Market-oriented farm management for trainers of extension workers

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TRAINING MATERIALS FOR AGRICULTURAL MANAGEMENT, MARKETING AND FINANCE

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Market-oriented farm management for trainers of extension workers

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This manual is one of a series produced by FAO's Agricultural Management, Marketing and Finance Service (AGSF) for use in various regions of the world. It was developed at a writers workshop held at Egerton University, Kenya, in 2003, which brought together farm management experts from Kenya, Mali, Nigeria, South Africa and Zimbabwe. The workshop provided a venue for sharing experiences in working with farmers in different regions of the continent. An outcome was an agreed upon content for the manual and the preparation of draft materials. The materials were field tested in Botswana, Ethiopia and Zambia before finalization. Although the manual focuses on Africa, it will be of value elsewhere to anyone concerned with improving farm management.

The materials provided in this collection are intended for the trainers of agricultural extension workers or others who deal with small-scale market-oriented farmers. Agricultural extension worker, as used in this manual, is a generic term that includes not only government employees of ministeries of agriculture and employees of local govenrment but also those from non-governmental organizations, civil society and the private sector who work directly with farmers in the field. The training approach used is experiential and participatory and aimed at ensuring that all involved acquire a better understanding of the skills needed to assist farmers to engage in profitable farming through better farm management practices.

We would welcome receiving
any comments or feedback from users
so that improvements can be made over time.

Note: The TRAINING AIDS PACKAGE is included in the CD-ROM that can be found in the leaflet accompanying this collection of the AGSF Training materials.

Module 1

Module 2

Module 3

Module 4

Module 5

Module 6

Module 7

Module 1

Module 2

Module 3

Module 4

Module 5

Module 6

Module 7

* Distribute to participants only after completion of the classroom examination or if participants are to administer the examination by themselves.

Many people have contributed to the preparation of this training manual. David Kahan, as Senior Officer Farm Management, was responsible for the design of the training programme, technical input, overall management and supervision. Special thanks go to the participants of the original writers workshop held at Egerton University, Kenya, for their contribution in conceptualizing and writing parts of the manual: Maurice Shiluli, Zacharia Mairura (Kenya), Paul Kleene (Mali), Steve Worth (South Africa), Betina Edziwa (Zimbabwe), Oluwole M. Okelola (Nigeria). Special thanks go to Steve Worth also for developing the exercises. Appreciation also goes to those colleagues at FAO who reviewed various sections of the manual. Finally, thanks go to Tom Laughlin for design and layout, Fabio Ricci for desktop publishing, symbol design and artwork, and a CD version, Martin Hilmi for technical contributions and Madeline Grimoldi for editing. We are grateful to all who have been involved in the preparation and development of the materials in this collection.

INTRODUCTION
TO A TRAINING PROGRAMME

Market-oriented farm management

In this manual, "market-oriented farm management" is a term used to capture a body of concepts and skills aimed at supporting farmers who have begun to adjust (orient) their farming activities to the opportunities and demands of the market. Farm management is all about making decisions on the farm. Market-oriented farm management is all about making decisions on the farm that enable farmers to farm for profit thereby expanding their potential and giving them and their families more choices in life.

General objective

This manual is for training front line agricultural extension workers in farm management for market-orientated farming. It is written generally for Africa, but it may have wider application. This is not a textbook for university students but a training manual for professional extension workers employed by the public, private or informal sector. Its aim is to contribute to building capacity by improving the skills of extension workers and, through them, the farmers with whom they work. It is not the intention of this training course to get farmers to become market-oriented. Rather the aim is more to help farmers understand why they make the choices they make and how to improve their decision-making skills in order to increase their farm income.

The principles and tools presented in this course may at first seem somewhat involved and complex. However, as the course progresses participants will see that it is not about numbers and accuracy, but about understanding and awareness. The primary outcome will be knowledge, understanding and skills that will better equip extension workers to assist farmers particularly as they become more market-oriented.

The learning principle behind the manual

This manual is built around the concept of experiential learning. The general format of the programme is a combination of individual readings providing technical information about a given topic followed by a group review and a variety of in-class exercises to reinforce learning and to practise a skill.

Most of the exercises are highly interactive. Some will entail field trips. Others employ creative ways to engage the participants in learning and in building skills. In addition to the practical knowledge and skills relevant to market-oriented farm management, the participants will also pick up a host of creative learning, training and presentation skills that they will be able to use in their extension work.

As will be seen when studying the Programme guidelines, everyone on the programme is referred to as a participant. While the programme is guided by a facilitator, the facilitator cannot take responsibility for anyone's learning. Each participant, including the facilitator, is responsible for their own learning. It is essentially a process of discovery through reading, discussion, practice and reflection.

The programme is intensive, but it is specifically designed to be fun. As will be seen, it covers a wide range of territory — some familiar, some new to the participants. There is ample space for interaction between and among participants. There is also space for critique and evaluation of the content, the learning approach, the learning outcomes, and style and manner of presentation.

Why market-oriented farm management?

Africa has many smallholder farmers who for years have farmed primarily for household food consumption with surpluses sold in the market. Farming has, in general, not been approached as a profit-making undertaking. Yet, as Africa is moving more and more to a cash economy, there is increased demand for food, fibre and fuel in towns and cities. This presents an excellent opportunity for smallholder farmers to consider ways and means to exploit increasing market opportunities for their products. One such way is to gain understanding, skills and competence in farm management practices that aim at increasing incomes for farmers by selling in the market.

Unfortunately farm management has often remained neglected in agricultural extension — in both the training of practitioners and in the job descriptions of extension workers. Extension in the past has focused largely on issues of production and productivity, limiting itself to the transfer of technologies.

The singular focus on production and technologies is not sufficient to meet the changes occurring at all levels of farming — locally, nationally, regionally, internationally. As smallholder and family farms become more and more integrated into the market economy, they have moved to more intensified ways of production, using "modern" inputs and machinery, thereby increasing their productivity and total production.

Further, farmers are increasingly diversifying their activities in relation to market opportunities. Diversification means introducing new crops (such as livestock) or new activities (such as post-harvest processing and storage). There are changes and advances occurring everywhere and on every front. Inputs, equipment, technologies, social and labour structures, and market opportunities are all changing, and these are impacting on the livelihoods of smallholder farmers.

For many farmers this situation is relatively new. Farmers are now asked to manage combinations of land, labour and other resources in a significantly different manner than those that they have been familiar with in the past. They are confronted with problems they did not know before, such as abrupt variations in costs of fertilizers and other inputs. They face difficulties in selling their produce at a good price. They experience strong fluctuations in market prices and demands too extreme to meet the specific quality requirements essential for their products. In short, they are confronted with farm management problems for which their past experience is of little support.

Farmers need to learn new skills. But what are these new skills and to what kind of situations can they be applied? That is what this manual is all about: understanding some of the management challenges facing market-oriented farmers and mastering the tools that can be used to tackle them. The first step is to help extension workers understand farm management and learn how to use tools that can be applied by the farmers with whom they work.

Market-oriented farm management in the context of unique farm household systems

One cannot speak about farmers, their farms and farm management without understanding the broader setting of the systems in which they find themselves. Each farm operates in a unique system. While most farm systems have a number of aspects in common, each individual farm is unique. However, it is beyond the scope of this manual to look at the whole range of farming systems that can be found in Africa.

While the diversity of farming systems is enormous — varying according to different climates, ecological zones, socio-economic and socio-political situations — of central importance is the understanding that principles of market-oriented farming can be applied to most farming situations.

It is up to extension workers to apply the concepts and tools learned in this course to the unique settings of each of the farmers and groups of farmers to whom they give management advice. The extension worker will also want to acquire a general understanding of how farmers and farming systems are linked to the global environment in which these are functioning.

Partnership programmes with farmers and farmers' organizations

The degree to which farmers themselves are an integral part of the governance and delivery of extension services will largely determine how successdful and effective extension services can be. Success rests in partnerships with farmers; incorporating farmer-to-farmer approaches, working with informal groups of farmers, and more formal farmers' organizations at village, district and national level.

In some countries demand for management training and extension advice is also provided through farmers' organizations. As stakeholders in the governance of such services, farmers — either individually or through their organizations — can participate in designing and implementing programmes and systems for extension delivery and evaluation. The participation of their members facilitates a more accurate identification of resources, opportunities and needs. Farmer organizations can assist in adapting the content of extension programmes to the situations and circumstances of their individual members.

Appropriate conditions for application

Market-oriented farm management extension can only be applied efficiently if certain conditions are met. The extension providers — public, private or both — should decide to convert at least a substantial part of their extension programmes to the provision of farm management advice. In the beginning this could be introduced through pilot programmes, which should receive full support from the governing agency.

However, farm management advice is not a panacea for all of the extension needs of farmers. Its application demands careful identification of target groups, regions and choice of personnel. Only sufficiently qualified and dynamic persons should be selected for training and participation in farm management extension programmes. Extension agencies need to be convinced of the usefulness and relevance of farm management extension, participatory processes and the importance of group dynamics. They should be ready to accept increased involvement of the beneficiaries and other stakeholders in programme definition and governance of delivery service.

Structure of the manual

Module 1 Getting started
Module 2 Understanding the farm setting
Module 3 Farm management decision-making
Module 4 Farm management tools
Module 5 Participatory approaches
Module 6 Planning
Module 7 Review, evaluation, examination

Modules are subdivided into sessions, which build on each other to expand understanding and develop skills.

How to use this manual

The manual is divided into two parts: handouts and training notes. The handouts are essentially information sheets to be given to the participants. Most of the handouts provide technical information relevant to the topic covered by the session in that section of the manual. Some of the handouts are guides to exercises.

The training notes provide guidance and instructions for the facilitator. The facilitator must read these thoroughly before presenting each session. The in-class exercises also require significant preparation. Facilitators should do all exercises themselves at least once to understand how they work and to get a feel for what will be required of them when working with the participants.

In most cases, the participants will need to receive the handouts the day (or night) before the session in which the material is covered. Some of the handouts are meant to be given out only during the session (particularly the handouts with answers to assignments). The facilitator will need to read through the training notes and prepare and distribute copies accordingly.

> **Note:** The participants should not get a copy of the training notes. If they do, they will compromise their learning. Reading ahead or reading the training notes will reduce the impact of discovery.

Preparing for a training programme

Preparation is a key factor to the success of this programme. The interactive nature of the exercises requires that the facilitator is very well prepared in advance.

Timing. The training programme runs for about 14 days. It can be lengthened or shorted, but 10 days is probably the minimum if core sessions are selected. The minimum programme can be divided into two five-day sessions. If this is the case, the facilitator may want to provide the participants with assignments to complete between training sessions.

Know the material. It is important that the facilitator prepares carefully for the training programme by reading the entire manual well in advance. Most of the in-class exercises provided will work in a wide variety of circumstances in Africa. However, the facilitator should be prepared to adjust these or any of the materials to improve the course. Perhaps more relevant local crops could be used or more examples of livestock included. It is also useful to have relevent stories from the field in mind to share with the class to help improve the learning process.

Physical facilities. It is important to consider the location of the training. Training of this kind should not take place in a luxurious or expensive environment. The whole focus is on efficient management and this message may be lost if the course itself gives the impression of unnecessary cost. It should also be away from the normal workplace and distractions such as shops and entertainment centres.

The training station should be in a large flat-floored room with chairs and tables that can be easily moved. It must be large enough to provide adequate space for small working groups as well as general presentations. Ideally the facility would have adjacent rooms large enough to accommodate comfortably groups of up to six or seven people.

If possible both the participants and the trainers should be accommodated near enough to the training centre to ensure group cohesion and possible evening sessions.

Equipment. The following is suggested:

- classroom board;
- flip chart stands (equal to the number of training groups);
- overhead projector;
- computer/laptop with CD rom reading and projection capacity;
- ring binders for handouts/materials for each participant.

Materials. The trainer needs to be sure that all materials are ready before starting the programme. While the need for materials varies throughout the course, the following list will be of help:

- handouts punched to fit the ring binders;
- flip chart paper and newsprint;
- heavy paper or light cardboard in a variety of light colours (e.g. green, beige, blue, yellow, pink); paper must be porous enough to write on with the available pens and markers;
- writing pads for each participant;
- paper (A3, A4, A5);
- scrap paper strips 21 x 5 cm (A4 cut width-wise);
- thick marking pens in a variety of dark colours (e.g. black, blue, red, green, brown);
- ink pens and pencils;
- scissors for each participant;
- hand calculator for each participant;
- prestick (or other means of attaching paper to the wall);
- string.

Who should attend the programme. This programme is designed to help professional extension workers employed by the public, private or informal sector who are working with smallholder farmers. Participants do not need to have any previous training or experience in farm management. The material covered will provide basic concepts sufficient to meet the farm management requirements of most smallholder farmers who are interested in or are already selling produce on the market.

Other participants might include extension support staff, livestock workers and community development workers. However, basic practical agricultural knowledge and some field exposure with farmers and crop/livestock enterprises are essential.

Introducing the participants and facilitators*. The entire course or single modules should start with a formal programme that introduces trainees to one another, specifies the training objectives and the trainees' expectations, and clarifies ground rules on the conduct of the training.

The programme should begin by welcoming the participants to the training workshop and setting the training atmosphere.

Objectives

To ensure that the participants will:

- have learned each other's name and acquired some understanding of the background and specific skills of the group;
- understand what to expect from the training course;
- understand the ground rules for conducting the training;
- recognize the challenges facing African agriculture.

** This has been built into Session 1.1, but facilitators may themselves wish to 'personalize' this introductory session.*

Post-training support

To be effective, training needs to be supported upon completion. It would be advisable to hold a short orientation course for the managers and supervisors of the extension workers selected to participate in this programme. The session would introduce managers and supervisors to the concepts and tools that the trained extension workers will apply when working with farmers in the field. By covering the materials included in the training programme, managers and supervisors will be in a better position to appreciate what is expected of their extension workers and the scope of expertise needed to be effective in the field.

ANNEXES

Annexes

Programme design

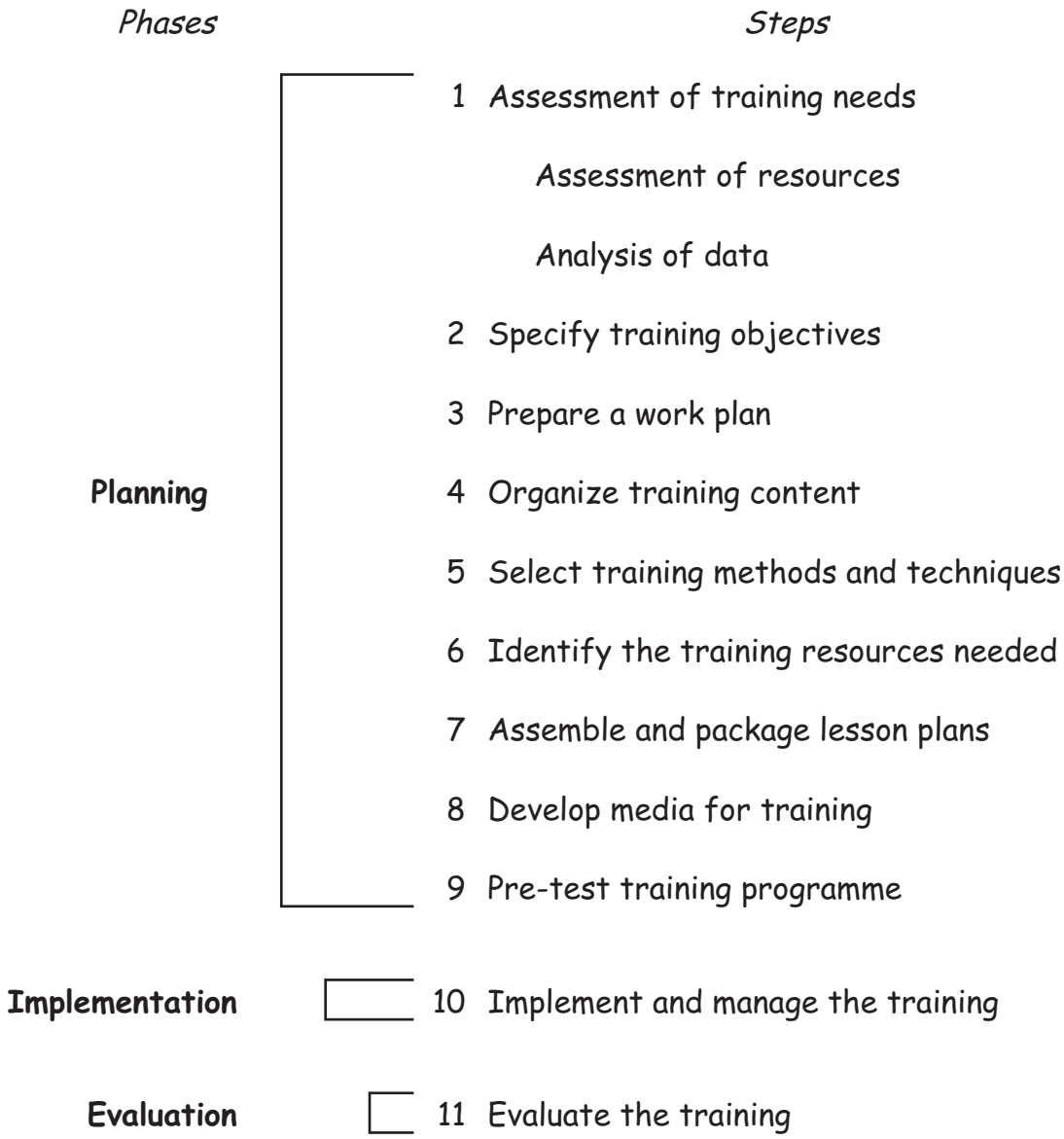
Purpose

Training requires more than just providing information and developing skills. It requires the trainer to have a thorough understanding of the training context and the role and value of proper and systematic planning, implementation and evaluation of the programme. This section has been prepared to remind you, the trainer, of the importance of preparing a well-designed training programme.

The section will provide you with information on how to plan, design and evaluate the training. It sets out the phases and steps in the training process with a list of those aspects that need to be kept in mind. The phases and steps involved should assist you in identifying shortcomings in the process of planning as well as evaluating, with a view to improving future training activities. It concludes with an explanation and guidance on how to apply some of the tools referred to in the manual.

Proper preparation is vital to the success of the training programme. More time and energy is usually required at this particular stage of the training than throughout its duration. As you are no doubt aware, preparation is the most challenging aspect of any training and if not adequately addressed can severely jeopardize its success.

Phases and steps in the training process*



Planning determines what you want to achieve and how best to achieve it. Steps on the following pages should assist you in designing a relevant and effective training programme.

* Source of figure: Planning for effective training (SDRE — FAO)

Step 1

Assessment of training needs

The primary step in any training process provides baseline information upon which the training programme is designed and developed. The assessment of training needs requires understanding (i) who, (ii) what, (iii) whom.

Who means the categories of people who have needs (e.g. extension workers or directly training farmers).

What refers to the kind of needs the trainees have (e.g. how to analyse and plan an enterprise; how to plan for the market).

Whom refers to the trainers (i.e. persons with knowledge to define the needs of extension workers or farmers).

In order to assess Who needs **"What"**, you need to look at ...

What is happening? ... **What** should be happening?
What are extension workers doing? ... **What** should they be doing?
and ...
What knowledge, skills and attitudes are necessary for the **training**?

During the preparation stage of the training design you need to conduct discussions with potential trainees and possibly with their supervisors. Conducting a survey, preparing a questionnaire or simply listening to well-informed extension workers and their supervisors should allow you to assess the interests and needs of the trainees.

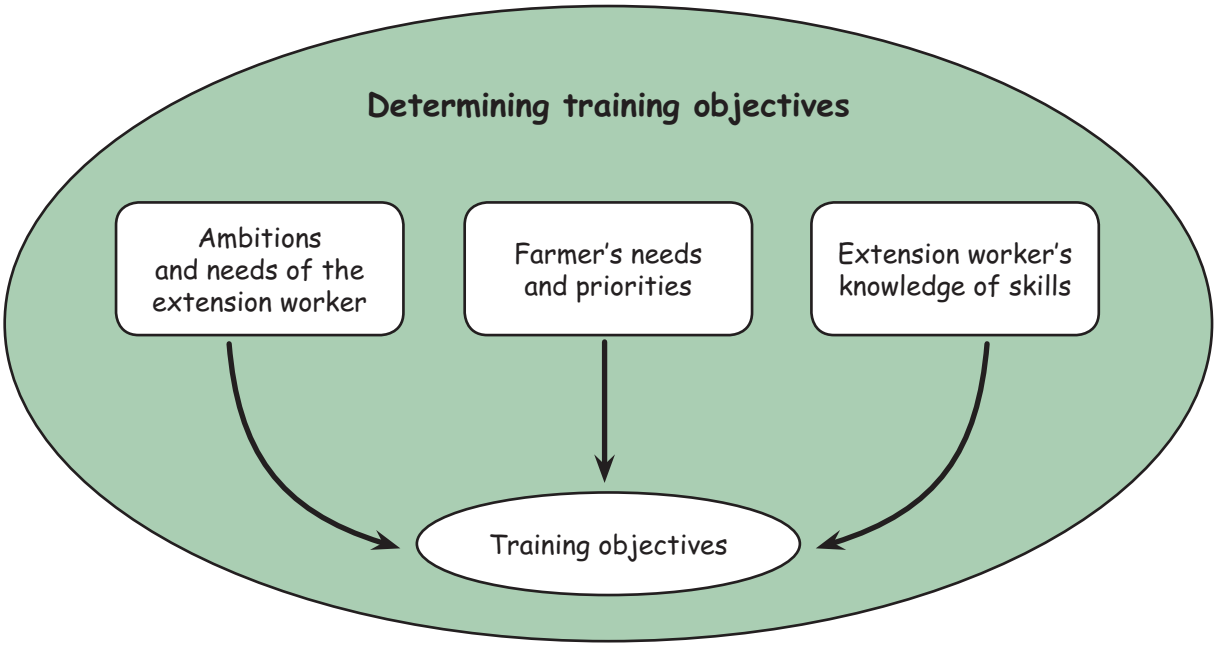
For example, if extension workers say that farmers really want to know more about analysing farm profitability, this should become a priority and a major part of the training design. You, of course, should not plan a training programme based on what you perceive as being a priority but should take into account the needs of the trainees. If this is not done correctly, the extension workers will become uninterested in the training and will feel that you are not concerned about their needs and wants. They will lose all sense of trust in you.

You should try to understand the reasons why extension workers prioritize their needs the way they do. This calls for some understanding of the farming community and the problems that farmers face. Some of this information may be available in reports and in files, or can be obtained from extension staff. Information gathered shows the skills of the extension workers, and needs assessment illustrates their aims and objectives.

Step 2
Specify training objectives
(turning needs into objectives)

Once the training needs have been identified, you should describe those needs as realistic objectives. Remember that the training objectives are the goals that the trainers set out to accomplish through the training. The objectives should help you to develop and conduct the training and provide the trainees with the knowledge and the skills they require. The objectives also provide trainees with a clear understanding of what they will be expected to do as a result of the training. This should help you and the trainees to evaluate what has been learned through the training.

The training objectives are illustrated in the figure below. They should be developed to serve as a guide to learning, a guide to instruction and a guide to evaluation*.



* Communications skills for rural development (SDRE — FAO)

Step 3

Prepare a work plan

A work plan is your plan of operations. It helps you to establish what is needed. An example is given below:

Training staff

How many?

To do what?

When?

Training

Who requires it?

When?

Where?

How long?

Media communications

What is required?

Where will it be obtained?

Equipment

What you need and where?

Stationery and materials

What and where?

Transport required

Where?

When?

Administration

Are secretaries or support staff needed and available?

Finance

Who controls funds?

Are there adequate funds available?

Step 4

Organize training content

The content of a training programme should be derived from the training objectives. You should develop a framework that draws out the content of the training. A good way to develop this framework is to list the objectives and prepare an outline using the descriptions and following the format below:

Must know information	**Should know information**	**Could know information**
allows trainees to achieve the objectives set (for example understanding of costs of production, gross margin).	will help the trainee achieve the objectives and will reinforce the learning process (for example risk management).	can be general or advanced, but the lack of which is not likely to prevent achievements (for example appraising investments).

Example

A content selection format

(to understand farm management and its importance)

Must know information	**Should know information**	**Could know information**
The multiple functions of management How to set objectives The process of decision-making	Concepts of input, output, enterprises, production process Internal factors that influence production	Enterprise combinations Technical, economic and institutional restrictions to agriculture

If you are unable to include everything and would like to teach within the time allotted, limit yourself to ensuring that the **"must know"** information is covered.

The **"should know"** and **"could know"** information could be communicated through assignments, handouts or group work activities.

In any case the training contents
should build on what the participants already know.

Step 5

Select training methods and techniques

The training content should include learning activities that help the trainees accomplish the training objectives. To help them understand the material, it is necessary to use training methods that allow you to review the key points communicated, use relevant and realistic examples, and restate new ideas in different ways by using familiar words and analogies. It is especially important when communicating to the trainees that there is consistency in the definitions and units of analysis used.

Different methods of training can be used to develop the skills of trainees, to ensure better understanding of the material, and influence attitudes and behaviour. Examples of these are given in the box below.

Training for skill development

If you want the trainees to be able to do something new as a result of training, the following techniques could be used ...	(i) demonstrations (ii) role-playing (iii) worksheets and exercises

Training for "understanding"

If you want the trainees to understand a concept or tool, you could provide them with information using ...	(i) printed materials (ii) lectures/trainer presentations (iii) diagrams (iv) case studies (v) demonstrations

Training to "influence" attitudes and behaviour

If you want to influence the attitudes and behaviour of the trainees, you could assist them in comparing old and new ways by using ...	(i) demonstrations (ii) field visits/study tours (iii) role-playing (iv) video films (v) case studies (vi) games and exercises

To influence the attitudes and behaviour of the trainees, it is necessary to use training methods that help you to compare old vs new attitudes and behaviour, arrange opportunities to experiment with new ways of acting, and reinforce and solidify these attitudes over time.

The following process is designed to help you make a good decision regarding which training methods to select*:

State training objectives

Determine performance indicated

What type of performance are you looking for?
Teaching for understanding? Teaching a new skill?
Influencing attitudes or behaviour?

Consider trainee characteristics

Understand the level of education of the trainees and their experience on the related topic.

List appropriate training methods

List all the different training methods that could possibly be used.

Consider practical requirements

Consider the practical requirements of the training situation. Where is it expected to take place? What seating arrangements are best? What is the environment of the training facility (lighting, electricity, noise, etc.)? What types of equipment and facilities are available for the training?
How much time does the trainer have?

Narrow the list and make a final selection

At this point you would need to compare the different training methods and make a final selection of the most appropriate. You should select the one that most closely matches the situation the trainees will encounter.

* Source: Planning for effective training (SDRE — FAO)

Step 6

Identify the training resources needed

Identify the resources needed to conduct the training. You will need to determine what facilities, equipment and materials are required in addition to identifying necessary administrative and personnel support.

Step 7

Assemble and package lesson plans

Pull together the training objectives, training content, training methods and the training resources into a plan that can be used for conducting the training. The plan should serve as a written record on how the training is intended to be conducted.

Step 8

Develop media for training

The materials prepared for the training need to be practical and relevant to the day-to-day work of the trainees. The material included in this training manual should provide you with an adequate base of information to address the needs of extension workers in Africa.

Step 9

Pre-test training programme

A pre-testing of the training programme would ensure that everything — the training objectives, media used for supporting the training programme, teaching methods, etc. — works as intended. During this phase you will identify unexpected problems and will be able to make changes and corrections in time.

Step 10

Implement and manage the training

(implementation involves a number of stages)

Preparation

Know the objectives of the training, be clear on the strategy to apply and know the content of the training. _____

_____

_____

Setting

Ensure a cheerful and relaxed environment that promotes learning. _____

_____

_____

Handling participants

This is a delicate process that requires patience and politeness. The trainees should be allowed and encouraged to participate, and you should try to show appreciation when they do. _____

_____

_____

Climate setting

Set the right atmosphere to relax and welcome participants. _____

_____

_____

Present the objectives

Let the trainees know why they are assembled, what are the objectives of the units and sessions, and what is expected to take place. _____

_____

_____

Openers (breaking the ice)

Introduce warm-up activities and ways for the participants to know each other.

_____

_____

Initiate the learning experience

This is the core of the training. Ensure that the participants are handled in a way that promotes participation and allows them to express their ideas by asking

questions. The training discussions also need to be kept on track. Motivation needs to be maintained throughout the training. This can be done by relating the material to real life situations from the trainees' own experiences and keeping their interest by using different types of media. _____

_____

_____

Conduct a refresher training session

The training should finish with a session that reviews the course content, providing trainees with an opportunity to ask questions. _____

_____

_____

Reflect on the experience

Solicit reactions to the material presented as part of a reflection process. Then the trainees should participate in a problem-solving discussion and provide feedback to you and the participants. _____

_____

_____

Discuss lessons learned

At this point the trainees should identify key points that have come out of the experience and the discussion. You should help the trainees draw general conclusions from the experience. _____

_____

_____

Discuss how the trainees might apply what they have learned

Based on the conclusions drawn, the participants should discuss how the information/skills will be useful in their fieldwork. They might also discuss how they propose to overcome difficulties in applying all they have learned. _____

_____

_____

Provide a closure to the training session

Briefly summarize the events of the training and assess the extent to which the objectives set at the beginning of the session have been met. Try to ensure that the participants leave with a positive feeling about the training. _____

_____

_____

_____

Step 11

Evaluate the training

Evaluation is generally considered the final part of the training process. However, it is best undertaken as an ongoing process conducted throughout the training and on completion of the individual modules. During the programme the evaluation enables adjustments to be made to the training as it proceeds. The training programme should be kept flexible, and if the evaluation shows that certain aspects of the programme are not working, the original plan should be amended and modified accordingly.

A final evaluation should be conducted at the end of the training to enable the entire programme to be assessed. This will provide a basis for reporting on the training while giving guidance for future training of its kind. A format for training evaluation is given at the end of the annexes. Although this has been prepared for module evaluation, it also may be of use for similar kinds of evaluation or for adaptation.

The next section describes some of the tools and techniques that may be used to enhance the quality of the training programme.

Training methods

Training methods

Brainstorming

Aims

- Stimulate wide and free thinking on a topic.
- Cause the group to see the breadth as well as the detail of the topic.
- Encourage everyone in the group to participate.
- Act as a lead into a discussion or subject area.
- Enable the sharing of the maximum amount of experience, training and ideas in the minimum time.
- "Liven up" a session — increase involvement.

Preparation

- Equipment: classroom board, overhead projector or newsprint (depending on whether the trainer wishes to refer to the information subsequently);
- Group size: restrict with the range from 6 to 20 people;
- Time: at the beginning of a topic. Normally not used at the beginning of a course because ideas flow too slowly. It should last 3—4 minutes.

Running a brainstorming session

- Write up topic/subject at top of classroom board, overhead projector or newsprint — keep it in view.
- Ask for one or two word contributions on the topic — whatever comes to mind.
- Ask trainees to free-wheel in their thinking — not to worry if some of their ideas at first seem wild or silly.
- Ask trainees to withhold any judgement on their own or other people's contribution until the end of the session.
- Ask trainees to keep their ideas flowing.
- Suggest to trainees that they "cross-fertilize" and develop the ideas of other members.
- Write up and number contributions as fast as they come — ensure writing is legible.
- Ensure that no contributions are missed.
- Add a contribution yourself occasionally to keep ideas flowing.
- Keep list of contributions in view — it helps to stimulate further ideas.
- Restate or slant the topic slightly if the session gets bogged down.
- Stop the session when you feel you have sufficient coverage of the subject — do not carry on too long.
- Ask trainees to read over the suggestions and take in the overall picture.
- Once the list is complete, the information can be used to highlight or lead into topics for: (i) a talk or lecture, (ii) whole group discussions.

*Role-play**

Organization of session

1. "Set the scene". Explain to the participants the aim of the role-play situation followed, and give a brief description of the "play". *(Key point: A written synopsis should be prepared in advance by the trainer.)*

2. Allocate acting roles to individuals who will receive specific written information as to the part they will play and the view they represent. *(Key point: It is important that players should not see each other's information.)*

3. Appoint "recorders" from the audience who should use either written notes, audio tape, video tape or a combination of these.

4. Keep time short for players to plan their inputs. *(Key point: Involve all the participants, including those who will be "the audience", allot groups of trainees to each "player".)*

5. Role-play. Allow action or discussions to develop freely without interruption. *(Key point: Time limit is set for the role-play, e.g. 15 minutes.)*

6. Debriefing session for the "players". *(Key point: This should take place away from the audience and should be led by the trainer. It allows players to "cool off" and drop their role.)*

7. Review the session with the whole group (audience + players) using written record or audiovisual reports presented by recorders.

8. Record conclusions of session. Hold group discussions to be followed by poster session. *(Key point: It is important that a list of outcomes is achieved, related to the situation covered by the role-play.)*

Examples of role-play

- Individual farmers negotiating a business loan with the bank manager.
- Farm-product shop retailer and customer assessing customer requirements.

Make sure your trainees understand why we use role-play:

- to deepen understanding of a subject they have already learned;
- to combine different skills and information;
- to understand the practical application of information they have learned.

* The trainer has an important role in managing the session.

Buzz-groups

Introduction

The buzz-group has become a widely used participative learning technique, and considerable experience has been gained from its use.

Aims

- breaks tension and establishes working relationships;
- focuses attention on subject matter;
- changes attitude and knowledge by sharing ideas;
- creates interaction;
- provides foundations for future session;
- links sessions;
- gives early achievement and recognition.

Benefits

- leaves course members in their "own" seat;
- creates a "comfortable" noise;
- trainers are able to make early observations of participants;
- participants realize they are able to contribute;
- ideas are caught from conversation in subgroups.

Preparation

- The buzz-group question should be clear, concise and, if possible, indicate the action required (e.g. list eight qualities of an effective leader).
- Ideally any new questions should be tested prior to the course to ensure that the desired response is obtained. Prior to the session write up the question on the classroom board or newsprint and conceal it.
- Ensure that felt tip pens, paper and newsprint are available.

Briefing

The order of the content of a briefing is important to ensure understanding of what is required. The following procedure is recommended:

- State purpose and time (e.g. "We are going to work in groups of 3—4 to share ideas for about 20 minutes").
- State what is to be achieved (e.g. a list of eight qualities and abilities) and show a written brief.
- Indicate recording method (e.g. " Which one of you would like to record the points we have just raised?").
- Split groups — three is ideal but supplement with a fourth if required.

Trainers' role during buzz-group sessions

1. Divide the participants into subgroups.

2. Allow groups to work alone for the first 1—2 minutes.

3. Check with each group on their understanding of the questions and that a member of the group is recording. Try to condense the answers into 2—3 words.

4. If possible, withdraw from the room for 5 minutes. The volume of buzz will increase as will the exchange of ideas between groups.

5. Gauge the progress by the level of noise. Visit any quiet group to encourage the thinking.

6. After 10—15 minutes, when noise level declines or when some groups are at the point of finishing their list, introduce newsprint.

Introducing newsprint

- Introduce newsprint to each group so that the ideas can be shared.
- Indicate the size of the writing — point out the size on name cards, newsprint brief or demonstrate.
- Help to select a scribe and suggest that other members of the group help formulate precise answers.
- Emphasize that they are not to worry about spelling.

While writing up

- Assist the groups in finding required words.
- Ensure that the size of writing is maintained.
- Thank scribes.

Hanging newsprint for feedback

- Number sheets in group order (e.g. clockwise around the room).
- Hang sheets in order.
- Allow 1—2 minutes to read through the sheets.

Feedback for buzz-group sessions

Aims

- clarify points made;
- consolidate and summarize;
- stimulate interaction between groups.

Method

- Invite course members to identify areas common to each sheet — trainer to underline.
- Channel any clarifying questions on common areas to quieter members of the group.
- Examine any wide variations between groups, question for clarification.
- Unusual or controversial responses should be directed to groups for discussion, and the trainer summarizes.
- Trainer inserts any key words that have been omitted from lists.
- Summarize key points in answer — indicate any links to future session.
- Indicate in some way satisfaction with the group's work, that the answers are correct and thank the group.

Important remarks

- Ensure that writing is not left to one member of the group for every session.
- Group members can be moved around to balance groups or to align or disseminate information.
- More than one question may be used, but ensure groups allocate appropriate time to each question.
- Newsprint can be exchanged prior to hanging to enable other groups to prepare, challenge or prepare areas requiring clarification.
- Select a group member to elaborate on points, or identify key points in feedback.
- Ensure that brief is clear and understood and that someone is recording.
- Assist quieter groups.
- Listen for noise level cues.
- Spread questions around the group.
- Indicate satisfaction with the answers.
- Encourage interaction.
- Give recognition, particularly to quieter members.
- Don't use groups of less than three or more than four.
- Don't concentrate on one group's work.
- Don't bore by running feedback too long (20—25 minutes maximum).
- Don't provide all the answers and interpretations.
- Don't take up a defensive position during controversy.

Training exercises

Using exercises

- Establish trainees acceptance of new technologies/processes.
- Break down classroom atmosphere by introducing movement and activity.
- Build confidence in handling new situations by trying first in a safe environment.
- Create learning by doing.

There are three phases in operating an exercise: brief (5 minutes), supervise (up to 50 minutes), review (up to 20 minutes).

Brief

- Have a printed set of instructions for the exercise on the overhead projector, flip chart or individual sheets of paper (see planning exercises on following page).
- Explain the details of the exercise such as (i) time available, (ii) result required, (iii) method of work/recording required, (iv) reporting back procedure.
- Allocate individuals to groups. Use the overhead projector or newsprint to show group membership.

Supervise

- After ensuring that the groups have the materials required for the exercise and starting work, leave them alone as much as possible.
- If individuals or groups get into difficulty, encourage them to resolve problems without doing the exercises for them.
- Towards the end of the exercise period, check the progress of groups and their readiness to review.

Review

- Use reviews to highlight the learning that has taken place.
- Ask groups to consider what went well and how performance could be improved next time.
- Conclude the review by making positive links to doing the job back at home.

Note: For real learning, an exercise requires at least 45 minutes and may take as long as 75 minutes.

Planning exercises

Plan an exercise where trainees can put a work process or technique into action by:

- working out costs of production (crop and livestock);
- calculating enterprise gross margins;
- working on budgets;
- solving a labour problem.

Process or technique

- should relate directly to course or session aim;
- should be part of the job that has to be done at work;
- should have a definite outcome and be achievable in time available.

Decide format

- Plan outcome of exercise.
- Decide how long it will take.
- Decide how many will work together.

Plan review

- Decide whether a whole group review is necessary.
- Decide what information the group will present to their peers.
- Decide what teaching points you will draw out.
- Plan your conclusion to the exercise.

Decide prior input

- Decide what technical instruction the group will need prior to the exercise to implement successfully the process/technique being taught.
- Identify whether the trainees need to be motivated to want to change behaviour prior to trying out the new process/technique.
- Plan inputs that will enable them to practice.

Plan exercise brief

- Specify time available.
- Specify result required.
- Specify method of working.
- Specify what is to be recorded.
- Specify reporting back procedure.

Tick box discussion

Use a tick box discussion to:

- establish previous experience (especially at the start of a course or session);
- establish current opinions and knowledge;
- get at individual standpoints and to question common attitudes and beliefs.

When using the tick box discussion there are three phases: brief (5 minutes), tick box (5 minutes), feedback (15 minutes).

Brief

- Hand out the tick box sheet (see example tick box sheet on following page).
- Explain what has to be done.
- Ensure individual working (unless the instruction is for pairs).
- Reassure trainees that this is not a test, but a means of developing discussion.

Tick box

- While trainees are completing the tick box sheet, avoid inspecting or overseeing what they are doing.
- Encourage speedy reaction and decision after 3 or 4 minutes (e.g. "Has everybody reached answer number ... ?").

Feedback

- Initially ask the whole group "which do you feel strongest about?" Then ask individuals to explain their choice.
- After the pattern of discussion has been established, you can go to individuals directly (e.g. "John, why have you chosen 1 or 1a?").
- Try to challenge superficial choices. Ask specifically "Why?"
- Try to obtain actual experiences.
- Draw conclusions that link to what is to follow.
- Vary the pattern of taking feedback according to the range of ideas within the group.

Timing

You should be able to operate a tick box discussion within 25 minutes.

Example tick box sheet

☐	There are good trainers and bad trainer teachers, and that situation cannot be changed.
☐	Good trainers worry about their performance.
☐	A good trainer should use visual aids to add impact.
☐	Trainees learn effectively by taking notes of what the trainer says.
☐	Strict discipline ensures that trainees learn.
☐	A successful trainer must always win arguments with trainees.
☐	Handing out printed notes encourages trainees to be lazy.
☐	Theory should be taught separately from practical work.
☐	Students learn best by watching a skilled demonstration.
☐	Experienced trainers would be insulted by the presence of a key trainer assessing their performance.

☐	Any trainer with proper training and motivation can become very effective.
☐	Good trainers are so confident about their performance that they never worry.
☐	A good trainer who knows his subject does not need visual aids because they distract trainees.
☐	Trainees spend their time most effectively by being given notes after the session.
☐	Motivation ensures that trainees learn and want to learn.
☐	An effective trainer always listens and accepts a trainee's point of view.
☐	Handing out course notes ensures that trainees make effective use of their time.
☐	Theory and practical work should always be integrated.
☐	Students learn best by trying out a new skill for themselves.
☐	An experienced trainer would be grateful for any help or advice from a key trainer.

Example tick box exercise

☐	A good farmer produces what the customer is used to.
☐	A farmer's production should be appropriate to his type of farm/location.
☐	A good farmer should produce a good product and then market it.
☐	A good farmer tries out new technology.
☐	Product presentation is more important than product quality.
☐	Planning production is of little use because critical factors (e.g. weather, are not predictable).
☐	A successful farmer must always be prepared to take risks by borrowing capital.

☐	A good farmer produces new products to introduce to the customer.
☐	A farmer's production should be appropriate to the market.
☐	A good farmer should establish a market and then produce what that market requires.
☐	A good farmer does what they know how to do best.
☐	Product quality is more important than product presentation.
☐	Planning production is even more important because critical factors are likely to change.
☐	A successful farmer must always be sure their venture will be successful before borrowing capital.

Case studies

Introduction

The practical case study is a well-established participative learning technique with a great many variations in its method of execution. Trainers may choose to use examples from their own experiences or prepare materials suitable for specific classroom requirements. The notes below summarize the main points that a trainer should be aware of, or be sure to carry out in any practical case study. Variation from the standard approach given in these notes is indicated in course manuals and instruction plans.

The technique will be discussed under the following headings: (i) aims, (ii) preparation, (iii) briefing, (iv) trainer role, (v) feedback, (vi) dos and don'ts.

Aims

To give an opportunity for:

- sharing ideas and experience;
- using existing knowledge to discover new or unthought-of information;
- increasing the absorption of a subject;
- solving problems;
- giving practice in specific techniques;
- developing and modifying attitudes.

Preparation

The question

- One of the most critical points for the success of a practical case study is a clear, unambiguous question that indicates what is expected in terms of discussion, context and presentation of results. To achieve this, questions must be carefully worded in advance and preferably tested prior to a course.
- A typed summary should be made available for each individual.

Classroom

- Ensure that the classroom is comfortable and not occupied by anyone.
- Check heating, working places and lighting.
- Arrange desks for a round-table discussion.
- Ensure there is equipment to take notes.

Choosing groups

Groups should be formed and manned carefully to be well-balanced to achieve aims of the discussion. Remember that:

- Groups smaller than three will obviously have less experience or ideas. In groups bigger than seven, some trainees may "fall out" of the discussion.
- A group can be balanced on the basis of contribution, experience or both.
- A group with few "generators of ideas" can work well; however, poor contribution may be the result of little experience or limited abilities.
- Name cards may help the trainer to form the groups. These cards can be rearranged until a better group structure is formed.
- Use overhead projectors or classroom boards to write group numbers and numbers of classrooms.

Briefing

In order for trainees to understand the objectives better and not interrupt the discussion, the following procedure is recommended:

- Announce that the group will divide into subgroups to discuss a problem.
- Explain which result you are planning as the outcome of a discussion (i.e. a list), a problem solution. Define time allocated for the discussion.
- Distribute handout, ensuring it is understood by everyone.
- Define the answer format.
- Read (show) prepared lists of subgroups (classroom, subgroup members, chairman and/or secretary, if necessary) to the trainees.

Trainer role

Trainers must not isolate themselves from the course completely during practical case study sessions. The trainer has an important part to play during discussions and the following procedure is recommended:

- Visit each group after 2—5 minutes to ensure that groups are organized and on track.
- Leave group to work for 5 minutes.
- Enter each group to ensure the first topic is being discussed in sufficient depth, bring in non-contributing members and introduce new thought areas through questioning. Trainers should begin to identify points to emphasize.
- Rarely should the trainer make direct inputs. The role should be one of listening and questioning to guide and draw out.
- Remind groups of time 3—4 minutes before end of syndicate. Check progress of writing up of feedback. Ensure agreement has been reached on who is to report back.

Feedback

Where similar questions have been used, adopt the same procedure as laid down for buzz-groups. Where different questions have been used, only hand in the feedback that is being discussed.

- Ask a spokesperson for the group to identify key points in feedback and explain thinking.
- Underline key points in feedback.
- Encourage members of other groups to challenge by questioning.
- If needed, the trainer identifies specific areas and asks other course members to comment.
- Trainer summarizes feedback, points out key areas — shows links to future sessions or action.
- Where appropriate, indicate satisfaction with feedback and thank the group. Any shortcomings should be dealt with constructively.
- Hang newsprint in chronological order around the room to enable easy reference during the subsequent session.

Dos and don'ts

Do

- prepare written brief to question;
- select groups carefully;
- sit in for short times during group work;
- use course members to give feedback;
- encourage interaction between course members.

Don't

- interfere in groups that are working well;
- take up defensive positions;
- dominate feedback;
- forget to involve quieter members during feedback.

Evaluation form

Please record your thoughts on what has been presented. This kind of information is helpful in making training programmes more interesting and useful. On the following pages you will find a number of questions dealing with a completed training segment. Most questions can be answered by circling a number on the scale to the right of the question. Consider your responses carefully and answer truthfully. Thank you for your help.

Module/Unit/Session/Other

Content

1. **Relevance of the topic to your job**

Not relevant				Very relevant
1	2	3	4	5

2. **Clarity of session's objectives**

Not clear				Very clear
1	2	3	4	5

3. **Level of instruction**

Too basic				Too advanced
1	2	3	4	5

4. **Lecture coverage**

Inadequate				Very comprehensive
1	2	3	4	5

5. **Time allotment**

Too short				Too long
1	2	3	4	5

6. **Emphasis on details**

Too brief				Too detailed
1	2	3	4	5

7. **Organization and direction**

Disorganized				Well organized
1	2	3	4	5

8. **Treatment of topic**

Useless				Useful
1	2	3	4	5

Comments

Teaching aids and handouts

1. **Effectiveness of teaching aids (general reaction) in helping you learn**

Not effective				Very effective
1	2	3	4	5

2. **Readability of handouts**

Not readable				Very readable
1	2	3	4	5

3. **Clarity of message of handouts**

Not clear				Very clear
1	2	3	4	5

4. **Appeal of handouts**

Not appealing				Very appealing
1	2	3	4	5

5. **Usefulness of field visits**

Useless				Useful
1	2	3	4	5

Comments

Additional remarks you may have on these or other aspects of the teaching

General

Please state the three most important ideas/concepts that you learned from this module

What did you like least about this module?

Suggestions to improve the module

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Notes

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The following is a list of the AGSF series TRAINING MATERIALS FOR AGRICULTURAL MANAGEMENT, MARKETING AND FINANCE

1. Farm planning and management for trainers of extension workers in the Caribbean, 2004 (CD-ROM, English).
2. Horticultural marketing extension techniques, 2004 (CD-ROM, English).
3. Farm planning and management for trainers of extension workers. Asia, 2006 (Hard copy and CD-ROM, English).
4. Integrating environmental and economic accounting at the farm level, 2005 (CD-ROM, English).
5. Curso de gestión de agronegocios en empresas asociativas rurales en América Latina y el Caribe, 2005 (CD-ROM, Español).
6. Market-oriented farm management for trainers of extension workers. Africa, 2007 (Hard copy and CD-ROM, English).

In preparation

- Farm planning and management for trainers of extension workers. Latin America (CD-ROM, in Spanish).
- Training manuals on farmer business schools. Asia and Africa.

Other work

- FAO Pacific Farm Management and Marketing Series 3, Helping small farmers think about better growing and marketing (Hard copy)*.

* Copies soon to be available from AGSF

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This publication is also available on the Internet at:
http://www.fao.org/ag/ags/subjects/en/farmMgmt/training.html

This manual is intended for trainers of extension workers as they interact with farmers to find ways to increase their incomes through a better understanding of the principles and tools of farm management and planning. It provides a "remedial" course of training on subjects such as farm business analysis, enterprise budgeting and risk management, all of which will be of help to either subject matter specialists or front-line workers as they assist farmers develop the skills required to compete and succeed in their farm businesses.

TRAINING MATERIALS FOR AGRICULTURAL MANAGEMENT, MARKETING AND FINANCE

6

Market-oriented farm management for trainers of extension workers

AFRICA

Module 1
GETTING STARTED

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TRAINING MATERIALS FOR AGRICULTURAL MANAGEMENT, MARKETING AND FINANCE

6

Market-oriented farm management for trainers of extension workers

AFRICA

Module 1
GETTING STARTED

Food and Agriculture Organization of the United Nations
Rome, 2007

ISBN 92-5

GETTING STARTED

We are now beginning a training programme on market-oriented farm management in Africa. The purpose is to better equip extension workers in their efforts to help farmers improve the profitability of their farms. The approach is interactive, learning based and designed to help professional extension workers support smallholder farmers who are beginning to sell, or already are selling, produce in the market. The aim is to increase the capability of farmers to manage their farms more effectively. Module 1 is intended to set the learning foundation for the duration of this programme.

Preparing for Session 1.1
Getting to know one another

Learning outcomes
Formally welcome all participants
to the training programme.
Explain that the goal of the programme
is to better equip extension workers
in their duties to help farmers.

Training aids
Exercise 1.1A (Me and my future)
Handout 1.1A (Me and my future)

Notes

Getting to know one another

The purpose of this session is to create unity among the participants and put them at ease with one another. It will also help to build participatory skills in preparation for the shared learning experiences that are to be presented throughout this programme. During this session you as facilitator should inform the participants of the name you wish to be called throughout the training programme.

Opening statement

Let us take a bit of time at this first session to introduce ourselves to one another as we prepare to work and learn together. We as a group already know that the goal of this programme is to better equip extension workers to help farmers improve farm profitability. The scope of this course covers a great deal of material that will involve considerable effort. However, it has been planned to provide not only an enjoyable experience but one that is rewarding and profitable. So, let us start by doing Exercise 1.1A (Me and my future). This will give us an opportunity to get to know one another and to help us build a shared vision regarding this programme.

Exercise 1.1A
Me and my future

Purpose: To help participants get to know one another and to practise drawing and communication skills.

Method: Pictorial representation, interviewing.

Materials: Give each participant: (i) an A1 sheet of paper (flip chart paper/newsprint), (ii) several thick coloured marking pens (preferably not black), (iii) Handout 1.1A (Me and my future).

Allow 15—20 minutes time for this exercise

Note

For this exercise the participants should work in pairs. If there are, say, 12 participants, have them count off from 1 to 6 two times, form two lines and pair the 1s with the 1s and the 2s with the 2s. If there is an odd number of participants, the facilitator or a visitor may have to pair off with one of them.

Procedure

1. For this exercise the participants should work in pairs.

2. Ask each pair of participants to write their assigned number (pair 1, pair 2, …) in bold letters on the paper and the name by which each would like to be known throughout the programme.

3. Have all the participants draw an image of themselves.

Exercise 1.1A (continued)

4. Then have each participant draw a river from their image to the vision of their own future. The river should pass by 'stepping stones' of progress towards that future. The stepping stones should be identified with a picture. Similarly, the end vision should also be indicated by a picture of the participant in the future. Have the class refer to the example in Handout 1.1A.

Note

Reassure the participants that the quality of their drawing is not important (they should not use words, but only pictures).

5. When the participants have finished their drawings, pair them off. All participants should give their drawings to their partners and explain the meaning of the story.

6. Arrange the group with the pairs near each other. Have the partners exchange drawings so that each group is given the drawing of the other.

7. One by one, ask each pair to stand and to introduce their partner by showing the drawing and telling the story.

Note

The facilitator should also do this exercise, either alone or with one of the participants.

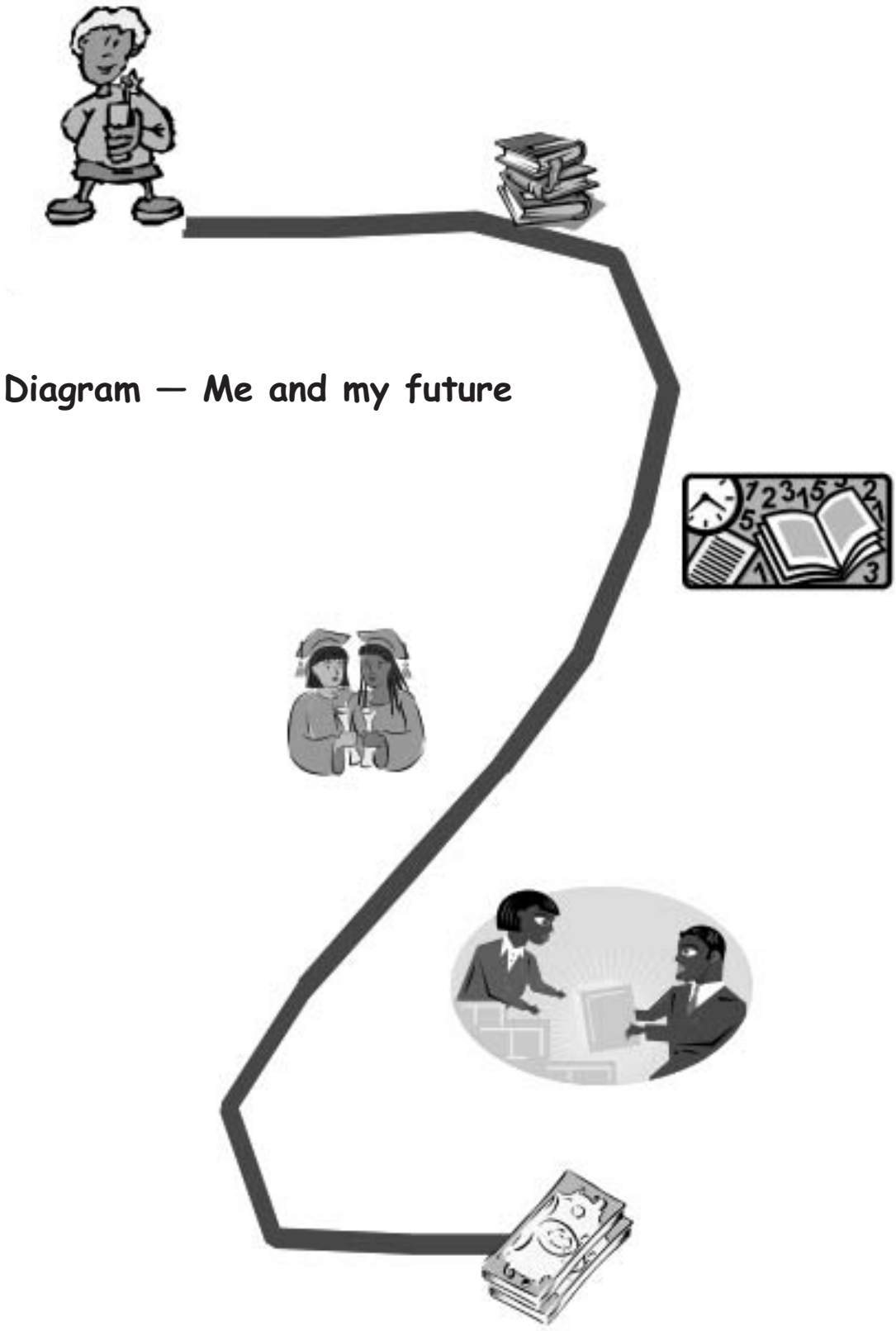

Diagram — Me and my future

Preparing for Session 1.2
Building a shared vision

Learning outcomes
Establish ground rules.
Identify participants' expectations and clear their concerns about the programme.
Develop a common understanding about process and outcomes of the programme.
Develop the following skills:
(i) interviewing, (ii) small group discussion, (iii) question formulation.

Training aids
Exercise 1.2A (Establish ground rules)
Exercise 1.2B (Clarifying expectations and worries)
Exercise 1.2C (Programme guidelines)
Handout 1.2A (Programme guidelines)
Handout 1.2B (Worksheet — Programme guidelines)
Handout 1.2C (Glossary of terms and concepts)

Notes

Building a shared vision

The purpose of this session is to set the ground rules for the course, identify expectations and concerns, and develop a common understanding about the process and outcomes of the programme. In addition, a study of the Programme guidelines, followed by an exercise of questions and answers, will help to create unity of vision among the participants and outline the basic conceptual framework to be used throughout.

Opening statement

We all come to a programme such as this with a number of expectations and concerns. In this session we shall discuss these in order to alleviate the worries that any of us may have. We shall also begin to build participatory skills. Study of the Programme guidelines will help to clarify the process, content and outcomes.

Exercise introduction

Now let us begin by spending some time to agree on how we shall conduct this progamme. Exercise 1.2A (Establish ground rules) will help us to formulate and use rules that will govern the group throughout the training programme.

Exercise 1.2A
Establish ground rules

Purpose: To ensure that we all agree on the rules and commit ourselves to putting them into practice.

Method: Group discussion.

Materials: Two flip chart papers marked: (i) "Accepted ground rules", (ii) "Maybe ground rules".

Allow 15 minutes for this exercise

Procedure

1. Ask the participants to suggest useful ground rules to govern the way the programme runs and the way the participants behave toward each other. They should suggest rules they think would benefit group cohesion and unity.

   For example: no interrupting while someone is talking.

2. As each suggestion is made, ask the group if they are happy for it to become a ground rule. If there is general agreement, then write it on the flip chart labelled "Accepted ground rules". If there is no general agreement, but some agreement, write it on the flip chart labelled "Maybe ground rules".

3. The facilitator should make sure that the following ground rules are included: (i) keep to the timetable, (ii) respect one another, (iii) criticize ideas, not people, (iv) speak simply and to the point, (v) be trustworthy.

4. When the list of ground rules is completed, post it on the wall where it can be seen and referred to during the programme. Ground rules should be reviewed from time to time, to see how well the group is doing in following them and to allow for changes that may be necessary.

5. Once the ground rules have been established, attend to "housekeeping" issues that include items such as confirmation of the daily timetable, accommodation, meals and clean-up.

Exercise introduction

As we have already discussed, trainers and participants alike have expectations and worries about programmes such as this. We each have concerns about the programme and hope to get something out of it as well. In Exercise 1.2B (Clarifying expectations and worries) we shall identify and record our concerns. At the end of the programme, we can revisit them to see if our expectations were met or if our worries came true.

Exercise 1.2B
Clarifying expectations and worries

Purpose: To identify and address participants' concerns.

Method: Group interaction.

Materials: (i) a thick dark marking pen and five A5 sheets of paper for each participant, (ii) a box at the front of the room labelled: "Worries", (iii) three sheets of newsprint marked "Expectations", "Background", "Worries" posted on the wall, (iv) prestik to attach papers to the wall.

Allow 30 minutes for this exercise

Procedure

1. Divide the participants into pairs. (If there is an odd number, then one group may have three members).

2. Give each participant five pieces of paper.

3. Ask each participant to write an "E" on two of the papers, a "B" on one of the papers and a "W" on two of the papers.

4. Participants interview their partners asking the following questions:

Expectations
What two things do you hope to get from this programme?

Background
What background do you have in farm business management?

5. Each participant should record the answers in as few words as possible, putting the answers for expectations on the papers marked "E" and the answer for background on the paper marked "B".

Exercise 1.2B (continued)

6. Ask all participants to write down not more than two things that worry them the most about being on the programme. (Write one concern per piece of paper marked "W".) Assure them that their "fears" will be kept anonymous. They should not write their names on these papers.

7. Randomly ask pairs to come forward. As they come up, they should drop their worry papers into the "Worry" box. Then each participant in turn should share their partner's answers to the first set of questions (i.e. expectations and background) and then stick the answers on the wall under the appropriate heading. As each pair comes up they should try to group similar or same answers on the wall.

8. When everyone has had a turn, randomly take out the "worry" answers and read them while putting them up on the wall under the "worries" category. Group the same or similar worries on the wall.

9. Review and discuss the lists.

Learning points

It is very likely that group members have little background in farm management (one of the reasons the participants were invited). So there should be a shared comfort that most, if not all, are starting from the beginning. Gently celebrate anyone who does have some background in farm business management. In general be very encouraging.

It is also very likely that the group has similar expectations and that many of these are addressed in the programme. If there is anything not covered, note it and if it fits in, perhaps it can be accommodated. The facilitators will need to use their discretion here. It is again very likely that they themselves share similar fears. Whatever fears have been expressed, offer reassurance.

Exercise introduction

Now that we have had a chance to get to know one another and to clarify our expectations and fears, let us spend some time looking at why we are here and what all of us will get out of the programme. This training course is specifically designed in terms of the content it covers, the skills it develops and the way that learning is done. Exercise 1.2C (Programme guidelines) outlines a basic understanding of these things, and we shall spend some time reading and studying it.

Exercise 1.2C
Programme guidelines

Purpose: To create unity of vision about the process and outcomes. Participants should have read Handout 1.2A prior to this exercise.

Methods: Question formulation, develop group skills.

Materials: (i) Handouts 1.2B (Programme guidelines), (ii) a red pen or highlighter, (iii) a glossary notebook (a glossary format that can be photocopied is provided on last pages of this session).

This exercise can be conducted as:
(i) a group exercise or alternatively, (ii) a facilitated plenary discussion.

Allow 1 hour for the group exercise
and 30 minutes for the facilitated discussion

Procedure for a group exercise

1. Divide the class into teams of 4—5.

2. Ask the teams to take turns reading aloud a paragraph from the Programme guidelines in Handout 1.2A. Participants should underline important words and concepts in each point and then ask and answer one or two relevent questions (an example of a format is shown opposite). Direct the participants as follows: (i) **participant "A"** reads **point one** aloud, the others read along silently and everyone underlines important words or concepts; (ii) **"A"** then asks **participant "B"** a question from that point and **"B"** answers using the same or similar words as those in the point; (iii) then **"B"** reads **point two** aloud, the others read silently and everyone underlines words and highlights; (iv) **"B"** then asks **"C"** a question from that point and **"C"** answers; (v) repeat this process until **all participants** have read and answered.

During this exercise participants
should record important terms in their glossary.

Exercise 1.2C (continued)

Example

Paragraph	Question	Answer
1	Whom is this programme for?	Me
2	What does it mean to be a collaborator?	To work together to help one another learn
3	Who is responsible for learning?	Each participant

3. Once the handout is read, reassemble the teams into the class group.

4. Ask the following questions. Each participant should stand when they answer. Move fairly rapidly with this exercise to ensure energy is maintained.

5. Remind the participants about their glossary notebooks and encourage them to use them as they go along.

Procedure for a facilitated plenary discussion

1. Ask one participant to read the first point of the Programme guidelines given in Handout 1.2A.

2. Facilitate a discussion about the point by asking and getting participants to answer questions. (You may want to use the attached question—answer guide provided on the next two pages.)

3. Choose a second person to read the second point.

4. Facilitate a discussion based on questions.

5. Repeat the process until all the points are read and discussed. Distribute the work evenly. Make sure that everyone reads at least one point and answers at least one question.

For the facilitator

Examples of questions and answers for discussion

Question	Answer
What are the overall learning outcomes of this training programme?	Understanding the value and place of market-orientated farm management in an agricultural extension programme Understanding the importance of using a participatory approach and of working with groups of farmers particularly in practising agricultural extension in market-orientated farm management extension Understanding the fundamentals of market-orientated farm management Acquiring specific skills needed to practise agricultural extension in market-orientated farm management extension Acquiring skills to apply a range of participatory tools to help farmers implement market-orientated farm management on their own farms
Who is this programme for?	Me
What is the programme designed to equip you with?	Help farmers improve the profitability of their farms
What is the focus of learning in the various training sessions?	Market-orientated farm management
What are the participants?	Collaborators
What does it mean to be a collaborator?	To work together to help one another learn
Who is responsible for learning?	Each participant
What are you expected to share?	Their experience
Why?	To enhance the learning opportunities
How much formal training in farm management do you need to participate in this course?	None
Why?	The programme will cover fundamental principles, concepts and tools sufficiently to give us adequate working knowledge and skill to enable us to apply them in the field
What does market-orientated farm management focus on?	Efficient production of farm goods for profitable sale off the farm
What should market-orientated farm management help a farmer to do?	Sustainably and continually increase their wealth over time
What is the framework that runs throughout the programme?	Inputs/farm and farm products/the market

For the facilitator (continued)

Examples of questions and answers for discussion

Question	Answer
What is the learning approach used in this programme?	Experiential and participatory
Why?	To help ensure participants acquire specific understanding, insight and skills needed to assist farmers engage sustainably in profitable market-orientated farming
What can you expect to happen each day?	Practical exercises, group discussions and individual work
What else is planned?	Field visits
What will help you track your progress?	Specific learning outcomes for each module, unit and session
What are the two versions of tools you could learn?	Number-based and symbol-based tools
What is the difference between these two versions?	Number-based uses numbers and requires calculations Symbol-based uses symbols to represent numbers and quantities
Why are you going to learn two versions?	So we can help both literate/numerate and illiterate/innumerate farmers apply farm management tools on their farms
What will you be asked to do at the end of the programme?	Develop a plan for applying what you have learned and practised with farmer groups.

Note

At the end of this exercise distribute Handout 1.2B (Worksheet — Programme guidelines) and ask each participant to answer the three questions posed (items 1, 2, 3) and, using the blank spaces, formulate three more questions (items 4, 5, 6). They should then answer all six questions. Upon completion review the results with the class.

Space for notes and questions for the facilitator

Programme guidelines

1. The participants in the training programme are collaborators — meaning you work together helping one another learn. While there is a facilitator to guide the learning process, all of you (including the facilitator) will share in the learning experience. You are responsible for your own learning. All of you are expected to share your experiences to enhance the learning opportunities both in terms of the specific learning outcomes and in terms of the training programme itself.

2. You do not need to have had any formal training or background in farm management to participate successfully in this course

3. The programme is designed to better equip you in your efforts to help farmers improve the profitability of their farms. The focus of learning in the various training sessions is market-orientated farm management. All over Africa, rural farm families are faced with many difficulties in relation to food security, income security, and general health and well-being. These families need to improve their situations. They need to make their livelihoods less vulnerable to the changes and opportunities of the world. One way to do this is to help them look at how they manage their farms so that they are in a better position to decide what to do with their farms. They will be able to make better decisions about producing food and about generating income from their farms. Making better and more informed decisions will make these families more secure and stable, and will make their farming activities more sustainable.

The programme will cover fundamental principles, concepts and tools sufficiently to allow you to apply them in the field.

Programme guidelines (continued)

Conceptual framework

To facilitate the purpose and outcomes of this programme, a few terms and concepts are explained below.

1. In general, farm management can be defined as planning and implementing activities on a farm for the purpose of sustainably supporting a family. Market-orientated farm management focuses attention on efficient production of farm goods for profitable sale off the farm. Therefore, good market-orientated farm management should help farmers and farm families sustainably and continually increase their wealth over time.

2. The framework that will run throughout the training programme is a simplified model of the basic elements to be explored in generating income and profits on a farm. This framework is expressed in the following model:

INPUTS → THE FARM & PRODUCTS → MARKET

3. Inputs are defined as those things (e.g. seed, fertilizers, labour, knowledge, skill, finance, technology) that are necessary for production on the farm.

4. The farm is defined as the place where crops and animals are raised for the purpose of producing certain goods including food and fibre products. Most certainly, farms vary from country to country. They may even vary greatly within the same country. Whatever comprises the farm, it is the place where products are produced, and the principles of market-orientated farm management can be applied to improve profitability.

Programme guidelines (continued)

5. The "market" is taken to be the place where products from the farm are sold or consumed.

Given this broad framework, in this programme you will learn about and practise the application of basic concepts and tools of market-orientated farm management to situations relevant to your own experience.

The learning approach

As stated earlier, this programme focuses on learning. In this programme, learning means: gaining understanding and insight about concepts and principles, and building practical skills. (In this programme the concepts, principles and skills are related to market-orientated farm management.)

1. This programme uses experiential and participatory learning. This means that you will learn by experiencing and doing things together.

2. The learning will take place mostly in interactive groups. These methods are used to help ensure you acquire specific understanding, insight and skills needed to assist farmers engage sustainably in profitable market-orientated farming.

3. Each session of the programme has specific learning outcomes for knowledge, understanding and/or skill. This enables both you and the facilitator to track progress in learning throughout the programme. Insight will come through personal and group reflection (thinking deeply about) on both content and practice.

4. Each day you will receive some instruction and will participate in practical classroom exercises, group discussions and individual work. Above all, you will be given the opportunity to practise the tools you study.

Programme guidelines (continued)

5. During this programme you will learn about and practise many tools. Tools are basically instruments that enable you to analyse the various aspects of farm management.The programme will help you understand the tools and how and when to use them.

6. These tools are based on specific farm management concepts. Some of these concepts may be new to you. Therefore, one of the first things you will need to do is to build your own glossary of terms and concepts. Your facilitator will provide you with glossary sheets on which you can record the terms, their meanings and an example or illustration. It will be up to you to keep this glossary up to date as you work through the programme. It will also be very useful for you in your later work.

7. Make notes about how you can apply what you are learning. At the end of the programme you will be asked to develop a plan for applying what you have learned and practised with individual farmers and farmer groups.

8. As you go through the programme, you are encouraged to participate as much as possible.

9. In some cases, you will have the option to apply two versions: "number-based" or "symbol-based" tools. Symbol-based tools work with symbols representing words. Using these visual expressions you can help farmers learn to apply valuable farm management concepts to their own farms. Symbol-based tools are also participatory, and this will help you when you work with groups of farmers.

10. Symbol-based tools will make it possible for you to also work with farmers who have difficulty in literacy and numeracy.

Programme guidelines (continued)

Learning outcomes

The overall learning outcomes of the programme are:

1. understanding the value and place of market-orientated farm management in an agricultural extension programme;

2. understanding the fundamentals of market-orientated farm management including (i) how profits are made on a farm, (ii) the input-production-marketing relationships of a farm, (iii) the importance of these relationships to farm profitability;

3. acquiring specific skills needed to practise agricultural extension in market-orientated farm management extension, including the ability to (i) analyse farming operations and propose plans, (ii) develop a basic whole-farm plan, (iii) develop and use a whole-farm cash flow;

4. understanding the value of using symbol-based tools and of working with groups of farmers particularly in practising agricultural extension in market-orientated farm management extension;

5. acquiring skills to apply a range of participatory tools to help farmers implement market-orientated farm management on their own farms;

6. understanding the importance of sustaining natural and other resources that are linked to the farm.

Worksheet — Programme guidelines

Question formulation and answer

	Question	Answer
1	*What are the overall learning outcomes of this training programme?*	
2	*What does market-orientated farm management focus on?*	
3	*What should market-orientated farm management help a farmer to do?*	

Worksheet — Programme guidelines (continued)

Question formulation and answer

	Question	Answer
4		
5		
6		

To make one glossary notebook:
(i) print one copy of this title page (adjacent),
(ii) print 20 copies of the interior pages (Glossary entry),
(iii) cut these in half to make 40 sheets in total,
(iv) punch two holes along the left margin of each sheet
to fit the ring binder for the handouts,
(as students add terms, they can re-arrange
the pages in alphabetical order).

Handout 1.2C — Glossary of terms and concepts

Name:_____

Glossary entry

Term: _____

Definition: _____
_____
_____
_____

Example or illustration

Glossary entry

Term: _____

Definition: _____
_____
_____
_____

Example or illustration

Preparing for Session 1.3

Farming and
market-oriented farm management

Learning outcomes

(i) A shared understanding of some of the issues and of one another's perceptions about farming and market-orientated farm management,
(ii) an appreciation of the diversities and similarities of thought in the group.

Training aids

Exercise 1.3A (Perceptions of farm management)
Handout 1.3A (Worksheet — Perceptions of farm management)
Handout 1.3B (Worksheet — Facilitators' record form)

Notes

Farming and market-oriented farm management

The objective of this session is to help participants develop an understanding of one another's perceptions and beliefs about farming and market-oriented farm management. We shall examine our shared views to discover the diversities and similarities of thought in the group. Extension workers do not necessarily have the same understanding even if they have similar backgrounds and education. If we learn to appreciate the diversities and similarities in ourselves we shall be more effective in our work in support of farmers.

Opening statement

Our point of departure in this session is ...
"What do we understand and believe about farming and market-orientated farm management?"
If we are to be effective partners in this study, it is first necessary to establish common ground. This will provide an opportunity to discover our shared and divergent views and how to work through these in our efforts to help farmers fulfil their farm and household objectives.

Exercise introduction

In Exercise 1.3A (Perceptions of farm management) we shall conduct a survey to gain insight into some of the assumptions made about farming, farm management and market orientation. This will help us as a group to understand our various perspectives, which we will then use as a point of discussion and unity building.

Exercise 1.3A
Perceptions of farm management

Purpose: To survey perceptions to gain insight into the assumptions made about farming, farm management and market orientation, and to appreciate diversity of opinion. Participants should have read Handout 1.3A prior to this exercise.

Method: Answer questions and discuss.

Materials: (i) A pen, (ii) a flip chart or newsprint prepared as in the example below for use in the classroom.

Allow 30 minutes for this exercise

When the participants have completed the Handout 1.3A Worksheet, collectively record their answers as shown below

Statement	Agree	Disagree	Don't know
1. The main purpose of having a farm is to produce food for the family	xxxx	xxx	xx
2. The purpose of farm management is to optimize production on the farm			
3. The main purpose of farming is to generate income			
4. Farming should result in personal satisfaction			
5. The purpose of farm management is to maximize profits from the farm			
6. It should be the goal of every farmer to produce agricultural goods only for the market			
7. To be profitable, farmers need to keep detailed records of income and expenses			
8. Market-orientated farm management requires formal training			
9. Semi-literate farmers can learn about market-orientated farm management			

Handout 1.3B provides an enlarged version of this form to be used for recording.

Exercise 1.3A (continued)

Procedure

1. Give each participant a copy of Handout 1.3A. They should read and answer the questions individually.

Learning points

Some participants may say that they cannot simply agree or disagree because the issues depend on other factors. This is possibly true. But assure the participants that this exercise is primarily meant to draw out perceptions and to help open their minds to some of the issues to be covered in the programme.

2. Ask the participants to read their answers to the questions. Do one question at a time making sure each person shares their answer before moving on to the next question.

3. Record the answers of each participant on Handout 1.3B.

4. Once the responses have been recorded, tally up the totals to see the range of perspectives. Starting with the first statement, ask a participant who has expressed a minority view to explain their perception. Then ask a participant with the majority view to explain their perception. Allow a brief discussion of the diverse views, but to not allow it to become a serious debate.
   The purpose is to be sure that the participants hear and understand the different perceptions. Be sure to get as many of the participants involved as possible.

5. Work through each of the statements in a similar way. If there is no minority view, then the facilitator should present a minority view to ensure that an alternate perception is shared. (Remember, the "Don't knows" are important because they are useful for opening up discussion.)

For the facilitator

Below are some possible reasons for agreeing and disagreeing with the nine statements. Use this as a guide to diversifying views. Where appropriate (especially where there is no minority view) share the reasons given to expand and enhance the learning experience.

1. The purpose of farming is food for the family.

Agree: Many families must use their farms for household food security. It is the only way of assuring survival of the families. Marketing of farm products is too risky to assure food security.

Disagree: Many people believe that food security comes from household food production, but food security can also be achieved by producing goods for the market and buying the required food.

2. The purpose of farm management is optimum production.

Agree: A farm should be as productive as possible to produce at the level where one gets the most from inputs.

Disagree: A farm should be as profitable as possible. This may mean producing lower yields, but making a higher profit.

3. The main purpose of farming is to generate income.

Agree: Farming is a business and should be used to generate income.

Disagree: Farming is meant to produce food to provide food security.

For the facilitator (continued)

4. **Farming should result in personal satisfaction.**

   Agree: Farming (as any form of employment) should lead to personal happiness. If it doesn't then one should stop farming and find another means of living.

   Disagree: Farming is about survival. Many people have no choice but to farm, even if it does not bring about personal satisfaction.

5. **The purpose of farm management is to maximize profits from the farm.**

   Agree: Farming is a business and therefore it should generate maximum profits.

   Disagree: (i) Farming may be part of a family household livelihoods strategy, which includes a combination of 'unprofitable' production of staples or other foods and farming for cash income, (ii) farming for maximum profits that is done at the expense of the environment or with the exploitation of people (e.g. labour, children) is not ethical or is it sustainable.

6. **It should be the goal of every farmer to produce agricultural goods only for the market.**

   Agree: Since farming is about generating income, choice of products should be determined by market demand and price (e.g. profitability).

   Disagree: Farming may be part of a family household livelihood strategy, which includes a production of staples or other foods that will be consumed at home and not sent to market.

For the facilitator (continued)

7. **To be profitable, a farmer needs to keep detailed records of his farm income and expenses.**

   Agree: Records are an essential part of farm management. With accurate records of income and expense, farmers will be able to decide what, how and how much to produce.

   Disagree: Farmers can adequately plan with estimated or approximated information about income and expense.

8. **Market-orientated farm management requires formal training.**

   Agree: The market is very complex. Farmers not formally trained in farm management may be taken advantage of.

   Disagree: With basic skills about how to use information and access resources, farmers can apply the principles of market-orientated farm management.

9. **Farmers with low literary skills can learn about farm management.**

   Agree: There are many participatory and 'picture-driven' learning methods that can equip farmers with low literacy and numeracy skills in market-orientated farm management to apply them on their farms.

   Disagree: Market-orientated farm management needs much technical information, particularly about markets. These tools require good reading, writing and numeracy.

Not every farmer will share the same view of farming and farm management: (i) some farmers will farm only for food, (ii) some will farm for food and cash income, (iii) some will farm only for cash income, (iv) farmers may change their purpose for farming over the years depending on many factors. With such a diversity of understanding about farming and farm management, extension workers can support farmers in fulfilment of the different farming and household objectives.

Worksheet — Perceptions of farm management

Nine statements related to farming, farm management and market-orientated farming are listed below. Read each statement carefully; think briefly about it and decide whether you "Agree" or "Disagree" with the statement, or if you "Don't know". Put an 'X' in the appropriate box next to each statement. There are no right or wrong answers. This exercise is an attempt to understand the various perspectives of those in the group as a point of discussion and unity building.

Statement	Agree	Disagree	Don't know
1. The main purpose of having a farm is to produce food for the family			
2. The purpose of farm management is to optimize production on the farm			
3. The main purpose of farming is to generate income			
4. Farming should result in personal satisfaction			
5. The purpose of farm management is to maximize profits from the farm			
6. It should be the goal of every farmer to produce agricultural goods only for the market			
7. To be profitable, farmers need to keep detailed records of income and expenses			
8. Market-orientated farm management requires formal training			
9. Semi-literate farmers can learn about market-orientated farm management			

Worksheet — Facilitators' record form

Statement	Agree	Disagree	Don't know
1. The main purpose of having a farm is to produce food for the family			
2. The purpose of farm management is to optimize production on the farm			
3. The main purpose of farming is to generate income			
4. Farming should result in personal satisfaction			
5. The purpose of farm management is to maximize profits from the farm			
6. It should be the goal of every farmer to produce agricultural goods only for the market			
7. To be profitable, farmers need to keep detailed records of income and expenses			
8. Market-orientated farm management requires formal training			
9. Semi-literate farmers can learn about market-orientated farm management			

Preparing for Session 1.4
Possible roles of extension workers

Learning outcomes
(i) A shared understanding of the roles of extension workers and their relationships with farmers and various role players, (ii) an understanding of the generation and dissemination of information, (iii) an understanding of extension methodologies, (iv) self-awareness of one's knowledge and preferences relevant to extension in market-orientated farm management.

Training aids
Exercise 1.4A (Approaches to agricultural extension)
Exercise 1.4B (Self-awareness)
Handout 1.4A (Worksheet — Self-awareness questions)

Notes

Possible roles of extension workers

By the end of this session participants will have a broader understanding of the possible roles of extension workers and methods of agricultural extension to use when engaging with farmers — particularly in reference to market-oriented farm management. Here we will explore a range of extension methodologies that can be used and briefly discuss different extension practices. This will provide some insight into the organizational environment in which participants operate.

Opening statement

Every extension worker has had some form of extension training. This may be formal, non-formal or 'in-service'. Training in agricultural extension varies considerably in terms of technical content, extension frameworks, methodologies and approaches. We shall see in the course of the programme that an important element in agricultural extension is the concept of continuous learning. Farmers and extension workers need constantly to update their knowledge and skill as research is conducted. For many extension workers, learning focuses primarily on farm production (e.g. yields, diseases, technology, production practices). Two areas that recieve less attention are farm management and extension methodologies.

Learning points

The extension worker has a crucial role to play as a facilitator of farmer learning. The key is to provide tools for guiding farmers to use the right methods and to understand the basic principles for enriching content and thus understanding. If used correctly, these tools and principles will bring forward the potential skills, creativity and knowledge of the group to the participating farmers. This is what is meant by facilitation. To facilitate farmers, a certain confidence is necessary, which is gained through regular practice and involvement in engaging with them.

Exercise introduction

Even though two extension officers may work for the same ministry, they will have a different understanding and approach to agricultural extension. The purpose of Exercise 1.4A (Approaches to agricultural extension) is to get a clearer picture of the range of understanding and approaches that exist in this group. This will allow each of us to expand our understanding of agricultural extension and to appreciate the work that we are doing.

Exercise 1.4A
Approaches to agricultural extension

Purpose: To help participants explore the focus of extension and the degree to which working with groups or individuals is used.

Method: Pocket voting (variation).

Materials: (i) enough cards in the shapes of squares, triangles and circles so that each participant has one of each kind, (ii) a pen, (iii) two voting boxes labelled "Individual farmer" and "Group of farmers".

Allow 30—45 minutes for this exercise

Procedure

1. Seat the group in a single-row circle. Give each participant a set of three cards indicating:

   INPUT INFORMATION — square ■
   PRODUCTION INFORMATION — triangle ▲
   MARKET INFORMATION — circle ●

2. Ask them to write their names on the back of each card.

3. Place two voting boxes just outside the door. Mark one "Individual farmer" and the other "Group of farmers". (Use a box the size of a shoebox with a slot in the lid.)

4. Explain that this is just a fun and random way to choose someone to tell a story about engaging with farmers. The participant whose name is drawn from one of the boxes will be asked to tell a short story.

5. Ask the participants to think of the last time they had a discussion with a farmer or a group of farmers about any or all of the three types of information.

Exercise 1.4A (continued)

6. When they have had enough time, ask each participant to go to the voting box and drop the relevant card(s) in the relevant box(es). (e.g. if the last time an extension worker had a discussion about market information was with a group of farmers, place the MARKET INFORMATION card in the "Group of farmers" voting box.)

7. When everyone has voted, collect the two boxes. Open the "Group of farmers" and, with your eyes closed, take out one card. Read the name and invite that person to tell the story of the meeting with the group of farmers and the discussion (input, market or production).

8. Congratulate the storyteller.

9. Draw another card and invite that participant to tell a story. (Be sure to remember to congratulate.)

10. Do this a third time.

11. Then ask the three storytellers some questions such as:

    - Why did you speak to a group and not to an individual?
    - Did you contact the group or did the group contact you?
    - How did you participate in the group discussion?

12. Encourage other participants to ask questions and discuss them.

13. When the discussion is over, empty out the "Group of farmers" box. With the names down, sort the cards into the three categories (be sure to include the three that have been taken out already).

Exercise 1.4A (continued)

14. Count the number of votes. How many input votes? How many market votes? How many production votes? How many in total in the "Group of farmers" box?

15. Now generate some discussion about:

- Why is it that there were so many/few group of farmer votes?
- Why were there so many for inputs versus production? or production versus market?

Learning points

Here explore two things. One is whether the focus is on individual farmers or on groups and why. The other is what kind of information is most often discussed (input, market or production) and why.

It is anticipated that group work is accepted but may not be practised for any number of reasons. The discussion should try to discover and capture those reasons. These may include policy issues, the scattered nature of farmers, or social or political constraints.

It is also anticipated that the most common sharing of information is about production. Given the previous exercise that shows about how much information and how many farmers to reach, extension workers need to work with groups. The discussion should try to discover and capture the reasons we do or do not share input and marketing information.

Further, discuss the vision of seeing farmers as partners in the provision of agricultural extension, which can be done partly through farmer-to-farmer extension (or farmer-to-group extension).

Exercise introduction

We are all often so busy and focussed on what we are doing that we do not have time to reflect or think about the work we are doing. This next exercise will be a guided self-reflection of our own work as extension officers.

Exercise 1.4B
Self-awareness

Purpose: To help participants explore their thoughts and preferences in connection with extension.

Method: Guided self-reflection*, group discussion.

Materials: Handout 1.4A (Worksheet — Self-awareness questions).

Allow 50 minutes for this exercise

Procedure

1. Give each participant a copy of Handout 1.4A.

2. Each participant should answer the questionnaire individually.

3. Starting with the first question, ask the participants for their thoughts. Do not 'force' them to expose their thoughts, but encourage them to do so.

4. Allow for some discussion after all the participants have shared their answers. Is there any common ground? Look especially for diversity and discuss it in the context of market-orientated farm management.

Learning points

Here we want the extension workers to become aware of three things: (i) the value and efficiency of working with groups of farmers and of acquiring the skills, tools and confidence to do this, (ii) the value of seriously generating and disseminating information, encouraging farmers to generate and disseminate information, and of acquiring the skills, tools and confidence to do this, (iii) the value of building skills, tools and confidence to engage in extension work that incorporates market-orientated farm management.

* Because this is a guided self-reflection, the facilitator should take extra care to become familiar with the questions.

Worksheet — Self-awareness questions

Extension workers using the manual should ask themselves the following questions to help determine how their own biases, experience, skills and knowledge might affect the way in which the farm management manual can be applied. These questions constitute only a small sample of the many questions that could be asked and are intended to serve to help extension workers to start thinking about their personal approach to using the concepts, tools and techniques. Extension workers can use the insight that is gained to develop a plan for complementing their own approach by asking for assistance from others.

1. Do I feel competent and confident asking questions and appraising information about farm business management issues or am I more skilled in dealing with technical production issues?

2. Do I think market-orientated farm management is important? Do I think it is important to have market-orientated farm management skills? What market-orientated farm management skills do I have? (Make a list)

Worksheet — Self-awareness questions (continued)

3. Do I have the skills needed to put farmers at ease while facilitating the participatory exercises? What participatory skills do I have? (Make a list)

4. Do I tend to prefer working with a group of farmers or individual farmers?

5. How do I feel and what do I do when I find that farmers are either not responsive to my ideas or disagree with my ideas? Do I only want to work with farmers who will implement my ideas? Do I persevere? Do I lose confidence? Do I look for other farmers? Do I try different extension approaches and methodologies?

Worksheet — Self-awareness questions (continued)

6. Am I tactful enough to bring up farm business weaknesses and deficiencies soon after a first analysis of the farm with the farmer? Record a story of a successful tactful engagement if you can.

7. Am I and the Ministry/NGO prepared to invest adequate time and resources to make the extension communication process a success and insure that our work is viable over the long term? Is this working in your area (if so give an example)?

8. How do I view farmers? Are they end-users of technology and information transfer? Are they innovators and researchers of technology? Do I see them as partners or as beneficiaries?

Worksheet — Self-awareness questions (continued)

9. How do I view my role with information? Do I receive it from others and disseminate it? Do I collect my own data and interpret it? Then what do I do with it? Do I do my own research? What kind? What do I do with the results?

10. What communication tools and techniques do I know and perhaps use? (Make a list) How confident am I in using them? Of what value are they to my work? Why?

Review of Module 1

While becoming acquainted with one another, participants were urged to build a shared vision regarding the programme, market-oriented farm management and the role of the extension workers in the progress. The aim of this segment is to review these important introductory activities.

The following outline will guide the facilitator in a brief review of the activities of this module.

Session 1.1
Getting to know one another

Purpose of this session:
group cohesion and trust;
to better equip extension workers in their duties to help farmers.

Learning outcomes

Learning each other's names;
building the group;
group cohesion and trust;
initial future/vision focussing;
initial mapping skills;
small group discussion;
initial presentation skills;

Session 1.2
Building a shared vision

Purpose of this session:
build a shared vision about the programme.

Learning outcomes

Establish ground rules.
Identify participants' expectations and clear their concerns about the programme.
Develop a common understanding about process and outcomes of the programme.
Participants create a level playing field

Develop the following skills: (i) interviewing, (ii) presentation, (iii) question formulation, (iv) small group discussion.

Session 1.3
Farming and market-oriented farm management

Purpose of this session:
begin the process of effective learning.

Learning outcomes

(i) A shared understanding of some of the issues
and of one another's perceptions about farming
and market-orientated farm management,
(ii) an appreciation of the diversities
and similarities of thought in the group.

Session 1.4
Possible roles of extension workers

Purpose of this session:
creating benchmarks for reflecting on learning.

Learning outcomes

(i) A shared understanding of the roles of extension workers
and their relationships with farmers and various role players,
(ii) an understanding of the generation and dissemination of information,
(iii) an understanding of extension methodologies,
(iv) self-awareness of one's knowledge and preferences relevant
to extension in market-orientated farm management.

Closing questions

Ask the participants if they believe that
the overall purpose of the module has been achieved
and if they have improved their skills in
(i) participatory diagramming, (ii) use of matrices,
(iii) visioning (comparisons), (iv) working in small groups,
(v) group presentations, (vi) storytelling (individual presentation),
(vii) pocket voting and (viii) self-reflection.

Notes

Notes

Notes

Notes

The following is a list of the AGSF series TRAINING MATERIALS FOR AGRICULTURAL MANAGEMENT, MARKETING AND FINANCE

1. Farm planning and management for trainers of extension workers in the Caribbean, 2004 (CD-ROM, English).
2. Horticultural marketing extension techniques, 2004 (CD-ROM, English).
3. Farm planning and management for trainers of extension workers. Asia, 2006 (Hard copy and CD-ROM, English).
4. Integrating environmental and economic accounting at the farm level, 2005 (CD-ROM, English).
5. Curso de gestión de agronegocios en empresas asociativas rurales en América Latina y el Caribe, 2005 (CD-ROM, Español).
6. Market-oriented farm management for trainers of extension workers. Africa, 2007 (Hard copy and CD-ROM, English).

In preparation

- Farm planning and management for trainers of extension workers. Latin America (CD-ROM, in Spanish).
- Training manuals on farmer business schools. Asia and Africa.

Other work

- FAO Pacific Farm Management and Marketing Series 3, Helping small farmers think about better growing and marketing (Hard copy)*.

* Copies soon to be available from AGSF

For further copies of this publication
and the information on FAO's activities
related to farm management
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This publication is also available on the Internet at:
http://www.fao.org/ag/ags/subjects/en/farmMgmt/training.html

Module 1 is intended to set the learning foundation for this training programme on market-oriented farm management. The purpose is to better equip extension workers in their efforts to help farmers improve the profitability of their farms. The approach is interactive, learning based and designed to help professional extension workers support smallholder farmers who are beginning to sell, or already are selling, produce on the market. The aim is to increase the capability of farmers to manage their farms more effectively.

TRAINING MATERIALS FOR AGRICULTURAL MANAGEMENT, MARKETING AND FINANCE

6

Market-oriented farm management for trainers of extension workers

AFRICA

Module 2
UNDERSTANDING THE FARM SETTING

For further copies of this publication
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TRAINING MATERIALS FOR AGRICULTURAL MANAGEMENT, MARKETING AND FINANCE

6

Market-oriented farm management for trainers of extension workers

AFRICA

Module 2
UNDERSTANDING THE FARM SETTING

Food and Agriculture Organization of the United Nations
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UNDERSTANDING THE FARM SETTING

It is useful to look at farm management from two aspects. One aspect is the farm, the farmer and the input—output relationships of farming. The second aspect deals with the resources used by the farmer on the farm. The participants will gain a detailed understanding of farm resources and the concept of the five capitals: natural, human, physical, financial and social. All of these affect the decisions to be made and by studying them we will begin to define the complex decision-making boundaries of farming. Whereas most extension officers are trained in technical (production) decision-making, here they will come to understand the overall system. This includes many complex elements both within and outside the farm boundaries. We will learn that even small farms are highly complex. To assist in the learning process, the participants working in groups will develop virtual farms to visually plot the farm enterprises, the decision-making boundary and the factors that impact on them.

Preparing for Session 2.1
The farm and its enterprises

Learning outcomes
Understanding (i) the farm and its physical boundaries, (ii) farm enterprises, (iii) the connection between cash and food, farm and household, (iv) the whole system in which the farm operates

Training aids
Exercise 2.1A (Identifying and mapping a virtual farm)
Handout 2.1A (The farm and its enterprises)
Handout 2.1B (Worksheet — Description of three smaller-scale farms)
Handout 2.1C (Diagram — Physical boundaries of the farm and household)

Notes

The farm and its enterprises

In this session the participants will build the foundation for exploration of market-oriented farm management. They will learn the basic concepts needed for the study of farm management by looking at the farm as a production unit with various enterprises. They will also look at the farm in terms of its function as the source of household food and income. This will set the stage for reviewing the central importance of farm management and the kinds of decisions required for farmers to be successful farm managers.

Opening statement

As our studies in this module begin we will briefly examine the essential features of a farm. This will help us to recognize the various boundaries of a farm that are key elements in the application of farm management principles. Now let us review Handout 2.1A (The farm and its enterprises). Feel free to ask questions if there are any points you may not understand.

The outline on the following pages is provided to help the facilitator conduct the review.

Farming for cash and farming for food

- Many farmers use their farms to provide food for their households. If this is the case, they will grow crops that they normally eat.

- Some farmers use their farms to generate cash income for their households. If this is the case, they may grow food crops that they will sell for cash or they may grow other crops such as cotton, coffee, or tea. Alternatively, they may grow a combination of food and 'cash' crops that they can also sell on the market.

- In some cases, farmers will use their farms to provide food for their family as well as cash.

- Principles and tools of farm management help farmers decide how to use their farms to meet their food and cash needs.

Market orientation and the need for improved farm management

- Life is very difficult for many farmers. There are often shortages of cash and food in the household. Decisions about the household and about the farm often conflict with each other.

- There is more and more need for cash to buy the things the household needs. So many farmers need to farm for cash. Most food farmers do not have the knowledge and skills of farm management and therefore they find it difficult to farm profitably.

- Basic training in the principles and tools of farm management can help these farmers organize their farms to make them more profitable and to meet the objectives of their families.

Outline of Handout 2.1A (The farm and its enterprises)

In order to apply the principles and tools of farm management the farmer must establish the boundaries of the farm. The first type of boundary is the physical enterprise boundary.

- A farm is a portion of land on which a particular household undertakes agricultural activities as a part of its livelihood. Some or even all of the land may include common property

- The agricultural activities on the land may include cultivating crops, tending livestock, managing fruit trees, exploiting forestry resources or a combination of these.

- In terms of farm management each activity is called an enterprise.

- A farm often consists of more than one enterprise, although there may be one main enterprise.

- Farms may also have a number of physical structures such as fences, animal paddocks (kraals) and crop storage. These exist to support the chosen farming enterprises.

- Each enterprise on a farm is based on an input—output relationship.

  (i) Inputs are items required for the production process. These include land, labour, implements, seed, fertilizer.
  (ii) Outputs are the goods that are produced, such as harvested crops, milk, meat, eggs.
  (iii) In many cases, the enterprises of a single farm are interlinked. This means some of the outputs of one enterprise are used as an input of another.

- Farm management is the work done to organize the input—output process effectively to generate profits from the farm.

Learning points

To develop the basic concept of a farm from a number of different aspects by looking at it:

- as a production unit with its physical boundaries;
- as a production unit that includes cultivated land and common property resources;
- in terms of the supply of inputs required to produce;
- in terms of the markets required to generate income;
- in terms of the various kinds of decisions to be made by a farmer;
- in terms of market orientation and improved farm management.

Exercise introduction

In Exercise 2.1A (Identifying and mapping a virtual farm) we begin by building a learning space that will be used frequently in this module and to some degree throughout the course.
We shall identify some of the kinds of small farms that we are familiar with and based on these, map a number of virtual farms that can then be used.
This will allow us to visually explore the factors that affect farms and in particular those that affect decision-making on the farm.

Exercise 2.1A
Identifying and mapping a virtual farm

Purpose: To create a visual learning space for the programme. To help participants visualize the physical boundaries of a farm and the farm household, and the basic spatial arrangements of a typical farm with which they are familiar. (Participants should have read Handout 2.1A prior to this exercise.)

Method: Paper construction diagramming, group discussion.

Materials: (i) Handouts 2.1B (Worksheet — Description of three smaller-scale farms) and C (Diagram — Physical boundaries of the farm and household), (ii) large flip chart paper or newsprint, (iii) thick marking pens, (iv) heavy paper or light cardboard, (v) prestik, (vi) scissors.

Allow 60 minutes for this exercise

Procedure

Part one
Identifying farms

1. Ask the participants to take out Handout 2.1A (The farm and its enterprises).

2. Divide them into teams of 5—6. (These will be their 'farm teams' where they will spend most of their time learning. Therefore give careful thought to how the groups should be formed. What groupings will encourage the best learning?)

3. Ask each farm team to use their own extension experience to identify and describe three different small-scale farms that are typical of the farms they know in their area. Each farm should have a different main enterprise. (For example: a 2 ha smallholder farm with 1.5 ha of cotton, 0.2 ha of potato, 0.3 ha of wheat and goats kept around the homestead.)

Exercise 2.1A (continued)

The farm teams should consider the following:

- What is the area (in hectares or acres) of the whole farm?
- What are the enterprises of each farm?
- How are the different enterprises interrelated?
- Do these farms mainly produce food, or cash, or both?

Based on their discussions each team should complete the table in Handout 2.1B (Worksheet — Description of three smaller-scale farms). A copy is provided below for ease of reference.

Allow 25 minutes for team discussion and completing the table

	Farm 1	Ac/ Ha	Farm 2	Ac/ Ha	Farm 3	Ac/ Ha
Main enterprise						
Other enterprises						
Inter-relationship between enterprises						
Farming for food, cash, or both						

4. Ask each team to briefly share their results. (This portion of the session is not for discussion, so questions should be limited to clarification only.)

Exercise 2.1A (continued)

Part two

Mapping the farm

5. Ask each team to choose one of these three farms as the example they will work with for the rest of the programme. The farm they choose must meet the following requirements:

   - at least two, but not more than four crops of which at least one must be for household food production;
   - one livestock enterprise (can be very small scale).

6. Each team will need to draw a map outlining the physical boundaries of the farm they have chosen. The paper they use should be large (a flip chart sheet or newspaper) to provide ample work space for the exercises that follow in this module. The physical map of the virtual farm itself should not take up more than about one-third of the paper used and should be drawn in the centre of the sheet.

7. Now ask each team to use coloured marking pens and heavy paper or cardboard to create symbols or labels to represent the different enerprises, resources and the farm household. Then they are to build a detailed virtual farm by fixing these to their maps. See the example in Handout 2.1C (Diagram — Physical boundaries of farm and household).

8. The phyiscal boundary that has been represented here is based on the natural capital, land. Discuss the following: Is this the real boundary of the farm? What about the household located in the homestead? Shouldn't the farm household and family be considered as an integral part of the whole?

9. Discuss these points with a view to understanding that the farm is more than land and crops. The household is very much involved with the activities of the farm. It is therefore very hard to separate them. Farm management principles and tools will help farmers decide when and where to demarcate the elements of their farms.

Space for notes and questions for the facilitator

The farm and its enterprises

The essential features of a farm are the productive resource base (usually land), farm inputs and outputs, and the farmer as decision-maker and manager.

In order to apply farm management principles and tools the farmer must establish the boundaries of the farm. The first type of boundary is the physical boundary. A farm is essentially a portion of land on which a particular household undertakes agricultural activities as a part of its livelihood. The land — or any part of the land — may be privately owned, hired from another owner, or used as a part of a common property arrangement.

The agricultural activities on the land may include cultivating crops, tending livestock, managing fruit trees, exploiting forestry resources, or a combination of these. In terms of farm management each activity is called an enterprise. A farm often consists of more than one enterprise, although there may be one main enterprise.

Farms vary in size from smallholdings of less than a hectare involved in subsistence production to large plantations covering thousands of hectares. In this manual we will focus on small- to medium-sized family farms that are partially or fully integrated into the market.

In Africa, farms are generally interwoven within the (extended) family structures of which the farms are a part. Within the same household different farms can be found, constituting more or less independent production units. The common feature of the farm is its 'unity of management'.

Farming may also involve social/community factors. For example, in many regions of Africa, livestock production enterprises largely depend on using common (shared) land for pasture.

The farm and its enterprises (continued)

In addition to the land itself, a farm may include structures erected on the land: wells, irrigation channels, fences, animal paddocks or kraals to control livestock, granaries to store farm produce and a homestead with a house or houses in which the farm family live. These exist to support the chosen farming enterprises.

Generally a farm is made up of several enterprises. Each enterprise on a farm requires inputs and produces a specific output. This is called an input—output relationship. Inputs are things put into the production process, such as land, labour, implements, seed, mechanization (tractors), fertilizer and pesticides. Outputs are the things that are produced, such as harvested crops, milk, meat, eggs.

In many cases, the enterprises of one farm are interlinked. This means some of the output of one enterprise is used as an input on another. For example, the stalks and bran, which are by-products of a maize enterprise, are used as feeds for a livestock enterprise.

Farm management is work done to organize the input—output process effectively to make profits from farming.

Cash and food crops

Many farmers use their farms to provide food for their households. If this is the case, they will grow crops that they normally eat. Some farmers use their farms to generate cash income for their households. If this is the case, they may grow food crops that they will sell for cash or they may grow other crops such as cotton, coffee, or tea. Or they may grow a combination of food and 'cash' crops. In some cases, farmers will use their farms to provide food for their homes and for cash.

The farm and its enterprises (continued)

In the last 30—40 years, there have been many changes in the way local, regional, national and international economies work. More and more farming families find they need cash. Thus, they find they need to grow farm products specially for the markets (perhaps in addition to growing food crops).

In addition, these changes in the economies have also created new opportunities to market current and new enterprises. For example, with rapid population growth, urbanization and economic development, the demand for food in the market has increased remarkably. Consequently, a much greater number of farmers have entered into the market offering food products for sale.

A notable outcome of this increased demand for food is the increasing number of farms that specialize in market gardening around towns. In such cases, farmers produce bulk food crops, such as maize or cassava in specific areas and livestock products, such as milk, eggs, beef, chicken, pork and mutton.

Deciding whether to farm for food or for cash or for both is a difficult decision to make. The principles and tools of farm management help farmers decide how to use their farms to meet their food and cash needs.

Market-orientated production and the need for improved management

Life is very difficult for many farmers. There are often shortages of cash and food in the household. Decisions about the household and about the farm often conflict with each other. There is more and more need for cash to buy the things the household needs. Thus, many farmers need to farm for cash. Most food farmers do not have the knowledge and skills of farm management, and therefore they find it difficult to farm profitably.

The farm and its enterprises (continued)

Farmers must make decisions about running their farms. Essentially they must decide:

- what to produce
- how to produce
- how much to produce

Each of these three decision areas involves decisions about inputs, decisions about production and decisions about marketing.

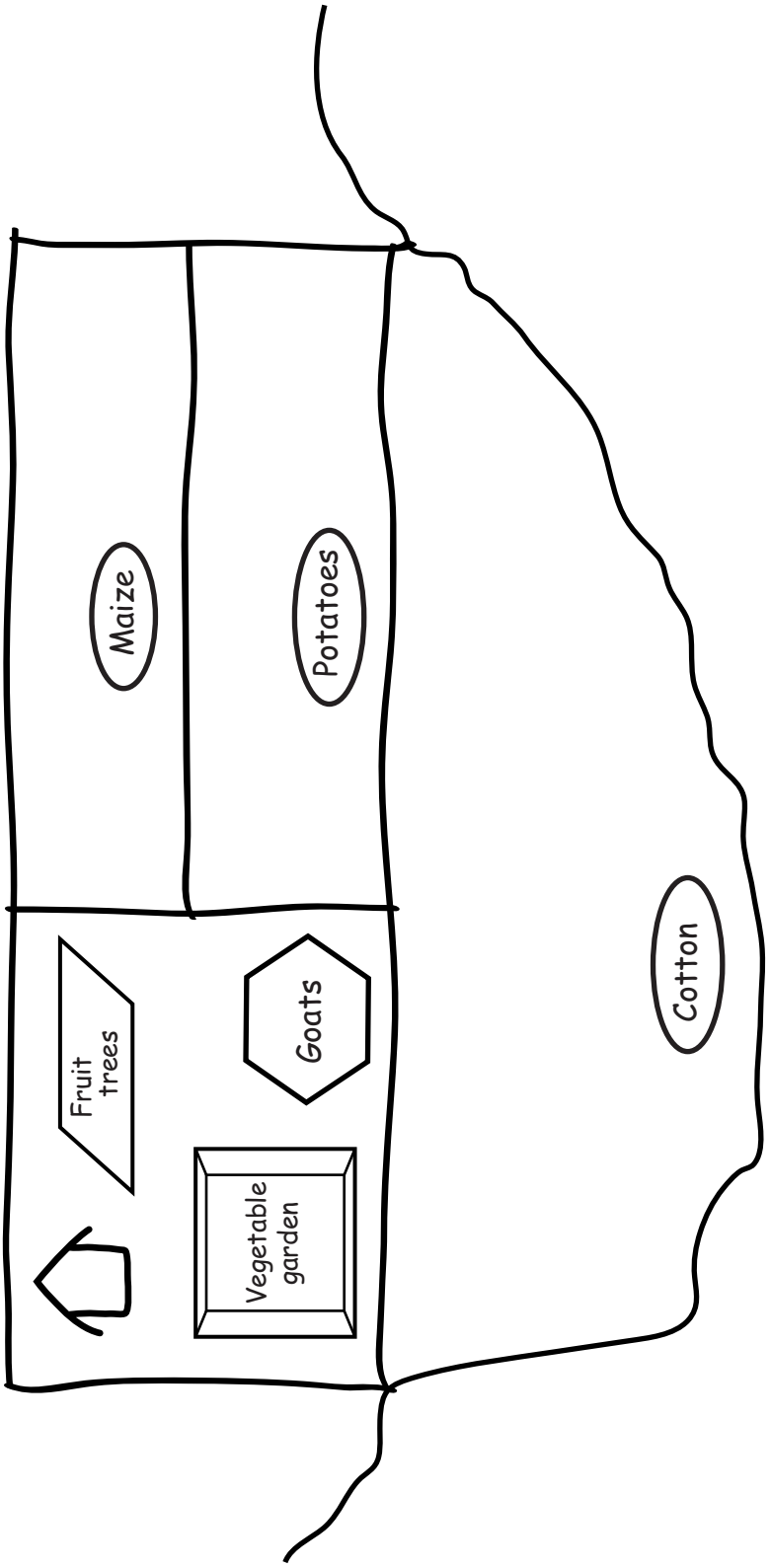
When farmers decide what to produce, they are deciding what enterprises they will have. Deciding what to produce, how to produce and how much to produce is influenced by many factors including food requirements, income requirements and a range of technical factors.

Basic training in the principles and tools of farm management can help farmers organize their farms and to make the necessary decisions to make them more profitable and to meet the objectives of their families.

Worksheet — Description of three smaller-scale farms

	Farm 1	Ha	Farm 2	Ha	Farm 3	Ha
Main enterprise						
Other enterprises						
Inter-relationship between enterprises						
Farming for food, cash, or both						

Diagram — Physical boundaries of farm and household



Preparing for Session 2.2
The farm and its resources

Learning outcomes
Understanding (i) the different kinds of capital used on a farm, (ii) the relationship of farm management and its resources

Training aids
Exercise 2.2A (The farm and its resources)
Exercise 2.2B (Natural capital)
Exercise 2.2C (Human capital)
Exercise 2.2D (Physical and financial capital)
Handout 2.2A (The farm and its resources)
Handout 2.2B (Natural capital)
Handout 2.2C (Human capital)
Handout 2.2D (Physical and financial capital)
Handout 2.2E (Worksheet — Assessing natural capital)
Handout 2.2F (Worksheet — Assessing physical and financial capital)
Handout 2.2G (Worksheet — Sources of physical and financial capital)
Handout 2.2H (Diagram — On- and off-farm labour sources
Handout 2.2I (Diagram — Physical and financial capital on the farm)

Notes

The farm and its resources

In this session you will help the participants explore and understand the range of resources used by farmers on their farms. The resources will be studied in a livelihoods framework of natural capital, human capital, physical capital and financial capital. The importance of maintaining and enhancing resources to ensure sustainable profits from the farm enterprises is also studied.

Opening statement

Let us begin with a review of the main points in Handout 2.2A (The farm and its resources) and of Handouts 2.2B, C and D, which in this session deal with the four farm resources: (i) natural — land, water; (ii) human — labour; (iii) physical — livestock, planted trees, buildings; (iv) financial — money, access to credit. These resources are referred to as "capital". In the next session we will discuss the sharing of resources. This is called social capital.

The outline on the following pages is provided to help the facilitator conduct the review.

Outline of Handouts 2.2A, B, C and D

Farms have a resource base made up of: (i) natural capital, (ii) human capital, (iii) physical capital, (iv) financial capital and (v) social capital. The concept of social capital and its role in small-holder-farming will be covered next in Session 2.3.

Natural capital

Sustaining the productive capability of natural capital is a very important part of farm management. Natural capital includes:

- biological renewable resources — rangeland or grazing land, forests, fish, wildlife;
- biological non-renewable resources: land and its productive powers;
- water.

Human capital

Human capital is among the most complex of resources used by a farmer. It is the skills and human power available to a farmer to carry out the farming activities. Many of the most difficult decisions made by a farmer involve human capital. Means of acquiring labour include:

- family labour
- hired labour
- customary social contract or practice

Physical and financial capital

- Physical capital includes producer goods, such as seed, fertilizer, equipment, planted trees and livestock.
- Financial capital includes cash, savings and access to credit.

Each of these types of capital represents decisions a farmer must make. The more they understand the role of capital and how it relates to farm management, the better position they will be in to make decisions to increase the profitability of the farm over many years.

Learning points

There are two ways of presenting Session 2.2. The choice depends on the degree of understanding that participants have about sustainable resource management prior to this programme.

If their understanding is limited, then you should follow the complete course as it has been designed. However, if you are confident that the participants understand the principles and practices of sustainable resource management (including natural resource management), then you may want to consider condensing the study. If you choose this approach, then you will need to prepare your lessons accordingly.

This unit asks the participants to develop a farm map as a learning space for the duration of the training programme. If you are using a collapsed session for the basic capitals, then you can leave the mapping of the capitals to be done all at once at the end of the study of the capitals.

Exercise introduction

Before we go into greater detail in our study of the farm "resources" or "capitals" let us briefly review them in a farm context. Exercise 2.2A (The farm and its resources) will help us to understand the roles of the various capitals. Then, in this and the following session, we will do a series of interactive exercises dealing with all "the capitals".

Exercise 2.2A
The farm and its resources

Purpose: To understand the role capital plays in farm management.
(Participants should have read Handout 2.2A prior to this exercise.)

Method: Group discussion and brainstorming, graphic representation.

Materials: (i) Heavy paper or posterboard, (ii) thick marking pens.

Allow 1½ to 2 hours for this exercise (depending on number of teams)

Procedure

1. Divide the participants into teams of 4—5 people each.

2. Assign each team one of the capitals.

• Natural • Human • Physical • Financial •

3. Ask each team to develop at least two posters about the capital assigned to them*. One should be a general poster showing what the capital is in theory and the other should show how their assigned capital is related to farm management. (The posters should be designed as though they were to be used to communicate these concepts to farmers.)

4. When the posters are completed each team should develop a brief (5—6 minute) presentation. Each member of the team should have a speaking/ presenting role.

5. Ask each team in turn to put up their posters and to make their presentations. Encourage questions of clarification.

While presentations are being made, check that the content being presented is consistent with the content in the handouts.

*The facilitator may need to assist the teams with planning their posters and presentations. Encourage them to be creative, but also to stick to the content as presented in the handouts.

Note

Each of the following three exercises is designed to help participants identify and map various forms of capital on their virtual farms. They will use the virtual farm maps created in the previous session and add various elements until a complete picture of the managerial boundaries of the farm become apparent. An example using physical and financial capital is shown in Handout 2.2H.

Exercise introduction

Now let us start with Exercise 2.2B (Natural capital). All farms make use of natural capital. It is important that farmers have a clear picture of the natural resource base of their farm. Long-term food security and profitability depend on how natural resources are used. If they are used in a sustainable way, farmers can look forward to long-term success. If not, their food security and their profits will decrease. Understanding this will help farmers and extension workers appreciate the need to be aware of the status of those resources and to make farm management decisions that contribute to sustainable agriculture as well as to sustained profits from the farm.

Exercise 2.2B
Natural capital

Purpose: To explore the inter-relationship of market-oriented farming and natural capital. (Participants should have read Handout 2.2B prior to this exercise.)

Method: Brainstorming.

Materials: (i) Handouts 2.2E (Worksheet — Assessing natural capital), (ii) pen and paper, (iii) heavy paper or posterboard, (iv) thick marking pens, (v) scissors.

Allow 60 minutes for this exercise

Procedure

1. Ask the group to get into their farm teams.

2. Each team brainstorms on the natural capital used by the virtual farm. This should include natural capital on the farm and natural capital brought onto the farm from outside. As they identify the natural capital they should answer the following questions:

   (i) Which of this natural capital is renewable?

   (ii) Which is non-renewable?

   (iii) Who controls access to the capital?
   Farmer, spouse, customary authority, private sector, government?

   (iv) How do you obtain this capital?
   Buy it, rent it, borrow it, customary sharing?

   (v) Which enterprises use that capital?

   (vi) Do any of the products or by-products replenish the natural capital?

Exercise 2.2B (continued)

3. A format for recording team findings is provided in Handout 2.2E. This can be used as a guide to create a similar working format on a large flip chart sheet or newsprint. When they have completed this, ask them to transfer their findings to Handout 2.2E. (A completed example is shown below.)

Assessing natural capital	Renewable	Non-renewable	Access controlled by	How access obtained	Linked to which enterprise	Return to natural resource
Cropping land around the homestead		X	Family	Allocated by traditional authority	Maize Vegetables Sorghum	Stover ploughed in Waste composted
3 ha of cropping land		X	Owner	Rented from brother	Maize	Stover ploughed in
Grazing lands	X		Traditional authority		Cattle	Dung
Water		X	Common property	Free access	Household vegetables	Waste water used on vegetables
Community forest	X		Village committees	Work for harvesting	None; income to household	1 tree planted for every tree harvested

4. When they are finished, ask each team to explain their grid. Discuss the significance of the different pathways of access to natural capital off the farm. Then look at linkages and sustainability issues. Some possible discussion questions are:

   (i) Is more taken from the natural resources than is returned? What does this imply?

   (ii) How reliable are the sources of water for the household and crop?

Exercise 2.2B (continued)

(iii) How long will common property continue to provide support to the farmer and the family?

(iv) How can the farm contribute to maintaining and improving natural capital?

(v) How does all of this influence the farmer in making long- and short-term decisions about inputs, production and marketing?

(vi) How does it affect profitability?

(vii) How does this affect the managerial/decision-making boundary of the farm?

Learning points

Natural resources (natural capital) form the basis of farming. Farmers get their natural capital from many different sources. Some of it comes from common property through social agreements that exist in the community. Some comes from government, such as in the case of irrigation water. Some is rented. Some is shared. Some is purchased and some is used on the understanding that it will be replaced, as is the case with community forests.

Some natural capital is renewable. Some is not. All natural capital is subject to losing its capacity to support the farm. The farmer's decisions about input, production and marketing all have impact on the long-term profitability of the farm. Farmers need to be aware of the affect of decisions about cropping patterns, the use of fertilizers and pesticides, the choice of production methods and other aspects of the farm management, on the farm's natural resource base.

Good farm management demands sustainable use of land and other resources. It includes maintaining and improving the productive power of land, which leads to sustained profits and can contribute to sustainable agriculture as well as to sustained profits from the farm.

Exercise introduction

Human capital on a farm is mainly labour. There are many ways to access labour. Exercise 2.2C (Human capital) will give you some ideas of how to assess labour sources for a farming community or household. The idea is to help farmers look systematically at the choices they have instead of simply repeating what they have done in the past without considering other options.

Exercise 2.2C
Human capital

Purpose: To identify the sources of labour and to extend the managerial boundaries of the virtual farm to include labour. (Participants should have read Handout 2.2C prior to this exercise.)

Method: Brainstorming and group discussion.

Materials: (i) Handout 2.2H (Diagram — On- and off-farm labour sources), (ii) pen and paper, (iii) large flip chart paper or newsprint, (iv) thick marking pens, (v) scissors.

Allow 20 minutes for this exercise

Procedure

1. Divide the participants into their farm teams.

2. Ask each group to brainstorm about the sources of labour for their farm and identify on-farm and off-farm labour sources. Since they are just identifying sources of labour, they do not need to know details of labour requirements for their various products. To do this they will have to 'create' a community context outside their farm. They will need to agree on the farm setting to identify the range of possibilities for labour.

Family labour
Assume there is some family labour
(the size of the family is not needed now)

Social work contracts
Does this practice exist in their area?

Sharecropping
Does this practice exist in their area?

Hired labour
Are local workers available to be hired?
Are there migrant workers available;
does this practice exist in their area?

Exercise 2.2C (continued)

3. Ask each team to record this information on their virtual farm, linking the labour options available to the farm enterprises. See example in Handout 2.2H (Diagram — On- and off-farm labour sources).

4. Ask each team to present its results. (This session does not need discussion, but it would be useful to check if there are any questions.)

5. After the diagrams have been shared, ask each team to outline the extended managerial boundary of the farm showing the inclusion of labour. Discuss.

Ask some lead questions:

- What is the value to farm management of identifying all the sources of labour available to the farmer?
- What might be the next step once a list of labour options is identified?
- What is the status (i.e. current practice) in their areas of these different options? Is it changing? If so, how?

Learning points

To make good decisions about labour, farmers need to be aware of their options regarding sources of labour. Creating a checklist of options makes it possible for farmers to consider these options systematically. This encourages strategic thinking on the contribution of labour to the profitability of the farm.

Exercise introduction

In Exercise 2.2D we are going to look at physical and financial capital. In Handout 2.2D you have been introduced to some of the important concepts that explain physical and financial capital.

We should understand that decisions made about these assets have a significant impact on the profitability and sustainability of the farm. It is important that farmers carefully consider many factors before making decisions about physical and financial assets.

To make meaningful decisions about their assets, farmers need to have a clear understanding of what physical and financial assets are.

In this exercise, we shall look at the physical and financial assets of your virtual farms.

Exercise 2.2D
Physical and financial capital

Purpose: To identify and map the physical and financial assets of the virtual farm and the sources of physical and financial capital. (Participants should have read Handout 2.2D prior to this exercise.)

Method: Small group discussion, mapping.

Materials: (i) Handout 2.2F (Worksheet — Assessing physical and financial capital), (ii) Handout 2.2G (Worksheet — Sources of physical and financial capital), (iii) Handout 2.2I (Diagram — Physical and financial capital on the farm), (v) pen and paper, (vi) large flip chart paper or newsprint, (vii) thick marking pens, (viii) scissors.

Allow 30 minutes for this exercise

Procedure

1. Divide the group into their farm teams and give each participant a copy of the worksheets in Handouts 2.2F and G. The first is to make an inventory of physical and financial capital currently on the farm and the second is to list the sources (suppliers) of physical and financial capital. Participants should make notes individually while conferring with the team.

2. In this exercise each team should develop one version for both themes. The idea is to develop a picture of the current situation as well as future possibilities. After that the virtual farm maps should be updated to reflect this information.

3. First, complete the grid in Handout 2.2F. Each team will need to identify and list the physical and financial capital currently on their farm. They should note on which enterprise (including the household) the capital is used, where they got the capital (private sector, self-built, own farm, another farm, household, government, common property) and how it was acquired (purchased, hired, borrowed, by right of common property). An example of an "own farm" source of physical capital might be seeds for planting that were kept from last year's harvest or cattle bred on the farm. An example of household source of funds might be personal savings.

Exercise 2.2D (continued)

4. Next, each team should complete the grid in Handout 2.2G. They should discuss possible sources of physical and financial capital. Some of these will be included in Handout 2.2F. For example, the team may use the cooperative to buy seed or fertilizer. But it may be possible to get these items from another source that they do not use, such as a general dealer. Or perhaps their farm does not have a loan, therefore a lender is not listed. They should list all the sources they can think of and what they can supply.

5. Finally, ask each group to compare their lists with their virtual farm maps. Some of the things listed in the previous worksheets will be accounted for. If there is anything on the list of physical capital that is not already on their maps, the team should create the necessary symbols or labels, and add them. They should create and paste arrows showing the movement from the sources to the farm. (Note: they may want to create symbols that show storage of consumer goods (e.g. seed, fertilizer). See the example given in Handout 2.2I (Diagram — Physical and financial capital on the farm).

6. When the lists and maps are done, ask each team to share and explain their findings with the whole group. Discuss.

Learning points

It is useful for farmers to have a good picture of the physical and financial capital on their farm and where and how they get that capital. It is also useful for them to be aware of all the potential sources of physical and financial capital available. When farmers have a picture of a known situation and can visualize the potential, they will be in a better position to make decisions on their farm.

Space for notes and questions for the facilitator

The farm and its resources

• NATURAL • HUMAN • PHYSICAL • FINANCIAL •

The working base of the farm is composed of a number of resources. Farm resources are either owned by individual farmers or belong to the pool of common property to which farmers have access under certain conditions. Resources can be divided into five categories called "capital': natural, human, physical, financial and social capital. The first four are discussed in detail in Handouts 2.2 B, C and D (Natural capital, Human capital, Physical and financial capital). Social capital is discussed in detail in Handout 2.3A.

Land is an example of natural capital. Labour is an example of human capital. Livestock, planted trees and buildings are examples of physical capital. Money and access to credit are examples of financial capital. Sharing of resources (common property) is an example of social capital, such as a community forest. In general these resources are either owned and/or controlled by the farmer, owned by someone else and hired by the farmer, or are common property to which the farmer has access.

Natural capital

Natural capital (natural resources) is classified into three broad categories. The first is "biological, renewable resources", which includes such natural resources as rangeland (grazing land), forests, fish and wildlife. The second is "non-renewable resources", which is land and its productive powers. The third is water. Sustaining the productive capability of natural capital is a very important part of farm management because natural capital is the primary resource used for both food production and profits.

The farm and its resources (continued)

Biological, renewable resources are often common property, such as grazing land and forest land (except legally protected forest or game reserves and national parks). In many societies, access to cultivated land for grazing is free after harvest. In many regions of Africa, registered land ownership is still uncommon. In such cases, land tenure rights are exercised through unwritten customary law.

Land and water areas are often also regarded as common property — where resources are accessed through customary practice or through more modern laws.

Human capital

Human capital refers to people. It is the skills and human power available to farmers to carry out their farming activities. An important human resource to the farmer is labour. Labour may be provided from the farm family, it may be hired, or it may be obtained through a customary social contract or practice. In many parts of Africa, customary social contracts exist. Such contracts generally make mutual aid possible under an unwritten reciprocal agreement.

Human capital is among the most complex resource used by a farmer. Many of the most difficult decisions made by a farmer involve human capital.

Physical and financial capital

Physical and financial capital are the things and funds available to farmers to carry out farming activities. Physical capital includes producer goods, such as seed, fertilizer, equipment, planted trees and livestock. Financial capital includes cash, savings and access to credit.

The farm and its resources (continued)

Farm capital and financial management

Each of these types of capital represents decisions a farmer must make.

- What is the condition of the crop lands? Grazing land? What crops can be grown?
- How much land should be allocated to which enterprises?
- How much labour is needed? What source of labour is best? Family? Hired?
- What equipment, seed, tools and infrastructure is needed for each enterprise?
- How should the farm be financed? With cash? With loans? A combination?

A farmer faces these and many other decisions about resources every year and sometimes every day. The more farmers understand the role of farm capital and how it relates to farm management, the better their positions will be to make decisions to increase the profitability of their farms over the years.

Space for notes and questions for the facilitator

Natural capital

Natural resources form the basis of all human life. Worldwide, humankind uses available natural resources to produce food, drink, fibre and fuel. Therefore, it is vital that natural resources be used sustainably by humans, for their continued benefit. The question for farm management is: How can farmers use natural resources both sustainably and profitably?

Because market-oriented farm management works largely in economic terms, it is useful to think of natural resources as part of the capital base of a farm. Natural resources form part of the assets of a farmer. As such it is capital employed to create profits. Thus, we refer to natural resources as natural capital. In this discussion of natural capital, we will look at land, vegetation, water, fish and wildlife.

Land

Regarding natural capital, the primary concern of this module is sustainability of the land and its implications for market-oriented farm management. *Sustainability of the land* means making sure that the land is able to continue to produce long into the future. This is often referred to as the productive powers of the soil. Decisions and actions of farmers about the way they arrange their input, production and marketing activities impact on the sustainability of land and other natural assets. This makes sustainability of natural capital of primary concern to market-oriented farm management.

Natural capital (continued)

Land forms the core of most farming activities. Land for crops. Land for livestock. Land for housing structures for other enterprises such as poultry. Farmers are faced with a number of important choices in deciding how to use their land. Some decisions may lead to maintaining or even improving the productive powers of soil. Other decisions may lead to eroding these powers. Long-term sustainable income from the profits of a farm will be directly affected by the way the land itself is treated and used. If the productive powers of the land decrease, profits will also decrease.

In many parts of Africa land has become a scarce resource. Most farmers practise permanent cultivation of their fields, applying crop rotation, multiple cropping, mixed farming or other practices for maintaining soil fertility. Unfortunately, the impact of these practices is limited in the face of widespread decreasing of soil productivity.

Regaining control over the long-term productive power of the soil is a very important part of market-oriented farm management. Farming for high profits in the short term without taking steps to sustain the soil will eventually lead to lower profits.

Soil erosion. This is the wearing away of soil by wind and water. Erosion happens when vegetation, such as trees and permanent grasses, are removed from the land. To prepare new land for crops, one removes trees and grasses. Too many head of livestock have the same effect by eating grasses. Both of these lead to erosion.

In some regions large areas of forest land have been cleared to make way for high-priced cash crops. Interest in short-term profits made farmers forget about protecting the productive powers of the soil. As a result, in many parts of Africa, the soil over large areas of land have been washed away or eroded by wind.

Natural capital (continued)

Even some farming practices contribute to erosion. For example, tractors using disk ploughs or harrows on light tropical soils can chop up the soil and expose it to erosion. Another example is intensive crop farming without sufficient use of organic fertilization. This drains soils of important nutrients, which reduce the productive powers of the soil.

The objective of good farm management being 'the maximization of profits' should not be misunderstood. If the desire for profit leads the farmer to neglect farming practices that protect the land, money might be made in the short term, but will without doubt be lost in the end.

Land tenure. This refers to the laws and customs that govern occupying and using land. Many different systems exist in Africa. But in general there are three types of land in Africa: state land (land belonging to the government); private or freehold land (land owned by individuals or businesses); and common land (land held under a traditional system or customary system).

In many parts of Africa, traditional land tenure systems are still very common. Over time this has led to a situation where many farmers have several small pieces of land on which to produce. In addition to land allocated to a family, the family may also have access to common land and to land that has been 'loaned' to them by another family. The allocation of and access to land is not uniform. Some families have large amounts of land while others have very small amounts of land.

Natural capital (continued)

Common land. In Africa, the common land systems present the greatest challenge to good farm management. The most widespread common land system in Africa is communal or shared grazing. The rules that govern communal grazing lands vary widely, but they share a common thread — members of the community should have access to grazing lands.

The status of cattle in the social and cultural systems in many parts of Africa often appears to cut across good farm management practice. Farm management treats communal lands and the livestock that graze them as factors of production used to generate income/profit. Culture tends to treat communal lands and the livestock as non-productive factors, but more as a savings system linked to social status. It is not uncommon for livestock to be referred to as the "African bank".

It is difficult to reconcile the conflicting cultural and farm management (economic) values governing livestock on communal land. Extension workers will need to find ways to embrace both systems in their efforts to support farmers with market-oriented farm management. They will need to find ways that help the farmers make decisions that comply with both sets of values. This is particularly challenging in arid countries such as Botswana, Namibia, Ethiopia, Eritrea and parts of South Africa, where livestock on communal lands is the primary agricultural activity.

Over time there will very likely be a change in these values, but this evolution should happen through the decisions made by the farmers and not through the deliberate attempt to change or undermine cultural values.

Natural capital (continued)

When land is limited. In many parts of Africa land is limited — therefore production is limited. Land sizes are often small. In some cases, a farmer may have two or more small pieces of land that are some distance from one another. It may be difficult or even impossible to get more land.

When this is the case, it becomes very important that the farmer get the most out of the land in the most sustainable way. Market-oriented farm management presents a number of options to the farmer to increase the productivity and the profitability of the farm through careful planning. Among the options available to smallholder farmers are:

- Learn about and apply the most productive and sustainable methods of growing the crops currently produced on the farm.
- Use intercropping to produce more than one crop at a time to increase total output from the land.
- Instead of growing common crops, grow more marketable and profitable crops to increase profitability of the land.
- Investigate growing more than one crop a year.
- Investigate the possibility of raising livestock for the market and use crops as feed.

Vegetation

Vegetation is an important part of the overall productivity of a community or country's soil. Increasing populations cause farmlands to be turned into settlements. New lands are being cleared for cultivation. The result is that the natural vegetation and forests are shrinking.

Natural capital (continued)

On the remaining areas, the situation is declining. Grazing lands are often overgrazed. Forests and wood-reserves are often overexploited through gathering for firewood and cutting trees for construction. This increases runoff causing severe erosion particularly in lower lying parts of the region or country where the good farmland is situated.

Two initiatives can be taken to fight against this. One is improved community management of common land and forest reserves. The other is careful management of farms, keeping income generation (profit-making) activities in balance with sustainability practices.

Water

Water is an important natural resource. It has three main functions in life:

- water for drinking
- soil moisture for crops
- water for irrigation

Water is limited. Farmers need to understand and practise careful use of water to get the most out of it while at the same time making sure it is available long into the future. Many farming systems are rainfed — that is they rely on rainfall for water. Other systems use irrigation that draws on water from rivers or underground water. In general it can be said that water is common property. There are some cases where individual farmers control water through the use of small dams, wells and water harvesting. But the majority of smaller-scale, smallholder farmers have to share water resources.

Natural capital (continued)

Water, as land, is influenced by population increases. More people requires more water. Industrialization also increases demands for water. More water used by households and industry means less water available for agriculture. As water becomes scarcer careful farm management is required, and collective management of water resources becomes essential.

As with land, the key concern regarding water is sustainable use to make sure that it is available for farm production in the future.

Fish and wildlife

In many parts of Africa, fish and wildlife play an important role in rural livelihoods and food security. Generally, fish and wildlife are common property, and specific rules have been made to control use of these. Governments and traditional societies both have systems for the management of fish and wildlife. In some parts of Africa, fish and wildlife are part of a private farm. In places such as Namibia, Nigeria and South Africa, fish and wildlife form part of farming.

Common property fish and wildlife require the protection of government or customary law. If used wisely and through collective arrangements, common property fish and wildlife can be used to increase the overall profitability of a farm as well as help with cash flow problems.

Space for notes and questions for the facilitator

Human capital

Human capital represents the skills, knowledge and ability to labour, and to good health that together enable a person to pursue a livelihood to fulfil their personal objectives.

Farming is a livelihood strategy used by many people throughout Africa. Farming uses several forms of human capital including labour and management, which it draws from various sources. Human power is a critical element of farm productivity.

Types of labour

Five types of labour are commonly called upon in smaller-scale, smallholder farming:

- family labour
- communal labour
- social work contract
- sharecropping
- hired labour

Family labour. This is labour provided by the members of the farming family. Generally, this includes members resident in the household. But it can also include members of the extended family. In most cases there is little or no economic value attached to family labour. In most cases — even when part of the labour requirements of the farm is hired labour — the core of the farm workforce is made up of family members.

Human capital (continued)

Availability of family members depends on the composition and ages in the family. At different stages of the family life cycle, family labour can be more available or less available. In general, farming activities take a high priority in smallholder farm families. At times of peak labour demands, members of the family often reorganize their household duties and other tasks so that they are free to help on the farm.

In most of Africa, the size of the agricultural workforce at household level is generally declining. On occasions, households may actually increase in size. This is because of the return of people from urban areas (following retrenchment, lack of employment opportunities, or the onset of sickness), or taking in orphans to care for. However, despite the increase in the number of people in a household, the ratio between those active in agriculture and their dependants may deteriorate.

Many farms employ no full-time labour. All of the work is done by their own family members. This puts them in a vulnerable position. Illness, injury or death of a family member has a significant negative impact. Loss of a family worker is met by imposing additional farm duties on other family members.

In addition, a farmer without regular help is handicapped when it comes to planning for change and developing the farm business. The farmer is tied to the farm and may have limited contact with other farmers to hear about and discuss new ideas. Difficulties in taking time off to seek advice may also constrain farm development.

Human capital (continued)

Communal labour. It is common for some smaller-scale farmers to come together when there is a particular job that needs doing quickly. This is referred to as communal labour. In some countries, communal labour is often grouped by age or gender. The social role is important for their members especially for ceremonies and feasts. At times, communal labour helps elderly people, widows or orphaned children in farm work and to build shelter for them.

Social work contract. This is a type of communal labour based on payment in kind. Community members help one another with various farming activities, such as bush clearing, land preparation or harvesting. In return the individual farmer who received help will provide food and drink for the helpers. There is not always a direct requirement of reciprocity. Instead work is done on good faith and mutual trust. This type of communal labour exists in many parts of Africa under different names. In Zimbabwe it is called *Nhimbe*, in South Africa the Batswana call it *Letsema*, and in Kenya it is called *Ushika* or *Umoja*.

A variation of this social work contract is found in West Africa where it is more structured and formal. They have a specific form of social work contract provided by working parties. These are traditional associations organized according to age group, gender or shared social interest. They vary in size, objective and manner of operation. Work is either provided for in kind, in cash and in some cases for free. The ultimate goal is often social cohesion, expressed through ceremonies or feasts.

Human capital (continued)

Sharecropping. In this system a farmer finds a person who will assume responsibility for a particular crop in terms of cultivation and harvesting. This person is called a sharecropper. Instead of being paid a wage, the sharecropper is allowed a share of the crop once harvested. Before farming begins, the farmer and the sharecropper agree on what percentage of the crop will go to the sharecropper and what percentage will go to the landholder. Often one-third to fifty percent will go to the sharecropper and the balance to the farmer.

Earning a share of the crop is a powerful incentive to work for high yields, and if sharecropping is done using sustainable farming methods, this is good for long-term profitability. But because the land does not belong to the sharecropper, short-term income is often of greater interest than sustainability. Thus the sharecropper may cause permanent damage to the soil or vegetation, or tree crops in trying
to get high yields.

Hired labour. Labour can be hired on a permanent or temporary basis. It can be hired full time or part time. It can also be hired as casual labour. It is more cost effective to hire workers only when they are actually needed for particular activities. Sometimes workers are hired because they have a special skill that the farmer does not have. There are four categories of hired labour: permanent, seasonal, casual and contract labour.

- *Permanent labour* is paid on a monthly or weekly basis. Such labour is paid whether or not there is work to be done. This forms part of the fixed costs of the farm. In some countries in southern Africa, permanent workers may not be paid less than a legal minimum wage. Farmers need to plan very carefully before committing themselves to permanent labour.

Human capital (continued)

- *Seasonal labour* is employed at particular times of the year for particular activities on the farm, especially harvesting or post-harvest processing. The period of employment is usually fixed and happens at the same time or season every year.

- *Casual labour* is employed on an hourly, daily, weekly or monthly basis to add labour for short-time periods. Farmers can determine ahead of time when there will be high labour need and short labour supply. Farmers can employ casual labour when the regular labour supply is unexpectedly short because of illness, injury, death or absenteeism. Using casual labour is very flexible, but payment is normally high.

- *Contract labour* is engaged to carry out specific tasks at an agreed rate, (e.g. payment of 30 shillings per kg for cotton picked).

Generally, labour is hired from two sources:

- *Local workers.* This includes local workers who make themselves available for hire and other local smaller-scale farmers who may offer themselves or their family members for hire when the family needs extra cash or food.

- *Migrant workers.* Migrant workers are people from outside the community in which the farm is situated. They are often hired as seasonal labour, coming to the farms in a particular area at a particular time each year to do specific activities. When they have completed the work, they return home, or move on to the next farm or area.

Human capital (continued)

Hired labour is of increasing importance as market-oriented production and individualism spread through Africa. Use of hired labour varies considerably in Africa. Rates of pay, conditions of employment (e.g. accommodation and meals) will depend on the social, cultural and legal requirements of the region or country. In some places, migrant workers may live with the employer's family and share meals. In the case of migrant workers who stay for longer periods, they may be given fields to grow food crops for themselves.

Functions within the household in relation to labour availability

Labour is not a single homogenous input. It consists of variations in terms of age and gender groups. Division of labour is important to improve efficiency and productivity. Division of labour by gender is being increasingly questioned as societies adopt new social standards based on the principle of equality of women and men. Further, the incidence of HIV/Aids and the introduction of modern farming technology are changing the work women do on farms. However, in most parts of rural Africa, division of labour by gender is still the norm.

Most of the household domestic work, such as fetching wood and water, cooking and cleaning, is the responsibility of women and girls. Women and girls (and some of the very young boys) will also have responsibility for the care of smaller children, tending to small stock and food gardens kept around the homestead, and repairing of mud walls and floors in the case of traditional housing. In many African cultures women are limited (sometimes forbidden) from carrying out particular duties. For example, among cultures in Botswana and parts of South Africa, women should not handle large stock.

Human capital (continued)

Men and (older) boys generally carry out heavier tasks, such as bush clearing and land preparation, looking after large stock and repairs to structures, fences and roofs (thatch) on houses. Men also tend to be the ones to work with mechanical traction such as tractors and heavy implements.

These different roles and responsibilities of men and women have implications on labour availability and productivity. In West Africa, for example, planting by hand is done by women, while planting using a mechanical planter is done by men. This division of labour clearly affects labour choices.

Impact of social factors on labour availability and productivity

Various factors affect labour productivity and availability, including climate, ill health, death, migration in search of employment, nutritional status of family members and cultural practice.

Cultural practices impose a variety of limitations on labour availability and productivity. In southern Africa, boys attending initiation school are not available for certain periods of time, and women in their courses are not allowed to tend to animals. In some cultures, one may not work in one's fields if there has been a death in a family. Religious rites also impose limitations on when people are available to work and what kind of work they are permitted to do. The result of these various social factors is that the agricultural labour force becomes increasingly characterized by the elderly, female-headed households and the very young (including orphans).

This loss of human power is often compounded by the reduced availability of other power sources, such as the loss of draught animals and the closure (or increasing expense) of tractor-hire services.

Human capital (continued)

These labour shortages, through their effects on agricultural production, reflect the vulnerability of agricultural production. The spiral of decline arising from farm power shortages (human and other) contributes to food insecurity (arising from untimely farm operations and an inability to cultivate sufficient area), malnutrition and poor health, and a lack of disposable income. This deteriorating situation acts as a further catalyst to rural—urban migration and contributes to social instability because of depression, frustration and the break-up of families.

HIV/Aids also has a negative impact on the asset base of families as assets are used or sold to cover medical expenses or to compensate the loss in production or other income generating activities. The remaining relatives may not have the skills to maintain and take care of the assets, and this will lead to the deterioration of the asset base.

Households that have lost a key family member are most likely to experience increased workloads and changed patterns of work. Many women who are heads of households take on more casual work in order to generate the means to feed their family. Not only does this reduce their time available for working on their own farm but may also introduce seasonal constraints, delaying critical activities such as weeding.

Men who lose their wives become responsible for the care and maintenance of the home. This changes their lifestyles also, and requires them to take on more responsibilities.

Human capital (continued)

Migration has also negatively affected farm productivity. In many countries, men (younger and older) and younger women take up work in towns far from their family farms. Visits to the farm/homestead are infrequent and short. This leaves the (older) women and children to provide labour on the farm. At times the family cannot cope with all the work — fields are neglected, production of crop/livestock enterprises is not properly done and infrastructure is not well maintained. Although in some cases money is sent by those employed elsewhere, this might not be enough to cover both household needs and farm inputs requirements.

Space for notes and questions for the facilitator

Physical and financial capital

Physical capital. This consists of the producer goods and the basic infrastructure needed to support the farm and livelihoods. In farm management terms, producer goods are those things farmers need to produce their products. Producer goods include seed, fertilizer, equipment, livestock, farm fences, wells, pumps and irrigation equipment. Infrastructure consists of changes to the physical environment that help farmers to meet their basic needs and to be more productive. Infrastructure common to a whole community includes roads, telecommunications, electricity, access to a clean water supply, sanitation and secure shelter. Infrastructure unique to farming includes irrigation canals and water to farm edge, government storage facilities and markets.

Financial capital. This includes cash, credit, loans or income that farmers and their households use to achieve their farm management and livelihoods objectives.

Sources of financing and credit

At times, farmers struggle to finance their enterprises. This is true for both large and smaller-scale farmers. When this situation arises, the farmer will need to consider options carefully before making a decision.

Self-financing. Some farmers have savings that they use in times of need. The savings can be money from farm activities or off-farm sources. Savings are a preferred type of financial capital because they belong wholly to the household (no one has a claim on them). In addition, by using savings the farmer does not have to rely on others.

Credit financing. Other farmers rely on credit or borrowed money to finance farm activities. Farmers can get credit from formal or informal sources.

Physical and financial capital (continued)

Informal sources (e.g. family members, relatives, village traders and money lenders). Informal institutions have advantages over formal institutions:

- They are convenient, available locally, require no documentation and can provide credit quickly.
- The informal moneylender has local knowledge to help in appraising household credit needs and creditworthiness.
- There is little risk of default because the lender is generally well placed to apply pressure on the borrower to ensure payment.
- Administrative costs are low.
- With some types of informal credit, such as the care-taking of livestock and the promise of tree crops, the risks of borrowing are shared between the two parties involved.
- Interest rates may be low.

The disadvantages of informal credit are that:

- The borrower feels an obligation to the lender and loses independence.
- There are few alternatives to choose from.
- Only short-term and relatively small loans are available.
- Interest rates may be high.

Farmers can obtain credit from formal sources such as:

- *Banks.* They provide agricultural credit to farmers. In some countries banks through their country branches provide credit to the farmers Credit and Saving Associations, which then extend it to their members.
- *Some non-governmental organizations.* They provide loans and inputs on credit to farmers.
- *Cooperative societies.* They give loans to their members or organize loans for them when they need to buy supplies.

Physical and financial capital (continued)

- *Government organizations.* Some governments set up special agricultural credit organization to lend money to farmers. Borrowing terms at such institutions are normally fair and at low interest rates.

Credit from any of the above sources can be taken for different lengths of time varying from short to long term.

- Short-term loans cover up to one year, generally for inputs.
- Medium-term loans are for two to five years, for equipment and store.
- Long-term loans are five years and above, for irrigation, land improvement, perennial crops and buildings.

Accessing (getting) financial capital/credit

When accessing financial credit there are conditions to be met by the farmers. Factors normally considered are:

Viability of the proposed plan or previous success. This refers to the likelihood that the plan will succeed. When a plan is viable, it means the farmer should be able to pay back the loan. Viability is shown in the plan, budget and financial records.

The character and ability of the farmer. Lenders need to know whether or not the farmer is reliable, hard-working and experienced. They look into past records funds borrowed before.

Security. In case the farmer is not able or fails to pay back borrowed money, the lenders require some form of security or collateral for the loan. Security is anything promised to be given to a lender to sell if the money cannot be repaid. Security can be in the form of crops, cattle or buildings. The farmer needs to negotiate this carefully with the lender.

Physical and financial capital (continued)

In many West African countries security is seldomly accepted because it is too difficult to put a claim on it. Instead, banks generally accept fixed registered property for security, which most family farmers do not posses. For this reason, in most cases in West Africa, credit is provided only when there is shared responsibility (e.g. cooperatives).

The cost of a loan. Borrowing money costs money. Lending money is a business — the lender has costs and also needs to make profits. To cover these costs and to make a profit, the lender charges interest on the loan. Interest is the price paid for the use of someone else's money, just as rent is the price for the use of hired land.

Before agreeing to take the loan and especially before signing any documents, the farmers need to be very clear about the rate of interest being charged for the loan. They should ask the lender to make this very clear and to show how much money must be paid to borrow the money. Those not happy with the interest rate should talk to the lender about getting a lower rate. In the end, it is the farmer who carries the full responsibility of a loan and must pay it back plus the interest.

Advantages of credit/loans

- Credit makes money available to a farmer to buy inputs at times when not enough cash is available to buy them.
- Credit makes it possible for a farmer to start different enterprises or to expand existing enterprises. This provides the chance to increase farm profitability.

Limitations of credit/loans for farmers

- A farmer may not have anything to offer as collateral security, and land cannot be offered as security without legal title.

Physical and financial capital (continued)

- Smallholder farmers usually need small loans. Many lenders are not interested in making small loans because they are not as profitable as large loans. Lenders prefer to lend large amounts to commercial farmers.
- Loan offices are often in larger towns, making them less accessible to smaller-scale farmers.
- Many farmers lack knowledge and experience of formal application procedures. They are discouraged by the need to complete application forms and other documents, which naturally make the process long.
- Many lenders believe that agricultural production is too risky and that the chances are high that the farmer will fail to pay back the loan.

As a result of these limitations, formal credit agencies rarely operate in rural areas without government support and promotion. Farmers are often forced to rely on informal sources.

Farmer, market orientation and resources

Market-oriented farmers are faced with three challenges:

- They are attracted by strong market demand and good prices for their products.
- They are under strong pressure from their dependants for a better life.
- They need to preserve the productive powers of their farm.

Therefore, a farmer needs to be:

- a good farm business manager;
- a wise user of resources;
- a capable decision-maker in the household.

Worksheet – Assessing natural capital

Assessing natural capital	Renewable	Non-renewable	Access controlled by	How access obtained	Linked to which enterprise	Return to natural resource

Worksheet — Assessing natural capital (continued)

Assessing natural capital	Renewable	Non-renewable	Access controlled by	How access obtained	Linked to which enterprise	Return to natural resource

Worksheet — Assessing physical and financial capital

Physical capital	Enterprise/ Household	Source	How acquired
1			
2			
3			
4			
5			

Worksheet — Assessing physical and financial capital (continued)

Financial capital	Enterprise/ Household	Source	How acquired
1			
2			
3			
4			
5			

Worksheet — Sources of physical and financial capital

Sources of physical capital	Capital provided by source
1	
2	
3	
4	
5	

Worksheet — Sources of physical and financial capital (continued)

Sources of financial capital	Capital provided by source
1	
2	
3	
4	
5	

Diagram — On- and off-farm labour sources

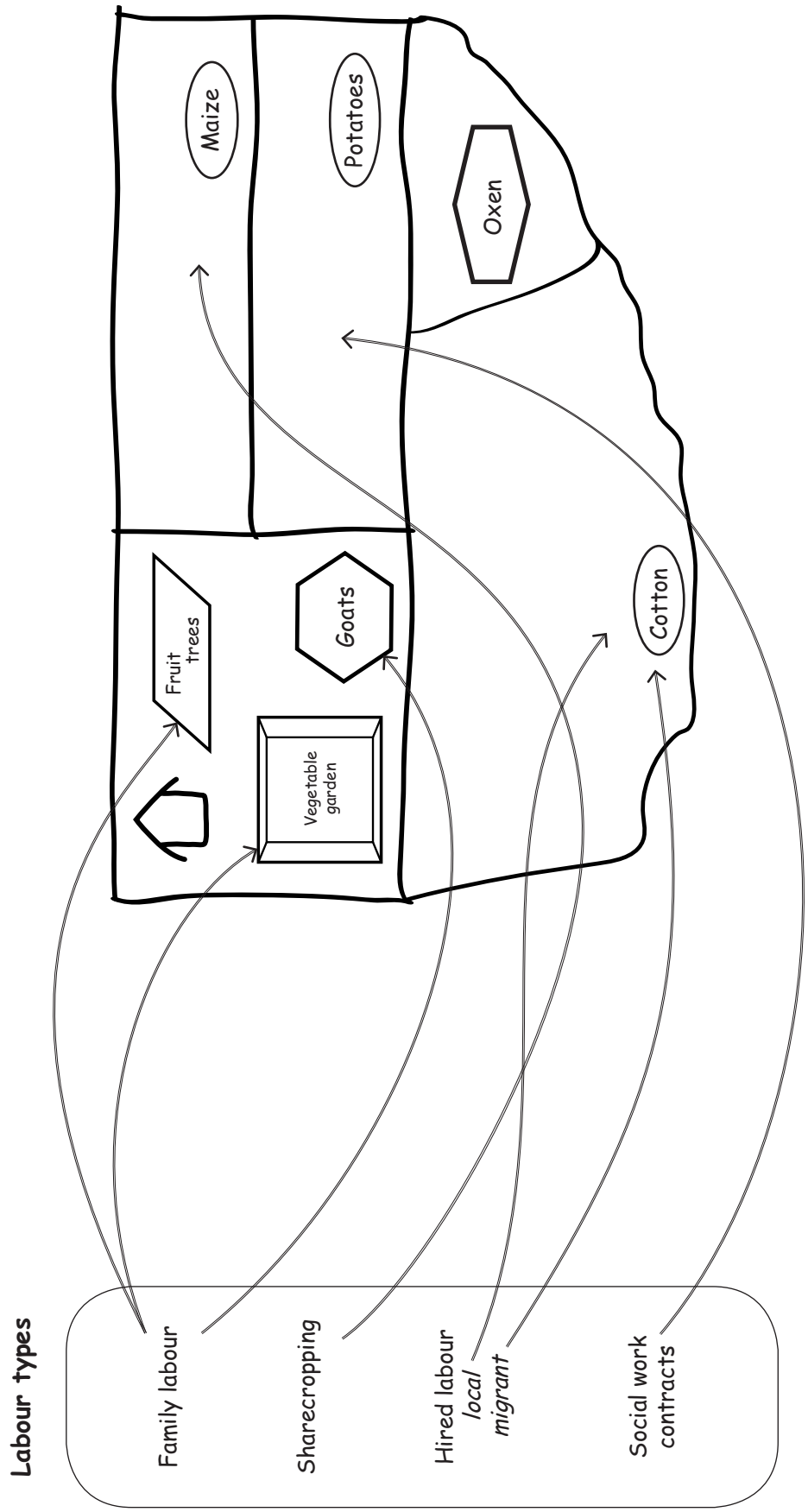
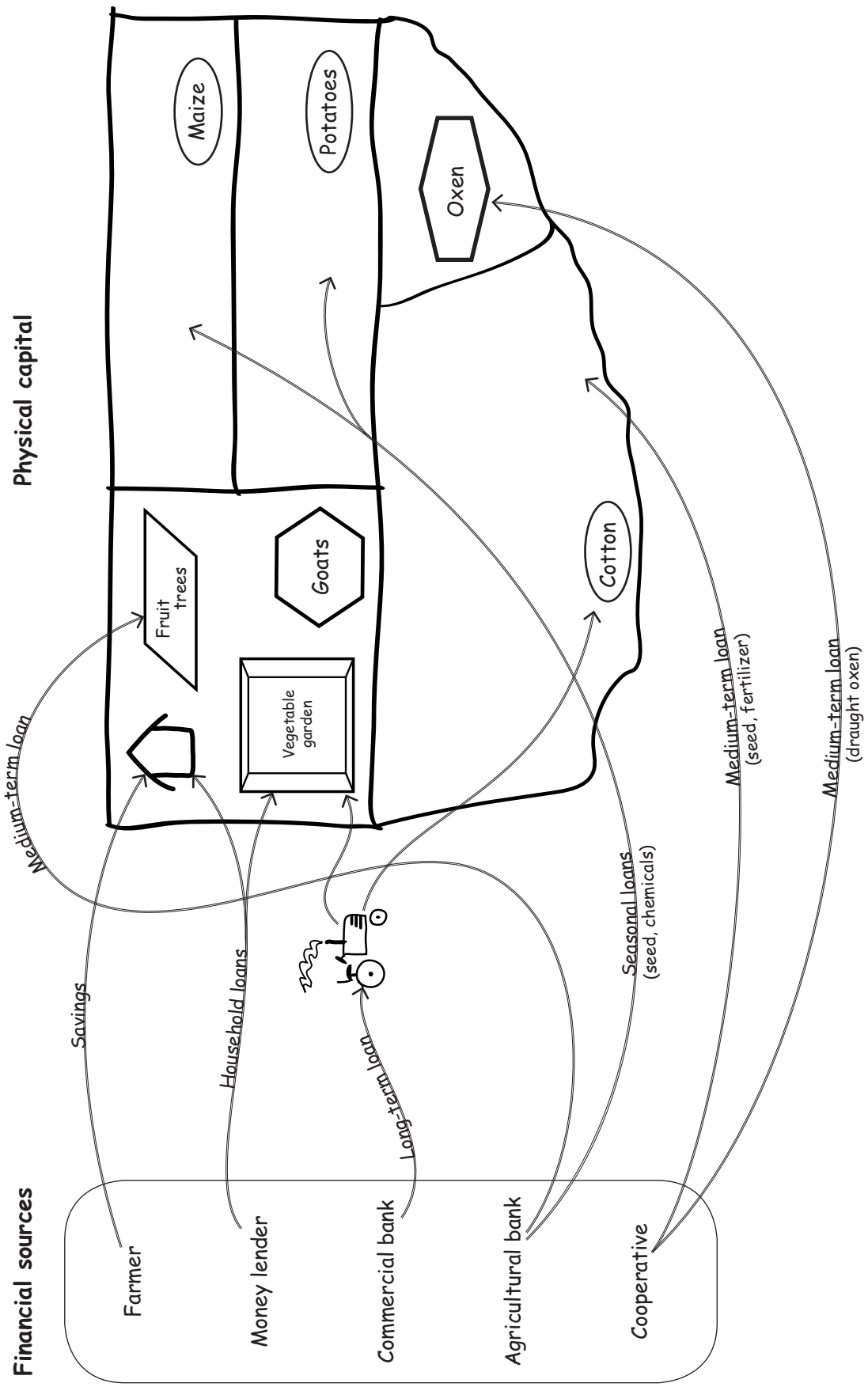


Diagram — Physical and financial capital on the farm



Preparing for Session 2.3
Understanding social capital

Learning outcomes
Understanding (i) the different ways of sharing natural, human, physical and financial resources, (ii) advantages and disadvantages of sharing

Training aids
Exercise 2.3A (Identifying social capital on the farm),
Handout 2.3A (Understanding social capital),
Handout 2.3B (Case study — Social capital on the farm)

Notes

Understanding social capital

"Social capital refers to the institutions, relationships, and norms that shape the quality and quantity of a society's social interactions" (World Bank/October 10, 2002). In this session the participants will explore the concept of social capital and the role it plays particularly in smallholder farming.

Opening statement

We are about to begin a study of "social" capital. You have already been told that this refers to the sharing of resources. It involves interaction between individuals and the formation of groups that are critical for farmers to prosper economically. Now let us review the main points in Handout 2.3A (Understanding social capital). All those participating should feel free to ask questions.

The outline on the following pages is provided to help the facilitator conduct the review.

Outline of Handout 2.3A (Understanding social capital)

Social capital refers to the institutions, relationships and norms that shape the quality and quantity of a society's social interactions. Among other things, it:

- contributes to sustainability;
- includes social resources that farmers can draw on;
- includes informal social networks and formal organizations used to exchange resources and information;
- involves interaction between individuals and groups.

A useful way of looking at social capital is to ask the questions: (i) Who owns it? (ii) Who has access to it? (iii) What are the relationships between people like? (iv) What rules, norms and sanctions exist? (v) How is social capital used? (vi) How strong are the connections and networks? (vii) What types of social arrangements exist? (viii) How effective are local groups? (ix) What are their weaknesses and how can they be addressed?

If the resource is collectively owned or held and there is access to it by the collective, then it is a social asset. A shared human resource would be defined more by the right of access.

Social capital can be divided into five categories: (i) shared natural capital, (ii) shared human capital, (iii) shared physical capital, (iv) shared financial capital, (v) institutional capital.

Exercise introduction

Now we shall begin to work with the virtual farms we have created in the last module, which map the physical boundaries of the farm and household. In Exercise 2.3A (Identifying social capital on the farm) we shall indentify links to social capital on our virtual farms.

Exercise 2.3A
Identifying social capital on the farm

Purpose: To identify and map the social capital of the farm.
(Have participants refer to Handout 2.3A.)

Method: Brainstorming, group discussion and representative mapping.

Materials*: (i) Handouts 2.3B (Case study — Social capital on the farm), (ii) large flip chart paper or newsprint, (iii) thick marking pens, (iv) scissors.

** Handout 2.2H from the previous session*

Allow 80 minutes for this exercise

Procedure

1. Ask the participants to get into their teams and review the case study given in Handout 2.3B

2. Distribute the handout among the participants. The handout should be used as an example.

3. Explain that the item refers to the different forms of capital. The second column identifies links to social capital.

4. Ask the participants to give examples of different forms of capital from farms they've worked with previously.

5. Ask the participants to identify the sources of these capitals.

6. Ask the participants to describe their relationship to social capital.

7. Ask the participants to comment on its four elements (i.e. trust, exhange, common rules and norms, connectedness).

8. List the information provided by the participant groups on a large sheet of paper and encourage them to discuss and share ideas.

Exercise 2.3A (continued)

9. Each team should brainstorm on other forms of social capital that cannot be easily allocated to the other forms of capital (natural, physical, financial, human).

10. Each team should present its findings to the rest of the participants. Encourage discussion.

Learning points

Trust emerges as the most important aspect of social capital. Social capital is an important and complex part of the farm resource management system. It touches on most if not all of the resources available to a farmer. If managed correctly, social capital can help improve profitability of the farm, thus farmers need to be conscious of its impact on their farm management choices.

Space for notes and questions for the facilitator

Understanding social capital

"Social capital refers to the institutions, relationships, and norms that shape the quality and quantity of a society's social interactions" (World Bank/October 10, 2002). Social cohesion is critical for rural communities to prosper economically and for development to be sustainable. Farmers can draw from the social resources that are available in rural areas in pursuit of farm management objectives. These consist of informal social networks and formal organizations used by farmers, the farm household and communities to exchange resources and information. The strength of social capital depends upon shared interests, common or mutual agreements on norms/rules, mutual trust and reciprocity within the rural community.

Social capital involves interaction between individuals and groups. It can be thought of as the oil that lubricates the process of joint farm management decisions. It can also be thought of as glue that holds families and communities together in partnerships of mutual support and accountability. These interactions can be informally or deliberately arranged. They help farmers to get to know each other and develop networks. The interactions increase confidence among the farming community to act for the overall benefit of the community and its members, and to build a commitment to the benefit of all. Social capital is dynamic and is both used and built through interactions where people share resources, knowledge, skills and values.

A way of looking at social capital is to ask the questions: (i) Who owns it? (ii) Who has access to it? (iii) What are the relationships between people like? (iv) What rules, norms and sanctions exixt? (v) How is social capital used? (vi) How strong are the connections and networks? (vii) What types of social arrangements exist? (viii) How effective are local groups? (ix) What are their weaknesses and how can they be addressed?

Understanding social capital (continued)

Generally, if the resource is collectively owed or held and there is access to it by the collective, then it is a social asset. Consider a community forest — it is collectively held by all the people in a given community. The local authority may have the responsibility of governing the resource, but it belongs to the community and the community has access to it under certain conditions. A river is not actually owned, but is held by a state authority that governs access to it.

Conversely, a bicycle may belong to a single person, who paid for it at a shop. It is privately owned. It can become as a shared resource (social capital) if the owner decides to make it available to others. But because the owner has the power to withdraw the asset, it is not really social capital to which others have inherent right.

In the case of human assets, one does not own a person. Therefore a shared human resource would be defined more by the right of access. For example, in many African cultures, there is an understood social work contract that communities can call upon for the completion of a variety of tasks including work on individual farms, community building projects and hunting. Such work arrangements would be considered social capital.

Using the approach described above, social capital can be divided into five categories:

- shared natural capital
- shared human capital
- shared physical capital
- shared financial capital
- institutional capital

Shared natural capital. Includes rivers, lakes, common grazing lands, shared croplands, wildlife and fish to which communities have shared access.

Understanding social capital (continued)

Shared human capital. Includes social work contracts that can be called upon by members of the community.

Shared physical capital. Includes items such as equipment, buildings, fences that are owned collectively and to which the collective has access. It also includes privately held items that may be made available under a cooperative arrangement within a group of people.

Shared financial capital. Includes group savings, group loans, group investments where the financial assets are held collectively by the group.

Institutional social capital. Includes *formal social organizations* that provide services, support and safety nets to the community. Some of the institutions may be structures that govern access to natural, human, physical and financial capital. *A cooperative* is an example of institutional social capital that provides access to physical and financial capital to its members. *A village bank* is another example of institutional social capital providing access to finance. *A village development* committee responsible for assigning work tasks in the community would be a form of institutional social capital providing access to human capital. *Clubs, associations and funeral societies* are all examples of institutional social capital.

Also included are *informal social organizations* providing services, support and safety nets. Here the focus is more on the trust arrangements that exist within society. *A group of parents* who come together to discuss the welfare of the children in the community is an example of informal institutional social capital. Another example might be the understanding that *families will assist one another* in times of difficulty. This form of social capital is discussed in greater detail later.

Understanding social capital (continued)

The intangibles. Beyond the more tangible forms mentioned, social capital can be also characterized by four elements*:

- relations of trust
- reciprocity and exchanges
- common rules, norms and sanctions
- connectedness, networks and groups

Relations of trust. Trust is the common thread in all forms of social capital. "Trust lubricates co-operation." One can trust a farmer or group of farmers based on a prior knowledge of the individuals involved. Or one can trust these same individuals based on one's faith in the system or structure within which they are working.

Social obligation and trust can replace time, money and energy when carrying out an activity. As trust is an essential for the formation of social capital, its absence (distrust) has a powerful negative influence. A breakdown of trust quickly destroys social capital, which normally takes a long time to build up.

Reciprocity and exchanges. Social capital often works at two levels: (i) where reciprocity (or exchange) is specific and timed, (ii) where reciprocal exchange is less defined. An example of specified reciprocity and exchange is found in the case of social labour arrangements where certain tasks are performed in return for food. Unspecified reciprocity and exchange is found when informal labour arrangements and mutual aid is used to help a farmer get over a shock. The families might contribute knowing that support will be reciprocated sometime in the future. In this case there is a continuing relationship of exchange that works out over longer periods of time.

* Pretty and Ward. 2001. Social Capital and the Environment, World Development 29 (2), 209—227

Understanding social capital (continued)

Common rules, norms and sanctions. Social capital operates according to systems of common rules, norms and sanctions. It is rare that these are openly negotiated. They are known and understood in advance by both parties as they are traditional and have been passed from generation to generation. The rules are built on a fundamental principle of collective over the individual.

Common rules, norms and sanctions create boundaries, which in turn create a sense of confidence that allows the individual to work with other persons or group members. The individual knows (or at least trusts) that others in the group will behave in a similar way. They also provide a code of sanctions for reward and punishment. These arrangements are intended to promote conformity of behaviour and action.

Connectedness, networks and groups. Social capital is built on connectedness, networks and groups. These come in many forms from formal and informal groups to looser development of networks. 'Connectedness' consists of the following five groupings:

- *Local connections.* Strong connections between individual farmers and within local groups and communities.
- *Local-local connections.* Horizontal connections between groups within communities or between communities, which sometimes become platforms and new higher-level institutional structures.
- *Local-external connections.* Vertical connections between local groups and external agencies or organizations, being one-way (usually top-down) or two-way.
- *External-external connections.* Horizontal connections between external agencies.
- *External connections.* Strong connections between individuals within external agencies.

Understanding social capital (continued)

How is social capital used?

In many parts of Africa, social capital is an important means of survival and forms the foundation for society and for economic activity. Social capital is used for many economic activities on farms, such as buying of inputs, marketing of produce, exchange of information, mutual help, and accumulation of savings and provision of loans.

Social capital also fulfils a welfare purpose within the village community, collecting funds for funerals or weddings and health. Social capital arrangements are used to manage more effectively labour, common property and infrastructure (including land, equipment and transport), finance and credit, organization, access to inputs and marketing, and on knowledge (both acquired and indigenous). In short, social capital permeates every aspect of rural economic life. As previously noted, the primary force behind social capital is trust.

Social capital is usually formed when people in the rural community come together either formally or informally to use their labour, (mutual ploughing, weeding, harvesting and building construction), their capital (rotating credit and savings groups) or their land and water (community forests, land clearing, water user associations, collective activity).

Social capital implies group action or joint action involving more than a single farmer. Group action brings benefits — it implies a higher level of information and discipline as well as psychological stimulation and support. Joint action can ensure that certain activities are carried out both more effectively (on a regular basis with greater skill) and more efficiently (with greater economies of scale) than if done individually by a farmer.

Understanding social capital (continued)

Some of the functions of social capital are:

- providing mutual help at key times of the year when labour demands are great;
- sharing resources at periods of personal tragedy and celebration;
- providing food assistance at times of austerity and drought;
- reciprocity in breaking bottlenecks through the provision of scarce resources;
- construction/development of community projects;
- the pooling of assets in order to expand the production potential;
- creating a safety net in times of hardship.

What type of social capital arrangements can be made?

The means of providing additional labour or other resources by rural farmers can be classified as informal, commercial, cooperative arrangements, sharecropping and communal labour. Each of these categories can be developed through both formal and informal arrangements.

Informal arrangements. These imply that help is given on a friendly basis without involving financial transactions. Relatives, friends and neighbours are most commonly providers of mutual aid. But provision of neighbourly help or mutual aid is unlikely to be 'free' in the widest sense. To accept help puts the recipient under a certain social or moral obligation. Informal arrangements happen entirely in the absence of legally binding arrangements but the trust and social norms that exist make it last for generations among communities. An example of this is the exchange of help between farmers at busy times of the year.

Understanding social capital (continued)

In much of Africa help is often given when there are emergencies. Assistance is given spontaneously. The help usually comes from individuals. However, the farmer who receives the support is often under a moral obligation to the community rather than to individuals in the community.

Mutual aid or neighbourly help is also given at regular peaks in the farming cycle. This implies an obligation to exchange something in kind. Very often labour is exchanged for labour, for hospitality, for use of machinery or for other services but not for cash. This type of social capital is usually encountered among relatives and among small-scale 'family' farmers.

Farmers can also cooperate informally among themselves by meeting together to discuss their farming problems, compare their records and accounts and share market information.

Commercial arrangements. These are services made in the expectation of payment and profit. Services are paid for at a rate agreed in advance. Agricultural contractors, seasonal and casual workers are 'commercial' sources of additional labour. Such arrangements do not carry any social obligation, any exchange of favours, or any commitment to use the service again. However, social ties may reinforce the contractual agreement. Commercial arrangements of sharing are more common in market-oriented farming. Commercial arrangements will no doubt continue to meet the greater part of the demand for additional labour services.

Cooperative arrangements. Social capital is often promoted through grouping of farmers to better provide agricultural inputs, credit and market surplus produce. Cooperative arrangements differ from commercial provision of services. They are established for the mutual benefit of users. Rather than the suppliers initiating the arrangement,

Understanding social capital (continued)

cooperative arrangements are initiated by farmers themselves. Cooperative arrangements also differ from informal arrangements in that there is prior discussion and formal commitment to the group, which is legally binding and which continues on agreed terms for a defined period.

Sharecropping. Under sharecropping the farmer rents out land for an in-kind payment as a percentage share of the physical output of the farm. Under this system, a farmer makes another person (called a sharecropper) responsible for a particular crop, which the latter cultivates and harvests. The sharecropper is not paid a wage but is allowed to keep a share of the crop yield. A disadvantage of the system is that the sharecropper may cause permanent damage to the crop in trying to get as high yield as possible.

Communal labour. This is a common practice in which villagers work together when there is a job that needs doing quickly. It is a good way for the people to help themselves in improving their living conditions. Sometimes an individual farmer can be helped by communal labour to build a house or clear a farm.

There are many societies in Africa where communal work groups are the only means of supplementing family labour. The work groups are formed on the basis of ties of kinship, age or neighbours. They still play an important role in tropical Africa although as commercialization occurs this role is diminishing. The groups may be organized on the basis of reciprocity, with incentives in kind offered. Alternatively they may consist of groups of individuals who work for cash or payments in kind and cash. Although communal work groups do not increase the total supply of labour, in practice people working together are frequently willing to work longer hours than when they work alone. Moreover, such heavy work as bush clearing is considerably facilitated by group labour.

Understanding social capital (continued)

What are the weaknesses of social capital arrangements?

Breakdown of informal arrangements. Commercial and market trends in Africa are undermining the traditional basis for neighbourly help and mutual aid. Farm enterprise specialization tends to prevent farmers from helping one another. It becomes more difficult to provide assistance if a farm enterprise increases in size. Frequently too high a level of assistance is needed. HIV/Aids has also led to breakdown of informal social exchanges as there is a dearth of labour available for exchange and reciprocity.

Farmers with a more 'commercial' approach to farming tend to regard labour as a scarce resource with an exchange value. More commercially minded farmers tend to be more aware of their time and are more reluctant to carry out neighbourly acts that were once commonplace. The more commercially minded farmer may also find that relying on informal sources of labour at key times or in periods of distress has become less reliable. As farmers become more commercial they are often willing to pay workers so that both reliability and quality are assured. They want to know that workers will always be available when needed and will be of sufficient calibre to cope with demands of modern technology and mechanization.

Market-oriented farming requires a higher level of labour skills. This may be more important than informal obligations to relatives and friends and even cost considerations.

Breakdown of more formal group arrangements. When group activities, such as marketing, input supply and credit mobilization are sought, farmers organize themselves into either formal or informal groups. While the productivity of a group is potentially greater than that of individuals, a group does not automatically perform better. No active group is ever immune from conflict, and conflicts often

Understanding social capital (continued)

result in the social breakdown of the group. A group locked in internal conflict cannot adequately provide human rewards to its members. In some instances the existing social conflict may be so great that it creates a lack of commitment by its members. Some members may even leave the group altogether. Social conflict is a major reason for low group cohesion, low performance and low sustainability. These problems of conflict result in lack of consensus in decision-making and the organization of splinter groups.

Conflict can occur within all of the social capital formation arrangements mentioned. The causes of conflict are complex. Among the more formal groups there are many reasons for it, such as group size, heterogeneity of membership, low levels of participation, ineffective leadership and conflicting interest groups.

Listed below are a few common sources of social conflict.

1. *Failure of communications* is one of the commonest causes of disagreement. Conflict may arise early in the life of a social network because of failure to develop adequate channels of communication. Failure to communicate occurs at all stages of group life. Communication must be a two-way process.

2. *Formation of splinter groups* sometimes occurs as the goals of group members change. New goals may not be shared by all members and may not be compatible with the original objectives of the group. Over time some members may subscribe to new goals while others don't. If new goals emerge that are incompatible with the original objectives, members could feel polarized. In this event the original group may even disintegrate.

Understanding social capital (continued)

3. *Difficulty in reaching consensus.* Members may agree to cooperate but disagree about how to cooperate. Agreement over a group task will be achieved more readily if members recognize the importance of unified action.

4. *Commitment of group members* is needed to maintain group motivation. Commitment generally comes when the members see the benefits of membership are greater than the input required to realize those benefits. If members feel the benefits are not equal to the input, individuals may become inactive or drop out.

5. *Interpersonal conflict.* Social arrangements tend to break down when unanticipated difficulties emerge. Disagreements among neighbours occur when there are inadequate ways of resolving these problems. For example, in many countries of Africa memories of unfortunate experiences with 'friendly' arrangements may have turned some farmers against the thought of cooperation in any form. As farming becomes more of a business with more capital at stake farmers may feel the need for more formal, guaranteed arrangements.

6. *Group cohesion.* This attribute of groups is the force that binds members together and helps the group cope with external shocks and stresses. The more cohesive a group is the greater the power it can exert over its members.

7. *Lack of trust and corruption* are also causes of conflict and ultimate group breakdown. This may occur as a result of poor leadership, failure to introduce methods that ensure greater accountability and lack of transparency and democratic principles.

Understanding social capital (continued)

8. *Lack of understanding* among group members of responsibilities, credit liabilities and accountability. Most often members lack capacity and skills in such topics as enterprise feasibility assessment, bookkeeping, market development, and the technical expertise to develop new enterprises and adapt them to the farming system.

How can these weaknesses be addressed?

Group size and composition. Groups with small, homogeneous membership usually find it easier than large, mixed groups to develop an effective network of human relationships. Small, intimate groups tend to be more cohesive than large groups. Cohesive groups achieve more because they can impose greater discipline on members. Small groups are less likely to suffer from breakdown of communications, formation of splinter groups or failure to reach agreement. Smallness has its drawbacks too. For some purposes the wealth of resources, variety of interests and greater power of larger groups can be an advantage.

Effective leadership. One of the key factors for the success of a group is the presence of effective local leadership. Good leadership in informal groups and more formal local organizations result in greater accountability, transparency, and innovativeness and an effect of increasing the commitment of group members. For leadership to be effective, communication with members needs to be assured. Part of effective leadership is to be able to monitor and evaluate progress towards the realization of the group's objectives and to be able to respond to changes.

Understanding social capital (continued)

Management training programmes. Training programmes for both group leaders and members are necessary to ensure that participants have the tools at their disposal to resolve problems of conflict and mismanagement. Training programmes in order to be effective require the full participation of group members in their design.

Organizational arrangements. The introduction of good management practices and arrangements are often needed to improve performance. This could include the regularization of meetings, the adherence to rules of decision-making, and procedures that increase the flow of communications and information among members. Actions that can be taken by management include rotating leadership responsibilities; spreading skills of administration among members; establishing and convening meetings on a regular basis; delegating responsibility to group members; and introducing sanctions and instruments that can be used to control malpractices.

Management procedures. Simple management procedures are optimal. There is a need for simplified and standardized methods of bookkeeping, record keeping and financial control, and these should be laid down in the group constitution. Simplified and appropriate methods of reporting and bookkeeping should permit most members to understand the intricacies of the bookkeeping and financial systems.

Case study — Social capital on the farm

Farm household

Item	Link to social capital
Natural	
3 Fields (1 ha each = 3 ha)	
• Usually Sorghum, maize millet	
• Access to stream	Common property
• Access to a variety of common natural resources; thatch, herbs, weaving grass, building materials	Common property
Physical and financial	
Physical: Own	
• 3 cows; 2 oxen; 3 goats	Oxen shared with son in return for labour
• Several chickens	
• 2 hunting dogs	
• 1 yoke	Plough shared with son in return for labour
• 1 plough	
• 1 hoe; 2 shovels	
• 1 bicycle	
Financial: Own	
• Sells surplus to market	Village development committee helps with marketing
Physical: community	
• Rural roads to enable marketing of surplus crop	Common property
• Church	Common property
• Primary school	Common property
• Clinic	
• 2 boreholes (working)	
• 1 hand-dug well (working)	
• 2 other wells (dry)	
Human	
3 adult children (1 son, 2 daughters)	
• Son and his children help prepare, plant & harvest fields	Family reciprocity arrangement
• Knowledge about which crops to grow in drought	
• Physically strong (carrying and building)	
• Good coping strategy for when food is limited	Food for work safety net
Social	
• Tenure security that enabled her to retain her land after her husband's death	
• Shares harvest with her children and their families	
• Food for work safety net (Care Zambia)	
• Storage at son's home	Village development committee helped improve

Preparing for Session 2.4

Inputs and markets — where profits are made

Learning outcomes

Understanding (i) how money is made on the farm, (ii) the role of inputs in profitability, (iii) the concept of the market, (iv) the role of markets in profitability, (v) of the market for products

Training aids

Exercise 2.4A (Test your input and marketing knowledge),
Exercise 2.4B (Inputs and markets on the farm),
Handout 2.4A (Inputs and markets — where profits are made),
Handout 2.4B (Worksheet — Test your input and marketing knowledge),
Handout 2.4C (Worksheet — Inputs and equipment on the farm),
Handout 2.4D (Worksheet — Marketing brainstorming),
Handout 2.4E (Diagram — Input supply and markets)

Notes

Inputs and markets — where profits are made

In this session the participants will be introduced to the off-farm management activities of input supply and marketing. Here they will learn that the farm is more than merely a place of production. It is a business that has to be managed beyond the production activities. The concepts of inputs, equipment and markets as the place where profits are made will also be introduced here.

Opening statement

As before we shall begin this session by reviewing the main points in Handout 2.4A (Inputs and markets), but this time we shall do it as a "farm team" competition as outlined in Exercise 2.4A (Test your input and marketing knowledge).

This relates to the questions you have already answered in the worksheet provided.

Note: *The winning team will not have to help clean up at the end of the day (the reward can be changed in consultation with the group).*

Exercise 2.4A
Test your input and marketing knowledge

Purpose: To review the inputs, production, market sequence. (Participants should have read Handout 2.4A prior to this exercise.)

Method: Farm team participatory competition.

Materials: (i) Handouts 2.4B (Worksheet — Test your input and marketing knowledge), (ii) 27 strips of paper per team, (iii) flip chart paper, (iv) thick marking pens.

Allow 80 minutes for this exercise

Procedure

1. Divide the group into their farm teams.

2. Prepare a score sheet. It can be drawn on the classroom board or on a flip chart as shown.

3. Refer to Handout 2.4B (Worksheet — Test your input and marketing knowledge), which should have been distributed to the class and completed prior to this session.

4. Give each team 27 strips of paper to answer the questions.

Question	Possible score	Team 1	Team 2	Team 3
1	5			
2	5			
3	5			
4	5			
5	5			
6	5			
7	5			
8	5			
9	5			
10	5			
11	5			
12	5			
13	5			
14	5			
15	5			
16	5			
17	10			
18	10			
19	5			
20	5			
21	5			
22	5			
23	5			
24	5			
25	10			
26	5			
27	5			
Total	**150**			

Exercise 2.4A (continued)

5. Each team should discuss and answer each of the questions. Their answers should be short and to the point. They should write down each answer on a separate strip of paper. They should be sure to write the name of their farm group and the question number on each strip.

6. After 20 minutes ask each team to put the papers in order from 1 to 27. Collect the question sheets (so that there can be no more writing). Keep them separated by team.

   Start with Question 1. Ask one person from each team in turn to answer the question according to their papers. Each team will have only 10 seconds to answer each question. Keep time carefully to be fair.

7. When the team has read its answer, decide on a mark and write it on the score sheet. If you award less than full marks for a question, you may call on another team to finish the answer for the remaining points. If no team can answer the question, then no marks are to be awarded for that question. There should be no discussion unless no team gets the correct answer.

8. Work through all the questions in the same way. There are many questions, therefore keep the pace lively.

9. When all the questions have been answered, total up the marks and see which team wins and gets the reward. If they all get the same score, then no one wins. Answers to the questions in Handout 2.4B are provided for the facilitator on the following pages. (Remember: each question is worth 5 points, except questions 17, 18 and 25, which are each worth 10 points each.)

Allow 30 minutes for answering questions
(about 1 minute per question)

For the facilitator

Answers to the questions in Handout 2.4B
(Worksheet — Test your input and marketing knowledge)

1. Explain how money is made on the farm.

Money is made through the management of the process of inputs, production and marketing.

2. Three elements of the farm management model.

INPUTS → THE FARM & PRODUCTS → MARKET

3. Any two kinds of inputs.

Inputs can be divided into six categories: (i) labour, (ii) equipment, (iii) production requisites, (iv) genetic material, (v) finance, (vi) information.

4. Any two sources of inputs.

Most inputs can be obtained from a number of sources: (i) the farmer's own farm, (ii) another farm, (iii) private suppliers, (iv) local general dealers, (v) farmers' cooperatives, (vi) product distributors.

5. Before deciding on an input what must the farmer determine?

Farmers need to know which inputs to use and where to get them. They need to determine whether the additional cost of using inputs will generate sufficient additional income to cover these costs. In each case, the farmer must consider the price, quality and availability offered by the various sources of inputs.

For the facilitator (continued)

6. Name the qualities inputs must have.

(i) Is it technically effective? (ii) Is it of dependable quality? (iii) Is its price reasonable? (iv) Is it available locally in particular when farmers need to use it? (v) Is it offered for sale in appropriate sizes or amounts?

7. What qualities must a farmer look for in a supplier?

In addition to knowing which input to buy, farmers also need to know who are reliable and trustworthy suppliers of inputs, equipment, machinery, spare parts and maintenance supplies. Farmers also need to know what each item supplied offers in terms of prices, quality, and availability of inputs and equipment.

8. What is a market?

The place where the exchange takes place is called the market. The market is made up of sellers, buyers, products and prices. The relationship among these elements influences the amount of money received in exchange for products.

9. What is marketing?

Marketing is the process of exchange between the producer (farmer) who sells and the consumer who buys. The exchange takes place when the two sides agree on an exchange rate (price). If they do not agree on a price, no exchange will take place. Price is the exchange value of a product measured by money.

For the facilitator (continued)

10. What determines the market price?

The price of the product is determined by two concepts: supply and demand. Supply refers to how much of that product is available and on sale. Demand refers to how much consumers (people who buy it) want the product. The balance between supply and demand sets the price of the product.

11. Using the two factors that determine price, give a situation in which price would be low.

High supply, low demand.

12. Using the two factors that determine price, give a situation in which price would be high.

Low supply, high demand.

13. What is one factor in Africa that makes marketing important?

Two factors make it important to market agricultural products in Africa. First is the fact that populations in towns and cities in Africa are increasing. This is increasing the demand for agricultural products. Farmers are the only ones who can supply these products. If farmers only produce for their own families, there will not be enough food for people in urban areas.

For the facilitator (continued)

14. What is the second factor in Africa that makes marketing important?

Second, the economies in Africa have changed. People need and want things that require cash such as school fees and uniforms, consumer goods (e.g. radios, televisions), and household goods (e.g. soaps, cooking utensils, linens). If a family needs cash, it needs a source of income. Families that live in towns look for jobs or start businesses. Rural farm families must rely on their farms to generate cash income. They do this by selling (marketing) agricultural products. "Market-oriented farming" means thinking about and making decisions about selling agricultural products in the market.

15. How can extension workers help farmers benefit from marketing?

Farmers can plan their farms to use marketing opportunities. Instead of only growing food for their families, they may be able to generate income by growing crops for the market. Extension workers can help farmers understand about how the market works. Understanding the market reduces the farmer's risk in generating a cash income for the family. Good farm management requires a good understanding of the market. The decision-making boundary of the farm must extend to include the market.

For the facilitator (continued)

Most smallholder farmers sell their products at the farm or local markets because it is easiest and simplest. Many farmers do not have the skills, resources or yields to access other markets. Extension workers can help farmers improve their ability to use the local market to increase profits. This will help farmers acquire the skills, resources and yields necessary to access other markets.

Extension workers can help farmers with reliable information about markets including: (i) prices, (ii) quality requirements, (iii) handling, (iv) packaging and transport, (v) niche marketing opportunities.

16. How does farm management relate to marketing?

From this discussion, we can see that the decision-making boundary (the farm management boundary) extends well beyond the production unit and the household. It extends beyond the natural resource base of the farm. It includes all the factors that affect the profitability of the farm: inputs, production and markets.

17. Which of the following would probably make a farmer a "price taker"? Which would probably make a farmer a "price maker"? Explain your answers in terms of supply, demand, price, quality, timing. (e.g. taker: quality low, supply high, demand low, price low).

Note: the following are possible answers, depending on how the situation is interpreted. The main point is for the participants to understand what puts the farmer in the position of being a price taker or price maker.

For the facilitator (continued)

- Selling maize in a local market just after the harvest season
  Taker: large supply, large demand, low price
- Selling strawberries in winter
  Maker: low supply (out of season), large demand, high price
- Carrying fruit to market loose
  Taker: lower quality, lower price
- Carrying fruit to market packaged
  Maker: better quality, higher price
- Selling grazing cattle at the end of winter
  Maker: better quality, higher price
- Selling grazing cattle at the start of winter
  Maker: higher quality, higher price
- Selling organic vegetables
  Maker: specialized market, high demand, low supply, high price
- Reducing livestock numbers on overgrazed land
  Taker: lower quality, lower price
- Growing mushrooms
  Maker: specialized market, high demand, low supply, high price
- Selling cattle when the school year starts
  Taker: high supply, lower price

18. Why is the price of a product in a shop higher than the price paid to the farmer?

The price of a product in a shop is higher than the price paid to the farmer because of the cost of the steps in the marketing chain. Each person or agent who handles the product changes the product in some way and each charges a fee. This fee is added to the cost of the final product sold to the customer.

For the facilitator (continued)

19. What are the three main areas of costs involved in the marketing channel?

- product preparation and packaging costs;
- processing and handling costs;
- transport costs.

20. At present where must most smallholder farmers sell their products? Why?

Most smallholder farmers sell their products at the farm or local markets because it is easiest and simplest. Many farmers do not have the skills, resources or yields to access other markets.

21. What can extension workers do to help farmers access markets other than the local markets?

Extension workers can help farmers improve their skills and ability to select more lucrative markets to increase profits. They can also provide them with market information.

22. What is the most common marketing problem?

Lack of market information is the most important problem in marketing. Farmers need current price information to plan properly.

23. Name any two other common marketing problems.

- lack of expertise and information; including a shortage of extension officers to convey information;
- low volumes and quality problems with their produce leading to poor returns;

For the facilitator (continued)

- government support is minimal;
- market flooding (over-supply);
- lack of local marketing outlet infrastructure (e.g. a lack of roadside stalls);
- lack of technical expertise on packaging and grading;
- inconsistent supply of farm products;
- little contact between producers and buyers;
- transport — availability, costs, financing to pay costs;
- lack of (or access to) storage facilities and pack-houses;
- prices of equivalent imported products are low;
- discrimination in some marketing channels.

24. What is value adding and why is it important to marketing?

Add value to their produce by wholly or partially processing it (e.g. drying, milling) and then market products through the various marketing channels.

25. Define any two of the following marketing options.

- Farmgate marketing
  Marketing done by the farmer at the place where the product is produced.

- Village marketing
  Village marketing entails the farmers in village community organizing to sell their produce at a farm stall located in the village or along a main road.

- Produce markets
  Markets set up in larger centres mainly for the sale of vegetables and fruit.

For the facilitator (continued)

- Stock sales
  The stock sales system uses the auction system where sellers offer animals for sale and buyers offer a price for the animals.

- Contract marketing
  Markets where the farmer sells directly to the retailer at agreed prices, quantities and qualities.

- Collective marketing
  Farmers organize to market their products together on a formal market.

- Community-supported marketing
  A farmer or group of farmers supported by a neighbourhood or community agree to provide produce at a set price or a proportion of yield based on the degree to which the community has supported them (i.e. supported their costs of production).

26. What can extension workers do to help farmers with inputs?

The extension workers have an important role to assist farmers in making management decisions about inputs, equipment and markets. They can help farmers to ask the right questions about sources of inputs and equipment and about the inputs and equipment themselves. They also can provide farmers with information about inputs and equipment including:

For the facilitator (continued)

- Research information on the technical effectiveness of the inputs and equipment;
- Experiences of other farmers with the inputs and equipment;
- Availability of inputs and equipment in the area.

27. What is the real decision-making boundary of the farm?

From this discussion, we can see that the decision-making boundary (the farm management boundary) extends well beyond the production unit and the household. It extends beyond the natural resource base of the farm. It includes all the factors that affect the profitability of the farm: inputs, production and markets.

Exercise introduction

Now that we have understood input supplies and markets, we want to apply them to our virtual farms.
In Exercise 2.4B (Inputs and markets on the farm) we shall brainstorm and discuss how to include and map inputs and markets for our farms.

Exercise 2.4B
Inputs and markets on the farm

Purpose: To identify (i) their input requirements and enable participants to visualize their products in the market, (ii) likely markets for their farm's products and likely problems in marketing their farm's products.

Method: Brainstorming, group discussion, mapping.

Materials: (i) Handouts 2.4C (Worksheet — Inputs and equipment on the farm), D (Worksheet — Marketing brainstorming) and E (Diagram — Input supply and markets), (ii) large flip chart paper or newsprint, (iii) 2—3 sheets of lined paper per team, (iv) thick marking pens, (v) scissors.

Allow up to 45 minutes for this exercise

Procedure

Part one
Inputs

1. Divide the group into their farm teams.

2. Give each participant Handout 2.4C (Worksheet — Inputs and equipment on the farm). Ask each team to complete the grid. To do this they should discuss and agree on the following:

   - Choose three enterprises (one must be a livestock enterprise).
   - iIdentify the basic input and equipment requirements (3—4 only) for each enterprise (do not include labour).
   - Identify the source (supply) of each input or equipment.
   - Identify any problems they might encounter with the product in terms of the availability, accessibility, reliability and appropriateness of the supply or product.

   The source of each input or equipment should be one of the following: (i) the team farm itself, (ii) another farmer, (iii) a supplier in a nearby town, (iv) a supplier in a town/city far from the farm.

Exercise 2.4B (continued)

3. Ask each team to report and discuss their findings.

    - What is their experience about where farmers can get inputs and equipment?
    - What is their experience about maintenance, repairs and spare parts for equipment and machinery?
    - What are some of the most common problems encountered by farmers in getting inputs and equipment?

4. Following the discussion, each team should list potential market outlets for their farm produce, creating symbols or labels for their inputs and placing them onto their farm map. Include arrows indicating where the inputs go onto the farm, linking farm enterprise products to the relevant market outlets. See the example in Handout 2.4E (Diagram — Input supply and markets).

Part two

Marketing

Allow up to 45 minutes for this exercise

1. Give each participant Handout 2.4D (Worksheet — Marketing brainstorming) and ask the teams to brainstorm over the following:

    - Identify two likely end uses of three products from their virtual farm at a local market and two at large city markets (e.g. if they grow wheat, the end product at a local market might be bread; at a large city market it might be sandwiches in a hotel restaurant). At least one product must be from livestock.
    - Identify the most likely profitable market for three farm products.
    - Identify the problems they are likely to run into when marketing the products from their virtual farm to the selected markets they have identified.

2. As ideas are developed they should be discussed and if appropriate provisionally listed on working sheets of paper.

Exercise 2.4B (continued)

3. When finished team members should then record their best answers in the spaces provided in Handout 2.4D (Worksheet — Marketing brainstorming).

4. Ask each team to share their findings. Start with the crop they agreed likely to be most profitable. Ask each team in turn until all the crops and their markets are covered. Encourage discussion. Look for creativity and an expanded understanding of the concept of marketing.

5. After the discussion, each team should design symbols or labels for their chosen markets and place them on their farm maps. They should lay arrows from the crops to the relevant market. See the example map in Handout 2.4E (Diagram — Input supply and markets).

6. Follow this up with a wrap-up session to discuss the main points again. Encourage the participants to ask questions from their reading and their class work.

Exercise 2.4B (continued)

Learning points

- Markets are the source of cash income to a farm.
- Incorporating markets into farm planning extends the decision-making boundary of the farm from the original physical farm, from the wider "household farm", to the "market farm".
- Prices of products are determined by supply and demand.
- Common products in large quantities generally attract lower prices.
- Rare products and high-quality products generally attract higher prices.
- Opportunities exist for small-scale farmers to increase the profitability of their farms and increase cash income by learning market-orientated farm management.
- To enter into the market, farmers will need to investigate the supply and demand of different crops and animal products at different times of the year to see which ones will bring them the greatest opportunity for increasing their profits from their farms.
- Extension workers can help farmers learn to be more market-oriented by helping them with market information. This means, of course, that extension workers will need to gather market information and understand its use in making choices on the farm.

Space for notes and questions for the facilitator

Inputs and markets — where profits are made

We have looked at the decision-making boundary of the farm in terms of the physical farm (the enterprise units) and in terms of the household. We learned that farm management decisions do not only involve production related decisions. Farm management also requires that decisions are made about off-farm opportunities. Two key sets of management concerns are inputs and markets: where profits are made. In this session we will expand the decision-making boundary of the farm to include inputs and the market.

How money is made on the farm

As noted earlier, extension officers and farmers are often trained only in production. The questions of what to grow, how to grow and how much to grow are production decisions. While this is a very important part of farm management, there is much more to making money on the farm.

A farm is like a factory. It is a business. The production unit (or enterprise) is the place where the goods are produced. And like any factory, money is made when raw materials (called inputs) are combined with labour (another input) and processed (called production) into goods that are sold to consumers. If the cost of the inputs and production are less than the income generated by sales, then the business makes money. However, if the cost of inputs and production are greater than the income generated by sales, then the business loses money.

Good production managers can be good business mangers only when they understand clearly that money is made through the management of the process of

INPUTS → PRODUCTION → MARKETS

Inputs and markets (continued)

Inputs

Farmers require inputs, equipment and materials in order to produce outputs for the market. These inputs and equipment include seeds, fertilizers, pesticides, livestock feeds, medicines and tools.

While much of the inputs and materials may come from the farm itself, such as livestock feed, compost and farm yard manure, some of the inputs required by the farmer have to be manufactured and specially prepared. Livestock producers often require purchased feed. Although it is possible for farmers to mix some of these themselves it is often more efficient for them to be manufactured. Similarly, only the simplest tools and implements can be made locally and by hand. Farm mechanization and specialized implements need to be manufactured.

Farmers need to know which inputs to use and where to get them. They need to determine whether the additional cost of using inputs will generate sufficient additional income to cover these costs.

Inputs can be divided into six categories:

- labour
- equipment
- production requisites
- genetic material
- finance

Labour. Labour refers to the people who work on the farm. In some countries labour is the most limiting factor to growth and profitability. The causes may be the shortage of labour (especially skilled labour) or the cost of actual labour.

Inputs and markets (continued)

Equipment. Equipment refers to the tools, handling equipment (for livestock) implements and means of traction (tractors or draught animals) farmers use to work their land. The choice of technologies is important. It is important that they do the job that the farmer requires. Technologies chosen must also fit into the livelihood and household system of the farmer. In other words, the tools, implements and means of traction must be appropriate to the farmer's situation. Often the farmer will make choices between labour and equipment.

Production requisites. For crop production, requisites are inputs such as seed, seedlings, fertilizer, manure, pesticides and other items used to grow crops. For livestock production, they include feed, medicines, dips, licks and similar items. As with equipment production, requisites need to be appropriate to the farmer's situation.

Genetic material. Genetic material refers to trees for orchards, point-of-lay-hen, day-old chicks, breeding stock and dairy stock for livestock enterprises. These are critical inputs into the farm. Issues of quality and suitability for the climate and other factors are key issues to consider when choosing genetic material.

Finance. Finance refers to the money needed to purchase or pay for the other inputs. It includes cash, loans, trading agreements and credit arrangements. How farmers finance their farms can make a difference between profit and loss. Thus again, the farmer must take great care to farm appropriately.

Sources of inputs. Most inputs can be obtained from a number of sources: (i) the farmer's own farm, (ii) other farms, (iii) private suppliers, (iv) local general dealers, (v) farmers' cooperatives, (vi) product distributors. In each case, farmers must consider the price, quality and availability of the various sources of inputs.

Inputs and markets (continued)

The market

Once the appropriate input and equipment has been selected the farmer can start producing. However, farm products gain value only once they leave the farm and are exchanged for money. Thus we need to look at marketing.

What is the market? The market is the place where the exchange of products for money takes place. The market is made up of sellers, buyers, products and prices. The relationship among these elements influences the amount of money received in exchange for products.

Marketing is the process of exchange between the producer (farmer) who sells, and the consumer who buys. The exchange takes place when the two sides agree on an exchange rate (price). If they do not agree on a price, no exchange will take place. Price is the exchange value of a product measured by money.

The price of a product is determined by two concepts — supply and demand. Supply refers to how much of that product is available and on sale. Demand refers to how much consumers (people who buy it) want the product. The balance between supply and demand sets the price of the product.

High prices are a result of supply being lower than demand. For example, suppose the farmer produces maize before anyone else. Everyone would want it, thus the farmer could raise the price without worrying about competition from other producers. Low prices occur when the supply of a product is greater than the demand for the product. For example, suppose the farmer has tomatoes to sell but everyone is selling tomatoes too. The supply is far greater than the demand. In order to get rid of the tomatoes the farmer may be forced to reduce prices.

Inputs and markets (continued)

Understanding the relationship between supply and demand will help farmers to decide on product price. When farmers plan they need to know what prices to expect. When they sell they need to know what prices to charge.

Why is it important to market agricultural products in Africa? Two factors make it important to market agricultural products in Africa. First is the fact that populations in towns and cities in Africa are increasing. This is increasing the demand for agricultural products. Farmers are the only ones who can supply these products. If farmers only produce for their own families, there will not be enough food for the people in urban areas.

Second, the economies in Africa have changed. People need and want things that require cash such as school fees and uniforms, consumer goods (e.g. radios, televisions) and household goods (e.g. soaps, cooking utensils, linens). If a family needs cash, it needs a source of income. Families that live in towns look for jobs or start businesses. Rural farm families must rely on their farms to generate cash income. They do this by selling (marketing) agricultural products. "Market-oriented farming" means thinking about and making decisions about selling agricultural products in the market.

Farmers can plan their farms to use marketing opportunities. Instead of only growing food for their families, they may be able to generate income by growing crops for the market. Extension workers can help farmers understand how the market works. Understanding the market reduces farmers' risk in generating a cash income for their family. Good farm management requires a good understanding of the market. The decision-making boundary of the farm must extend to include the market.

Inputs and markets (continued)

Marketing is finding out what the customer wants and supplying it

From the point of view of the farmer, marketing is a process where a farmer finds out what the customer wants and supplies it at the quality and price at which the customer is prepared to buy, and at which the farmer makes a profit. Agricultural marketing involves a number of tasks including harvesting, grading, sorting, packing, transporting, storing, processing, distributing and selling of produce.

Price takers. Farmers who produce and sell in a competitive market with many buyers and sellers are called *price takers*. Price takers have very little influence on the price. They can sell as much as they want at the market price. Their marketing challenge is to cope with fluctuations in supply and demand during the year. In such an environment, successful marketing implies selling as much as possible at higher prices.

Price makers. In situations where the market may not yet exist or may be very small, the farmer may be a *price maker*. This is true for specialized products produced for 'niche' markets. Their marketing challenge is to get a higher price by making their products different from other similar products. This could be done by growing a new variety or producing a product of higher quality to be sold in specialized markets (e.g. mushrooms, flowers).

Inputs and markets (continued)

The marketing chain

The different steps involved in moving produce from the farm to the consumer, is called the *marketing chain*. Each of these steps involves costs. At the simplest level, the steps and costs involved may just be the time taken to walk to a nearby market and sell produce. At the most complex level, a product may be stored for long periods, transported long distances and processed several times before reaching the form in which it is finally sold.

The cost of marketing makes the price of a product in a shop or retail market higher than the price paid to the farmer. Each person or agent who handles the product changes the product in some way and charges a fee. This fee is added to the cost of the final product sold to the customer.

Farmers selling directly to the end customer will receive the full market price, but will be responsible for all marketing costs. Farmers selling to someone else (e.g. a trader who will process the product and then sell it again) will receive only the price paid by the trader. The trader is then responsible for the marketing costs.

Costs involved in the marketing chain

Product preparation and packaging costs. Products must be prepared and packaged for marketing. This means they must be moved from the field to a place of preparation. Packaging helps to protect the product from damage and to keep the product attractive to the customer.

Inputs and markets (continued)

Handling costs. At all stages in the marketing chain, produce will have to be packed and unpacked, loaded and unloaded. Each time the product is handled there is a cost involved. The cost is added to the final price of the product.

Transport costs. Once packed, the produce is then transported. Whether by foot, bicycle, car, truck or other means, transport is a cost that is added to the final price of the product.

Types of markets

There are many different types of markets. Some are close to the farmer while others are far away. At some markets, farmers can sell products with very little packaging, handling and transporting. Other markets may require substantial packaging, handling and transporting. Each type of market requires different information, different skills and different decisions. Farmers must carefully consider these requirements when choosing a market.

Most smallholder farmers sell their products at the farm or local markets because it is easiest and simplest. Many farmers do not have the skills, resources or yields to access other markets. Extension workers can help farmers improve their ability to use the local market to increase profits. This will help farmers acquire the skills, resources and yields necessary to access other markets.

Local markets. Markets the farmer can reach fairly easily and are not too far from the farm.

Distant markets. Markets that are far from the farm. The distance requires the farmer to organize transport or sell to an agent at the farm or in the nearby town.

Inputs and markets (continued)

Export/international markets. Markets in other countries. Very often they are outside Africa. Export marketing requires specialist information and skills. Very few smallholder farmers are able to sell directly to the export market.

Specialized markets. Markets for very specific products. Generally they will have very specific quality and packaging requirements. Such markets might include hotels, processing plants, caterers, schools and hospitals.

Marketing channels

A number of marketing channels exist for farmers. They can:

- market directly from their farms to the surrounding communities;
- supply processing units;
- directly supply various retail outlets such as supermarkets and hotels;
- market through farm or market stalls;
- sell through contracts to commercial farmers or processors.

Inputs and markets (continued)

Options for marketing produce

Farmgate marketing

Farmgate marketing is where consumers come to the farm to buy produce. Examples include the sale of vegetables from a farmer's garden, the sale of eggs from an egg production unit and the sale of pigs directly from the farm. This type of marketing is common in traditional small farming.

Village marketing with farm stalls

Village marketing entails the farmers in village community organizing to sell their produce at a farm stall located in the village or along a main road. Farmers may sell as individuals or they may group together to sell collectively. Unlike farm-gate marketing, the farmers take their products closer to the customer.

Produce markets

Produce markets are set up in larger centres mainly for the sale of vegetables and fruit. They usually cater for larger-scale commercial producers and, in turn, supply the larger urban centres. These markets usually seek larger quantities of specific grades of produce. Farmers can use agents at the market to sell their produce.

Stock sales

Stock sales (auction system) where the sellers offer animals for sale and buyers offer a price for the animals. The seller may decide whether or not to accept the price offered by the buyer. The prices are not fixed. Generally, prices reflect the supply and demand position, both locally and within the entire market. Pigs, cattle, goats and other animals are commonly marketed this way.

Collective marketing

Farmers may choose to market collectively. Farmers' associations may get together and jointly market their crop. This form of marketing is one of the basic functions of a cooperative.

Contract marketing

With contract marketing the farmer sells directly to the retailer at prices, quantities and qualities agreed to in advance.

Community-supported marketing

A farmer or group of farmers supported by a neighbourhood or community agree to provide produce at a set price or a proportion of yield based on the degree to which the community have supported them (i.e. supported their costs of production).

Inputs and markets (continued)

Common marketing problems

Lack of market information is the most important problem in marketing. Farmers need current price information to plan properly. Lack of information leads to frequent surpluses on the market, which decrease prices. Other marketing problems are:

- lack of expertise and information; including a shortage of extension officers to convey information;
- low volumes and quality problems with their produce leading to poor returns;
- government support is minimal;
- market flooding (over-supply);
- lack of local marketing outlet infrastructure (e.g. a lack of roadside stalls);
- lack of technical expertise on packaging and grading;
- inconsistent supply of farm products;
- little contact between producers and buyers;
- transport — availability, costs, financing to pay costs;
- lack of (or access to) storage facilities and pack-houses;
- prices of equivalent imported products are low.

The decision-making boundary

From this discussion, we can see that the decision-making boundary (the farm management boundary) extends well beyond the production unit and the household. It extends beyond the natural resource base of the farm. It includes all the factors that affect the profitability of the farm: inputs, production and markets.

INPUTS → PRODUCTION → MARKETS

Worksheet — Test your input and marketing knowledge

Discuss and answer all the questions. Write your answers on the papers provided. One question, one answer. Please write your farm name and the question number on each paper. Each question is worth five points except where otherwise noted.

1. Explain how money is made on the farm.

2. Name the three elements of the farm management process.

3. Name two kinds of inputs.

4. Name the two sources of inputs.

5. Before deciding on an input what must the farmer determine?

Worksheet — Test your input and marketing knowledge (continued)

6. Name the four qualities inputs must have.

7. What qualities must a farmer look for in a supplier?

8. What is a market?

9. What is marketing?

10. What determines the market price?

11. Using the two factors that determine price, give a situation in which price would be low.

Worksheet — Test your input and marketing knowledge (continued)

12. What is one factor in Africa that makes agricultural marketing important?

13. What is a second factor that makes agricultural marketing important?

14. How can extension workers help farmers benefit from marketing?

15. How does farm management relate to marketing?

Worksheet — Test your input and marketing knowledge (continued)

16. Which of the following would probably make a farmer a "price taker"? Which would probably make a farmer a "price maker"?

Note: Explain your answers in terms of supply, demand, price, quality, timing, etc. For example price taker: quality low, supply high (in season), demand low, price low.

10 points (1 for each)

- Selling maize in a local market just after the harvest season

- Selling strawberries in winter

- Carrying fruit to market loose

- Carrying fruit to market packaged

- Selling grazing cattle at the end of winter

- Selling grazing cattle at the start of winter

- Selling organic vegetables

Worksheet — Test your input and marketing knowledge (continued)

- Reducing livestock numbers on overgrazed land

- Growing mushrooms

- Selling cattle when the school year starts

18. Why is the price of a product in a shop higher than the price paid to the farmer?

19. What are the three main areas of costs involved in the marketing channel?

20. At present where must most smallholder farmers sell their products? Why?

21. What can extension workers do to help farmers access markets other than the local markets?

Worksheet — Test your input and marketing knowledge (continued)

22. What is the most common marketing problem?

23. Name two other common marketing problems.

24. What is value adding and why is it important to marketing?

25. Define any two of the following marketing options.
10 points (5 for each)

- Farmgate marketing
- Village marketing
- Produce markets
- Stock sales
- Contract marketing
- Collective marketing
- Community-supported marketing

Worksheet — Test your input and marketing knowledge (continued)

26. What can extension workers do to help farmers with inputs?

27. What is the real decision-making boundary of a farm?

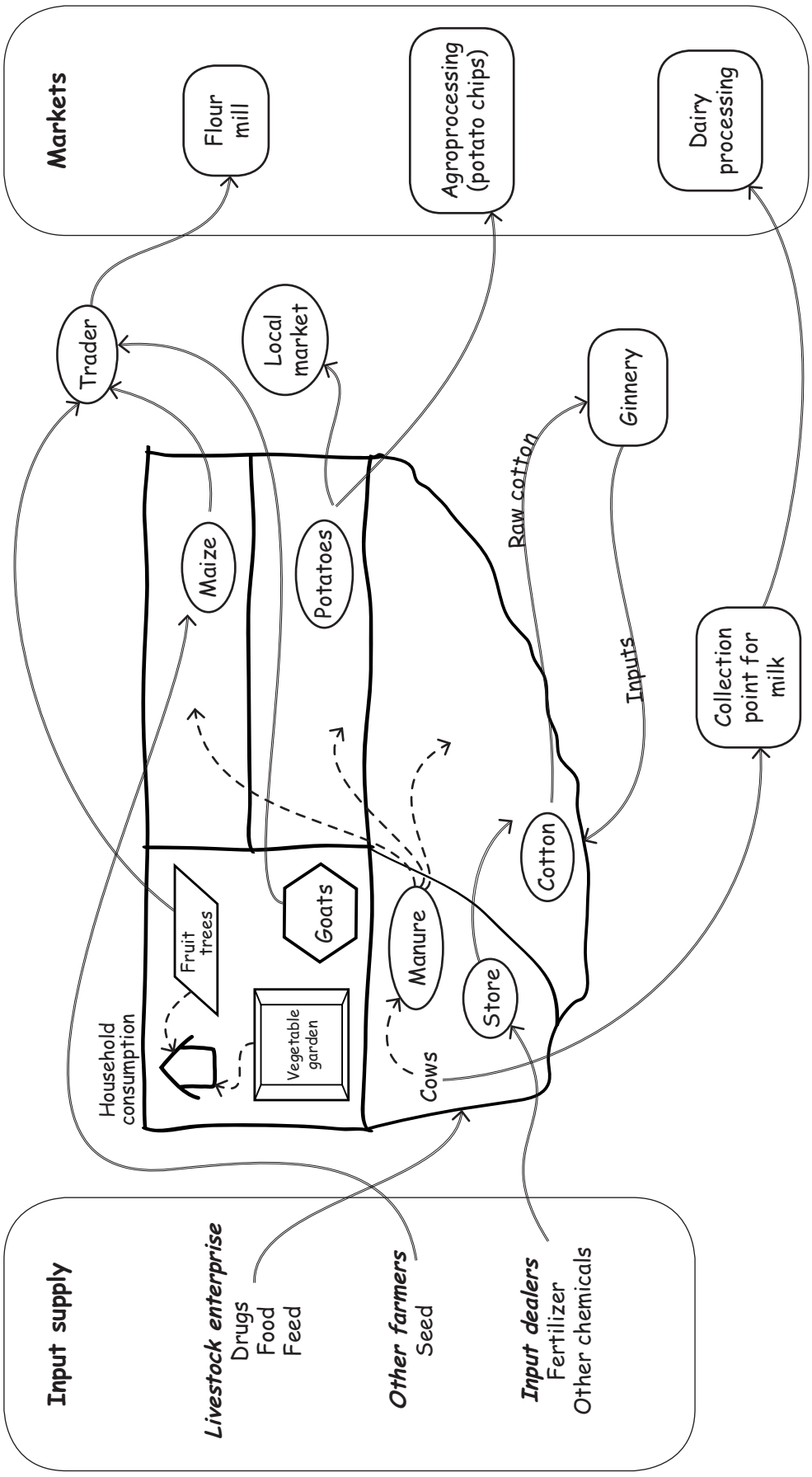
Worksheet — Inputs and equipment on the farm

Enterprise	Enterprise	Enterprise
Input:	Input:	Input:
Source:	Source:	Source:
Problems:	Problems:	Problems:
Input:	Input:	Input:
Source:	Source:	Source:
Problems:	Problems:	Problems:
Input:	Input:	Input:
Source:	Source:	Source:
Problems:	Problems:	Problems:
Input:	Input:	Input:
Source:	Source:	Source:
Problems:	Problems:	Problems:
Input:	Input:	Input:
Source:	Source:	Source:
Problems:	Problems:	Problems:

Worksheet — Marketing brainstorming

	Enterprise	Enterprise	Enterprise
Final products: local market			
Final products: city market			
Most likely profitabile markets			
Likely marketing problems			

Diagram — Input supply and markets



Review of Module 2

The participants should have a good practical understanding of the farm setting in which market-oriented farm management decisions are made. They will have learned about small- to medium-sized family farms and their enterprises, the farm and its resources, social capital, and the input/production/marketing process. (This review also includes an exercise.)

The facilitator may handle the exercise in one of two ways. If time permits and the participants are not too tired, then the exercise can be done in the classroom. Otherwise, if it fits into the timing well, it can be given as an overnight assignment and the participants can report in the morning. (The facilitator can then continue with the review outline following the exercise.)

Review exercise 2
Understanding the farm setting

Purpose: To ensure that the learning outcomes have been attained.

Method: Group discussion, mind mapping.

Materials: (i) Flip chart paper or newsprint, (ii) thick marking pens.

Allow 2 hours for this exercise

Procedure

1. Randomly divide the participants into four teams.
   Give each team 2 sheets of flip chart paper and a set of marking pens.

2. Assign each group one of the sessions to work on:
   Group 1—Session 1, Group 2—Session 2, etc.

3. Each group is to work on two tasks:

   Task 1: Develop a mind map of the main learning points as they relate to the learning outcomes. (Draw this on the flip chart paper)

   Task 2: Draw a picture that can be used to tell farmers about the points raised in the mind map developed in Task 1. The picture should be farming related. It is not a diagram, but a picture of a farm or market, etc.

4. When each group has completed their mind map and picture, ask them to present them to the rest of the participants. Encourage discussion and guide the discussion where necessary to ensure that 'correct' learning has taken place. The learning outcomes and key learning points for each session are set out below.

The following outline will guide the facilitator in a brief review of the activities of this module.

Session 1
The farm and its enterprises

Purpose of this session:
to focus on small- to medium-sized family farms that are partially or fully integrated into the market.

Learning outcomes

Understanding (i) the farm and its physical boundaries, (ii) farm enterprises, (iii) the connection between cash and food, farm and household, (iv) the whole system in which the farm operates.

Session 2
The farm and its resources

Purpose of this session:
to study resources of natural capital, human capital, physical capital and financial capital in a livelihoods framework.

Learning outcomes

Understanding (i) the different kinds of capital used on a farm, (ii) the relationship of farm management and its resources.

Session 3
Understanding social capital

Purpose of this session:
to explore the social cohesion that is critical for rural communities to prosper economically and develop sustainably.

Learning outcomes

Understanding (i) the different ways of sharing natural, human, physical and financial resources, (ii) advantages and disadvantages of sharing.

Session 4
Inputs and markets — where profits are made

Purpose of this session:
to introduce inputs and markets, the two key sets of off-farm resources, and to expand the decision-making boundary of the farm to include inputs and the market.

Learning outcomes

Understanding (i) how money is made on the farm, (ii) the role of inputs in profitability, (iii) the concept of the market, (iv) the role of markets in profitability, (v) of the market for products.

Closing questions

Ask the participants if they believe that the overall purpose of the module has been achieved and if they have improved their understanding of (i) the farm resource base, (ii) the decision boundaries of the farm, (iii) the different forms of capital and (iv) the market for inputs and products.

Notes

Notes

Notes

Notes

The following is a list of the AGSF series TRAINING MATERIALS FOR AGRICULTURAL MANAGEMENT, MARKETING AND FINANCE

1. Farm planning and management for trainers of extension workers in the Caribbean, 2004 (CD-ROM, English).
2. Horticultural marketing extension techniques, 2004 (CD-ROM, English).
3. Farm planning and management for trainers of extension workers. Asia, 2006 (Hard copy and CD-ROM, English).
4. Integrating environmental and economic accounting at the farm level, 2005 (CD-ROM, English).
5. Curso de gestión de agronegocios en empresas asociativas rurales en América Latina y el Caribe, 2005 (CD-ROM, Español).
6. Market-oriented farm management for trainers of extension workers. Africa, 2007 (Hard copy and CD-ROM, English).

In preparation

- Farm planning and management for trainers of extension workers. Latin America (CD-ROM, in Spanish).
- Training manuals on farmer business schools. Asia and Africa.

Other work

- FAO Pacific Farm Management and Marketing Series 3, Helping small farmers think about better growing and marketing (Hard copy)*.

* Copies soon to be available from AGSF

For further copies of this publication
and the information on FAO's activities
related to farm management
please contact:

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Web site: http://www.fao.org/ag/ags/index_en.html

This publication is also available on the Internet at:
http://www.fao.org/ag/ags/subjects/en/farmMgmt/training.html

It is useful to look at farm management from two aspects. One aspect is the farm, the farmer and the input—output relationships of farming. The second aspect is the resources used by the farmer on the farm. Both affect farm decisions. In Module 2 we shall explore these briefly and develop our own virtual farm, which will be an important tool used in learning about farm management.

TRAINING MATERIALS FOR AGRICULTURAL MANAGEMENT, MARKETING AND FINANCE

6

Market-oriented farm management for trainers of extension workers

AFRICA

Module 3
FARM MANAGEMENT DECISION-MAKING

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TRAINING MATERIALS FOR AGRICULTURAL MANAGEMENT, MARKETING AND FINANCE

6

Market-oriented farm management for trainers of extension workers

AFRICA

Module 3
FARM MANAGEMENT DECISION-MAKING

Food and Agriculture Organization of the United Nations
Rome, 2007

ISBN 92-5

FARM MANAGEMENT DECISION-MAKING

In this module the participants will be introduced to the concept of farm management. The module will revisit the five capital types (natural, human, physical, financial and social) and look at the type of farm management decisions that are made for each category of capital. Decisions that impact on the supply of inputs and farm produce marketed will also be discussed. The concept of risk is also introduced. Finally, the data and information needed to make sound management decisions is also covered in this module.

Preparing for Session 3.1
The farmer and decision-making

Learning outcomes
Understanding (i) farm/family goals, (ii) the farmer as manager, (iii) farm management decision-making process, (iv) the different roles of family members in the process

Training aids
Exercise 3.1A (Decisions on the farm),
Handout 3.1A (The farmer and decision-making),
Handout 3.1B (Worksheet — Decision-making grid)

Notes

The farmer and decision-making

In this session the participants will learn to realistically visualize the decision-making boundaries of a farm. They will explore the physical decision-making boundaries and how they extend to incorporate the farm household decision-making process. Here the farm teams will decide on goals for their visual farms. Further they will look at the kinds of decisions that have to be made, who will make them and when.

Opening statement

Here we will begin to explore the concept and dynamics of decision-making on a farm family. This will provide the basis for the use of the learning tools and methods we will study in Modules 4 and 5. Now let us review Handout 3.1A (The farmer and decision-making). Participants should feel free to ask questions.

The outline on the following pages is provided to help the facilitator conduct the review.

Outline of Handout 3.1A (The farmer and decision-making)

Decision-making

- Decision-making is central to farm management.
- The more farmers are aware of the decision-making processes that affect the farm household, the more likely they will be profitable and the more sustainable they will ultimately be.
- Farm management decisions are closely tied to decisions made in the households.
- Farm management decisions are made to meet social and economic goals of the household.
- This leads to the concept of "decision-making boundaries".

The production decision-making boundaries

- Decisions about production are just the beginning of the decision-making boundaries of the farm.
- Production decisions depend on a number of factors that fall outside the physical/production area of the farm.

Farm and family household decision-making boundaries

- In many parts of Africa, the farm and the household are virtually one entity.
- Decisions about the farm directly impact on the household. And decisions about the household directly impact on the farm.
- It is useful for anyone working with a farming family to understand the dynamics of the farm household and the decisions that go with them.
- Traditionally men are heads of households, but there are now many variations.
- To determine the decision-making boundaries of the farm, extension workers need to identify who makes what decisions and when.

Social and economic goals

- Farmers and their families need a secure source of food, and they seek a secure source of income.
- Food security is a social goal.
- Generating income is an economic goal.
- These farm management goals often conflict.
- Market-oriented farm management skills and tools can be used to make more informed decisions about food production and income generation.

Short-term versus long-term view

- Good farm management requires a long-term perspective.
- If decisions are not thought through carefully, then the farm business performance may be poor.
- Learning and applying principles of farm management enables farmers to consider alternative actions in advance.
- This will help improve performance and profit in the future.

The farmer as manager

- A farmer has two main jobs. One job is to take care of plants and livestock in order to get useful products. The other job is to manage the farm (make decisions about how to use the farm's resources).
- Decisions require making choices between alternatives.
- Farm planning is thinking ahead about farm activities and making decisions sometime before they will be carried out.
- As farmers become more market oriented, they will need to improve their planning and decision-making skills.

Decisions farmers make refer to:

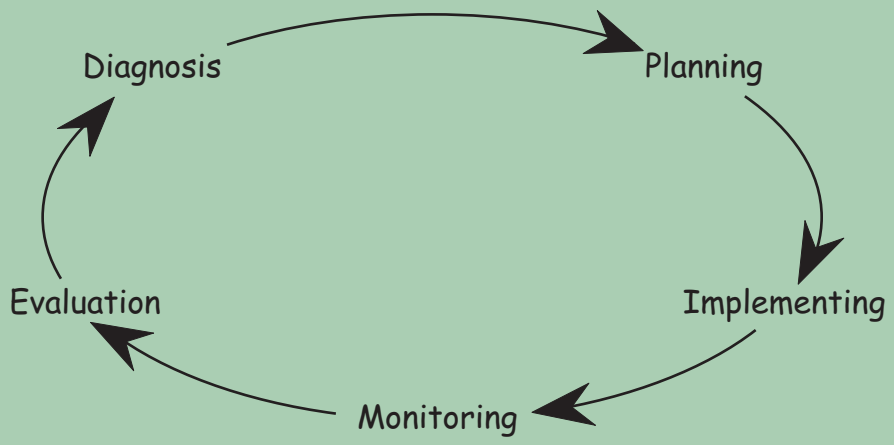
- what to produce;
- whether to produce for food, for income or for both;
- how to produce the crop;
- how to rear livestock;
- how much to produce;
- what resources to use and when to use them;
- what inputs to use and where to get them;
- how much of the produce to sell and when to sell it;
- where and to whom to sell produce and at what price.

Key aspects of decision-making

In order to make the decisions listed above, farmers need to develop understanding and skills in four broad decision-making areas:

- Diagnosis
- Planning
- Implementing
- Monitoring and evaluation

Learning how to make decisions in these areas will put farmers in greater command of the resources and processes that influence their food security and their income generation. These areas support a process of continuous learning about what works best for farmers and their family.



Diagnosis

Diagnosis means investigating the performance of the farm business.

Planning

- Once farmers have completed their diagnosis, they can plan the farm.
- By planning they will take decisions on what, how and how much to produce in the future.
- Planning includes decisions about the use of resources and inputs.
- Planning includes an indication of expected yields and income.

Implementing

- Implementing means putting the plan into action.
- During implementation, the farmer may discover that things do not work out exactly as expected. Decisions may be needed to adjust the plan to accommodate these changes.

Monitoring and evaluation

- Monitoring means keeping track of what is happening to the farm business.
- The plan is a guide for monitoring.
- Monitoring provides the farmer with the information needed to evaluate the farm business.
- Evaluation means judging how well the farm performs compared to the plan.
- Monitoring and evaluation provide the information farmers need to appraise their needs for the next season as the basis for preparing a farm plan.

Summary of key areas

- Following these steps in decision-making provides farmers with a very effective system for making informed choices.
- They enable the farmer to know the 'health' of the farm business.
- If it is healthy, the farmer will know why and what to do again.
- If there are problems, the farmer will know why and what to do about them.
- This will increase the sustainability of the farm.
- This will improve the family's food security.
- It will make the family's income more predictable and reliable.

Men and women in farm management decision-making

- The role of women in making farm management decisions varies widely across Africa.
- Women and men have equal capacity to apply the principles and tools of farm management.
- In practice, gender may play a very important role, especially regarding access to resources.
- Women often have less access than men to the inputs required for farming.
- Farm management advice must be carefully targeted in order to address gender specific issues.

Exercise introduction

Now that we have reviewed the concept of decision-making, let us spend some time looking at the kind of decisions that need to be made on a farm.

In Exercise 3.1A (Decisions on the farm) we shall look at who makes the decisions and who implements them.

Exercise 3.1A
Decisions on the farm

Purpose: To identify the various decisions to be made on a small family farm. (Participants should have read Handout 3.1A prior to this exercise.)

Method: Group discussion.

Materials: Handout 3.1B (Worksheet — Decision-making grid).

Allow 60 minutes for this exercise

Procedure

1. Get the participants to join their farm teams.

2. Give each participant a copy of the worksheet in Handout 3.1B.

3. Ask each group to select one of their enterprises and identify:

   - the decisions that need to be made;
   - who makes them;
   - who implements them.

Note

In doing this exercise, the participants should use their knowledge of farming in their areas. They should try to build on their real life experiences.

4. Each group should be allocated one of the decision-making themes: resource allocation, inputs, production, marketing and management. Depending on the number of groups, a group can look at more than one theme.

5. An example grid is given on the following page. Facilitators may use this as a reference to help if teams get stuck when completing this assignment.

Exercise 3.1A (continued)

Decisions	Who decides	Who implements
Resource allocation		
Communal grazing land for cattle	Husband	Husband and sons
Cropping land around the homestead	Wife	Wife
Allocated cropping land	Husband	Wife
Family labour	Husband	Wife
Input (source and amount)		
Seed	Husband	Husband
Fertilizer	Husband	Husband
Finance	Husband	Husband
Production		
Land preparation	Husband	Husband and sons
Sowing	Husband	Husband and sons
Transplanting	Husband	Husband and sons
Weeding	Wife	Wife and daughters
Application of pesticides	Husband	Husband and sons
Harvesting	Husband and wife	Whole family
Marketing		
Storage (amount)	Wife	Wife
Sell (amount and when)	Husband and wife	Wife
Process (amount and when)	Wife	Wife and children
Transport to market	Husband	Wife and children
Management		
Record keeping	Husband and wife	Wife and children

6. Begin with one of the headings (e.g. Resource allocation decisions) and have each group report the results of their discussions.

7. Start with one heading (e.g. Resource allocation decisions), and as the group report the results of their discussions other groups could add their experiences. Continue until all the headings are presented and discussed.

Exercise 3.1A (continued)

8. After each group has reported their answers, encourage discussion. Consider asking the following types of questions:

   - Does this reflect reality?
   - Are things changing?
   - How does this affect extension work?

Note

Instead of having each group report in full, you may find it more useful to start with one heading and one group and then ask if the other groups have similar or different answers. For the next heading you can ask a different group to report.

9. When the discussion seems complete, move to another heading. Repeat steps 4 and 5 until all the headings are completed.

10. As a summary point, reinforce the idea that the farm is now more than just a production unit, but also includes the household.

Exercise 3.1A (continued)

Learning points about content

- Decision-making follows a process of diagnosis, planning, implementing and monitoring and evaluation. Monitoring and evaluation lead to a new diagnosis, which leads to a new plan. This is the cycle of decision-making. It is a powerful tool for creating sustainable farm business.
- Farm management involves a wide range of decisions including those related to production, the market and the household economy. These decisions impact on each other.
- Because farm management is about making decisions, it is important that extension workers understand who makes decisions about the various activities on the farm
- Because the farm is often very closely tied to the household, it is useful for extension workers to understand the broader decision-making and decision-implementing roles of women, men and children. This will help them trace the impact of farm management decisions on the household and the impact of household decisions on the farm.
- Although we have looked at only one enterprise, in the field it may be necessary to look at all enterprises of a farm. This may be done enterprise by enterprise, or it may be done for the farm as a whole.
- It may be useful to conduct such an exercise for household decisions (especially regarding decisions about food balances or decisions that might limit labour or finances needed for the farm).
- When various exercises are conducted with the same group of farmers (women or men), comparisons can be made that will help them understand the impact of their current decision-making arrangements. This may lead them to reconsider these arrangements to make their farms more profitable and their households more sustainable.
- In the field, these exercises can be conducted on the ground (without paper, using chalk, markers or symbols).

Space for notes and questions for the facilitator

The farmer and decision-making

Decision-making is central to farm management. Each decision has an impact on the farm and on the farm household. Even deciding to do nothing, is a decision and has an impact. The more farmers are aware of the decision-making processes that affect farms and households, the more profitable their farm will be, the more likely it is to be sustainable.

In many parts of Africa, farm decisions are closely tied to decisions made in the household. Farm decisions affect food availability, play an important role in social ceremonies, and are linked to issues of social status and wealth. Two of the main features for understanding rural economic decision-making are the way farm boundaries are determined and the ultimate social objective for which farm goods are produced. In this programme we refer to the farm boundaries as "decision-making boundaries".

The production decision-making boundaries

- We first think of a farm in terms of its physical enterprise boundaries. We think of the land, the crops, the livestock, the fences. Many extension workers are trained only in decision-making about production. The questions of what to grow, how to grow and how much to grow are production decisions. While this is a very important part of farm management, the production decision-making boundaries are just the beginning of the decision-making boundaries of the farm.
- As we study the farmer and decision-making further, we will learn that even production decisions depend on a number of factors that fall outside the physical/production area of the farm. One of those factors is the farm family/household.

The farmer and decision-making (continued)

Farm and family household decision-making boundaries

- In many parts of Africa, the farm and the household are virtually one entity. Decisions about the farm directly impact on the household. And decisions about the family directly impact on the farm. More and more, families require cash for things, such as school fees, medicines, transports. These all affect the decisions that must be made about what to do on the farm. Therefore, it is useful for anyone working with a farming family to understand the dynamics of the farm household and the decisions that go with them.
- Farm boundaries are determined by family structure. There may be a family farm under the head of household, but the farm may have various subunits over which a family member will have some level of control. This will have implications for decision-making, particularly with reference to shared labour and equipment.
- While traditionally men are heads of households, there are now many variations. And even within a clearly established arrangement, different members of the family make different decisions for the family at different times of the year.
- For each specific farm, extension workers will need to identify not only the physical boundaries of a farm but also who makes what decisions and when. This is necessary in order to determine the decision-making boundaries of each farm in terms of access to resources, resource sharing at family level and the main objectives of production.

The farmer and decision-making (continued)

Social and economic goals

- Farmers and their families need a secure source of food, and they seek a secure source of income. Many develop a strategy of producing for a market while at the same time ensuring food self-sufficiency either from the farm harvest or by use of cash to purchase food from the market.
- In many countries, even though profit maximization is of great importance, farmers are still bound by social obligations within their own communities. In some areas farmers are less bound by these obligations and are freer to focus on farming for profits.
- Food security is a social goal. Generating income is an economic goal. These family goals often conflict. Uncertainty (or risk) is part of the conflict. Often demands of food security are detrimental to farm profitability. And it can happen that the sole focus on producing for the market can negatively affect food balances and other food security factors.
- Market-oriented farm management skills and tools can be used to make more informed decisions about food production and income generation.

Short-term versus long-term view

- Good farm management requires a long-term view. It requires thinking carefully about what might happen in the future as a result of a decision made today. For example, before a farmer decides to plough and plant more land, the extra labour that will be needed for weeding must be considered.
- If decisions are not thought through carefully, then the farm may perform weakly.

The farmer and decision-making (continued)

- Learning and applying principles of farm management enables farmers to look at their farms more impartially and to consider alternative actions in advance. This will help improve performance and profit into the future.

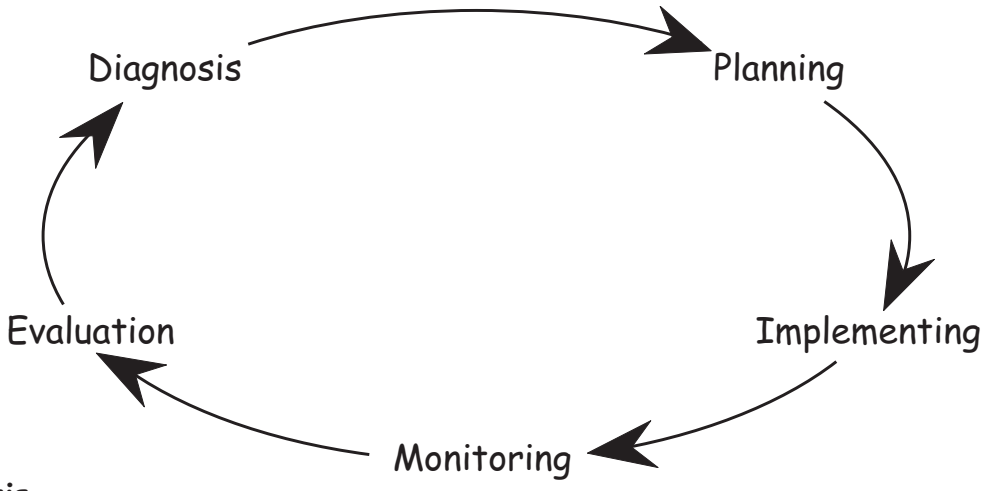
The farmer as a manager

- Any farmer has two main jobs. One job is to take care of plants and livestock in order to get useful products. The other job is to manage the farm; that is, making decisions about how to use the farm's resources.
- Decisions require making choices between alternatives. This often includes choosing between different crops that might be planted in each field, choosing what livestock are to be kept on the farm and deciding how to distribute available labour time among different tasks.
- Farm planning is thinking ahead about farm activities and making decisions some time before they will be carried out.
- As a farmer becomes more market oriented, the farmer will need to improve planning and decision-making skills.
- If we expand a little on the basic decisions taken as discussed earlier, we find that the kind of decisions farmers make as managers can be summarized as follows: (i) what to produce, (ii) whether to produce for food, for income or for both, (iii) how to produce it, (iv) how much to produce, (v) what resources will be used and when, (vi) what inputs to use and where to get them, (vii) how much of the products to sell and when, (viii) where and to whom to sell the products and at what prices.

The farmer and decision-making (continued)

Key aspects of decision-making

In order to make the fundamental decisions just listed, farmers need to develop understanding and skills in four broad decision areas: diagnosis, planning, implementing, and monitoring and evaluation. Learning how to make decisions in these four areas will put farmers in greater command of the resources and processes that influence their food security and their income generation. As the following diagram shows, these subject areas flow in a pattern that supports continuous learning processes on what works best for the farmer and the farm family.



Diagnosis

- Diagnosis means looking at the farm and household as it functioned over some period of time. For a first diagnosis, the farmer may want to understand how the farm has performed over several seasons. Just as a doctor with a patient, a diagnosis will give the farmer important clues about the 'health' of the farm business. How is it producing? What is the condition of the farm's resources? Are resources becoming more or less productive? How profitable is it? Are farm goals being achieved? What problems are there? What opportunities exist?

The farmer and decision-making (continued)

Planning

- Once a farmer has completed the diagnosis, planning can begin. It is here that the actual decisions about what, how and how much to produce are made. Some planning decisions will be based on knowledge (such as how much land and labour are available). Other planning decisions will be based on less certain things (such as rainfall and product prices).
- In addition to including decisions about resources and inputs, the plan will include an indication of the expected results in terms of yields and income.

Implementing

- Implementing means putting the plan into action. In general, implementing does not require major decisions. The plan should have covered major decisions. However, things may not always work out according to plan. Perhaps there is less rainfall than expected or perhaps the price of a crop changes. Thus, during implementation, plans may need to be adjusted to accommodate such changes.

Monitoring and evaluation

- The plan is a guide for monitoring (i.e. keeping track of what is happening on the farm). For example, the plan may say that the farmer should plant .5 ha of cabbage. During monitoring the farmer can check to see how many hectares were actually planted. Perhaps the plan expected 100 mm of rain by a certain time; the farmer can record the actual rainfall. Monitoring provides the farmer with the information needed to evaluate the success of the plan.

The farmer and decision-making (continued)

- Evaluation means judging how well the farm performed when compared to the plan. Did things go as planned? Were expected yields achieved? Were expected incomes reached?
- Monitoring and evaluation provide the information the farmer needs to diagnose the farm for the next season. It is the basis for making the next plan.

When farmers follow these steps in decision-making, they will have a very powerful process in their hands. Just as a doctor, they will be able to know the 'health' of their farm business. If the farm is healthy, the farmer will know why and will know what to do again. If there are problems, the farmer will also know why and what to do about it. This will increase the sustainability of the farm business. It will improve the family's food security and it will make the family's income more predictable and reliable.

Men and women in farm management decision-making

- The role or place of women in making farm management decisions varies widely across Africa.
- Women and men clearly have equal personal capacity to apply the principles and tools of market-oriented farm management. Market-oriented farm management should not, in principle, be affected by gender. However, in practice gender may play a very important role, especially regarding access to resources. Women often have less access than men to the inputs required for farming.
- Farm management advice needs to be carefully targeted in order to address gender specific issues.

Worksheet — Decision-making grid

Resource allocation decisions	Who decides	Who implements

Input decisions	Who decides	Who implements

Production decisions	Who decides	Who implements

Worksheet — Decision-making grid (continued)

Marketing decisions	Who decides	Who implements

Management decisions	Who decides	Who implements

Preparing for Session 3.2
Resources and farm management

Learning outcomes
Understanding (i) the importance of maintaining the value and productive power of resources, (ii) the role of farm management in sustainable use of resources

Training aids
Exercise 3.2A (Short-term gains and long-term profitability)
Handout 3.2A (Resources and farm management)
Handout 3.2B, C, D and E (Farm management decisions — human, physical and financial, and social capital)
Handout 3.2F (Worksheet — Farm management resources sustainability)

Notes

Resources and farm management

In this session, participants will be given an opportunity to take a detailed look at the kinds of decisions required that affect the use and allocation of the five types of capitals used by farmers on their farms.

Opening statement

We will begin with a brief review of the subject matter materials provided in the handouts of the session, which deal basically with decision-making.

The outline on the following page is provided to help the facilitator conduct the review.

Outline of Handouts 3.2A, B, C, D and E (Resources and farm management; Farm management decisions — the five capitals)

Decision-making is central to farm management. Each decision has an impact on the farm and the farm household. Some key decisions include:

- what to produce;
- whether to produce for food, for income, or for both;
- how to produce it;
- how much to produce;
- what resources will be used and when;
- what inputs to use and where to get them;
- how much to sell the products for and when;
- where and to whom to sell the products
- what prices are attained.

Each decision a farmer makes is essentially about how to utilize farm and household resources. Decisions can relate to the five categories of capital:

- natural capital: land, vegetation, water, and fish and wildlife;
- human capital: human skills and capacity to work;
- physical and financial capital: producer goods, basic infrastructure and funds required to farm;
- social capital: shared capital, such as community institutions, social work contracts, communal grazing land, rivers, community forests.

Exercise introduction

Let us continue the review with Exercise 3.2A (Short-term gains and long-term profitability). The purpose of this exercise is to teach participants how to achieve longer term sustainability of the farm business.

Exercise 3.2A
Short-term gains and long-term profitability

Purpose: To understand the impact of short-term gains on long-term profitability and to create a checklist of sustainability. (Participants should have read Handouts 3.2A, B, C, D and E prior to this exercise.)

Method: Group discussion, brainstorming, graphic representation.

Materials: (i) Handout 3.2 F (Worksheet — Farm management resources sustainability), (ii) heavy paper or poster board, (iii) thick marking pens.

Allow 90 minutes for this exercise

Procedure

1. Ask the participants to get into their farm teams.

2. Give each team two pieces of flip chart paper/poster board.

3. Ask each team to draw two picture/posters of their farm resources 10 years into the future.

    - One should show what the resources (all five capitals) would look like if they were well maintained.
    - The other picture should show what the resources (all five capitals) would look like if they were not well maintained.

4. Ask each team to present their posters. Encourage discussion around the farm management decisions a farmer needs to take to ensure long-term value and productivity of farm resources.

Exercise 3.2A (continued)

5. Now ask each farm team to use their two pictures as a discussion point to develop 3—4 farm management sustainability questions and recommendations per capital group (i.e. natural, human, physical, financial, social). Participants can record their questions and recommendations on Handout 3.2F.

6. A farm management sustainability question should generally ask: What is the long-term affect on _____
   if I _____
   and _____.

Note

A recommendation indicates what you, as an extension officer, would recommend to the farmer. Keep in mind the farmer needs to make profits now and in the future.

Allow 30 minutes for this

7. Choose one capital group after another and ask each team to present its questions and recommendations until all the teams have reported on all the capitals. Encourage discussion about the questions and recommendations to help deepen their understanding of the relationship among farm management decisions, resources and long-term profitability.

Exercise 3.2A (continued)

Learning points

- Decision-making is central to farm management.
- Each decision has an impact on the farm and on the farm household.
- The more farmers are aware of the range of decisions to be made and the factors affecting those decisions, the better their decisions will be, the more sustainable their farms will be and the more likely they will be profitable.
- Underpinning all these decisions are the resources available to the farmer.
- Each decision a farmer makes is essentially about how to utilize the farm/household resources.
- Resources are subject to stresses and shocks that reduce their value or productive power.
- The farmer has two areas of concern: (i) productivity of resources, (ii) profits.
- To achieve both objectives, farmers will need to consider very carefully their decisions about utilizing their resources.
- The aim of market-oriented farm management is to increase farm profitability.
- Farming for profits does not imply sacrificing resources.
- The real goal is long-term sustained profits from farming.
- Good farm management demands sustainable use of resources.
- Maintaining and improving the value and productive power of farm resources to sustain profits is one of the key decision areas of a good farm manager.
- Good farm management looks for ways to put these resources to work in such a way that the farm will be profitable in both the short and long term.

Space for notes and questions for the facilitator

Resources and farm management

As stated previously, decision-making is central to farm management. Each decision has an impact on the farm and on the farm household. Even deciding to do nothing is a decision that has an impact. The more a farmer is aware of the range of decisions to be made and the factors affecting those decisions, the better the decisions will be, the more sustainable the farm will be and the more likely it will be profitable.

We know that some of the key decisions to be made include:

- what to produce;
- whether to produce for food, for income or for both;
- how to produce it;
- how much to produce;
- what resources will be used and when;
- what inputs to use and where to get them;
- how much to sell the products and when;
- where and to whom to sell the products and at what prices.

Underpinning all these decisions are the resources available to the farmer. Each decision a farmer makes is essentially about how to utilize the farm and household resources. Resources or capital, as it is often called, can be categorized into five types:

- *natural capital:* land, vegetation, water, and fish and wildlife;
- *human capital:* human skills and capacity to work;
- *physical capital:* producer goods, basic infrastructure;
- *financial capital:* funds required to farm;
- *social capital:* shared capital, such as community institutions, social work contracts, communal grazing land, rivers, community forests.

Resources and farm management (continued)

Each of these capitals is vulnerable. Each is subject to stresses and shocks. There are many pressures on these resources that may cause them to decrease in value or reduce in their productive capacity. There are other pressures and events that may completely deplete or remove the resource.

Farmers have two areas of concern. One is the productivity of the resources. The second is that they need to make sure their resources are maintained or improved. They also need to make profits. To achieve both objectives, farmers will need to consider very carefully decisions about resource utilization.

We know the aim of market-oriented farm management is to increase farm profitability. However, farming for profits does not imply that one must sacrifice resources to maximize income. The real goal of market-oriented farm management is long-term sustained profits from farming. Therefore, good farm management demands sustainable use of resources. Maintaining and improving the value and productive power of farm resources sustains profits. Once this is understood, good farm management embraces sustainable agriculture and supports sustained profits from the farm.

Resources and farm management (continued)

Thus, one of the key decision areas of a good farm manager is maintaining the farm's resources. Proper care of land, infrastructure and equipment; keeping labour healthy and well-trained; wise investment of cash; prompt repayment of debt and being trustworthy in all their dealings — all of these will help to reduce the vulnerability of a farmer's natural, human, physical, financial and social capital and will help ensure that they are productive for many years to come.

Maintaining control over the long-term value and productive power of resources is a very important part of market-oriented farm management. Farming for high profits in the short-term without taking steps to sustain the soil will eventually lead to lower profits. Good farm management looks for ways to put these resources to work in such a way that the farm will be profitable in both the short and long term.

Space for notes and questions for the facilitator

Farm management decisions — natural capital

Farm management and natural capital

Farmers do not farm in isolation. They take from and influence natural capital. Natural capital is the first resource base on which a farm is established and run. Farmers need to be very aware of the inter-relationship of their farms with their natural resource base. Natural capital is run down and destroyed by one of two forces:

- acts of nature such as droughts, wind and floods;
- deliberate acts of humans such as over-grazing, harmful production practices.

Obviously it is to the latter that farmers must turn their attention.

Below are some actions that can be taken by farm managers to make sure their land remains productive and to help make sure that common property also remains productive.

- improved land reclamation through **preservation of vegetation strips and valuable trees, subdivision of fields**, introduction of **agroforestry** practices such as quick-set hedges;
- introduction of **soil conservation measures** on existing fields, using improved ways of land preparation, improving soil coverage by mixed cropping or other techniques, introduction of tree crops and quickset hedges;
- development of **better integrated on-farm livestock production activities** including animal traction, making **use of crop by-products for feed and litter, and use of the manure for fertilizing the crops**.

While each of these takes place at a cost, they have long-term benefits. They will contribute to the sustained profitability of the farm.

Space for notes and questions for the facilitator

Farm management decisions — human capital

Farm management and human capital

Decisions about human capital on the farm are among the most important decisions made by a farmer. Decisions about human capital represent choices in technologies. They represent productivity on the farm. They represent how the farm family earns its income. In many ways, these decisions represent the way the family sees itself and the way it sees its farm.

With the change in economies in Africa, the availability and the cost of labour are changing. And with it farmers now face serious questions. They need to decide if it is better for their families to sell their labour in town or to use it on the family farm. Understanding the concepts, principles and tools of farm management will help farmers assess the choices and to make better decisions.

However, extension workers will need to take special care in assisting farmers with examining this aspect of farm management. Human capital decisions touch on societal and cultural issues as well as on more purely management issues. Many of the factors to be taken into consideration are related to the status of women. Changes in the status and role of women vary from country to country and culture to culture. And these changes will find expression in different ways in each family.

Farm management decisions — human capital (continued)

Some technical or practical factors that might also be taken into account include: (i) issues of land rights and inheritance, (ii) who in the home is allowed to work outside, (iii) the effect of HIV/Aids and other health issues on head of household.

Options for alternative labour sources

Faced with the many problems affecting the productivity and availability of labour and their compounding affects on the household and farm, farmers need to think carefully about options for providing power on the farm — and to plan for them in advance. Some of the options might include:

Labour saving technologies. Most farmers could improve the productivity of their labour by adopting better tools that have been tried out successfully elsewhere. This may include replacing hand labour with animal power by using draught animals, tractors or motorized implements. Each of these is an additional cost to the farm. Therefore a farmer should decide to use labour-saving technologies only when sufficient returns can be generated to cover the extra costs.

Changing farm enterprises and combinations. Market-oriented farmers will want to give careful consideration to adding or changing crops. This can be a very effective way to increase farm profitability and cope with labour productivity problems. Some possible changes include:

- *Intercropping.* Two or more compatible crops are grown together in the same field or row.
- *Introducing a new crop.* Farmers can investigate increasing profitability and addressing productivity by growing high-value crops on a reduced area.

Farm management decisions — human capital (continued)

There are many opportunities. Farmers will have to investigate the market first and then find out about the input and production requirements before changing crops.

Increasing productivity

There are a number of ways to increase labour productivity, including introducing new technology, producing more per hectare, choosing the right enterprises to produce, improving farm layout, using improved tools and working methods, practicing good labour relations, and paying wages in relation to the amount and quality of work done. Good relations means treating labourers justly, paying fair wages and providing good supervision for hired labour.

Note

A word of caution. Increased productivity based on intensification of cropping techniques together with mechanization often results in increases in labour constraints. For example, mechanized land preparation may lead to more land being tilled. This will result in an increased need for labour for planting and weeding. It may lead to increased total yields that will require more labour.

Handout 4.7A (Labour planning) provides a detailed examination of labour decisions and provides tools for making these decisions.

Space for notes and questions for the facilitator

Farm management decisions — physical and financial capital

Farm management and physical and financial capital

As has been stated frequently, farm management is about making decisions. Many of the decisions to be made involve physical and financial capital. These decisions have long-term implications for the farm. Remember, decisions made today limit the decisions you can make tomorrow. Farmers need to make both short-term and long-term decisions about physical and financial capital. Short-term decisions affect long-term decisions. And long-term decisions affect short-term decisions. Farmers need to think things through carefully.

Long-term capital decisions in different enterprises

Capital invested in livestock, perennial crops, orchard trees or buildings cannot be readily changed into another form of capital that might earn a higher rate of return. Once capital has been invested in durable assets it is committed, and flexibility is lost. Capital is always limited. It should be used where it will add most to profits. Different enterprises involve issues when making long-term capital decisions.

Tree crops. The capital cost involved in tree production is equal to the cost of growing that tree up to the stage of full production. When the tree dies, it should be replaced by a new tree. Taking good care of trees and controlling diseases and pests is very important to protect the money that has been spent growing the tree. If the tree dies before it has produced anything, all the money is lost.

Farm management decisions —
physical and financial capital (continued)

Livestock. The capital cost involved in livestock production is equal to the cost of keeping that animal up to the stage it reaches full production. Whether the animal is being kept for meat, milk, eggs or some other product, the animal should be kept fit and healthy so that it will produce efficiently. Only in this way can the farmers get high profits through their livestock. Again, farmers want to protect investments. If the animal dies before producing, the money is lost.

In cases where farmers cannot afford to raise the livestock, they can also hire. For example, the farmer may be able to look after an animal for someone else. In return they will keep half of the offspring and return the other half to the owners as a kind of hire charge. This is a form of sharecropping, but with livestock.

Buildings. The cost of buildings can be kept very low if the farmers and farm families do most of the building. Careful repair and maintenance of buildings will make the buildings last longer and this will reduce depreciation cost (or decrease in value). Where possible and practical, a farmer can hire a building. Buildings that are hired should be put to maximum productive use. An empty building is a waste of money. However, there is no point in filling a building with produce where it will be losing value. If the produce can be sold at a good price, it should be sold.

Farm management decisions —
physical and financial capital (continued)

Machinery and equipment. Investment in machinery and equipment can be very profitable if the farmer can manage the finance and if it increases profitability. Mechanization can be costly both in terms of buying it and in terms of repairs and maintenance.

Mechanization through animal traction. In many countries animal traction with draught animals is an immediate way of mechanizing. The investment includes the animals and the equipment they will pull, such as a plough, a planter, a cart or other farm implements.

Motorized machinery and equipment/intermediate power-driven equipment. This includes two-wheel tractors and light four-wheel tractors. Farmers can also invest in small-scale post-harvest equipment, such as threshers, mills or oil-presses, to add value to their products before taking them to market.

Heavier power-driven equipment. This include tractors, combine harvesters or trailers. Hiring is an option that can be used by farmers, and this saves on the cost of buying the machine. For example, hiring a tractor to plough the land or a threshing machine for maize. Hiring is often cheaper than buying.

Cooperative use of machinery or sharing is another option. Shared use of equipment by two or more farmers has often been more successful than cooperatives. In Kenya, for example, sharing often means one farmer brings a cart, another one the oxen, and another the yoke. In other cases, one farmer brings the tractor and another farmer brings the threshing machine.

Farm management decisions —
physical and financial capital (continued)

Short-term decisions about physical and financial capital

Farms require many decisions that affect the farm for a single season. Which seed to buy? When to plant? Which market to use? Farms also require short-term decisions that impact on the long-term sustainability of the farm. Often these decisions involve choices about what to do with limited cash: Should the farmer repair a weakening fence this year, or use the cash to buy all the seed needed? Not buying all the required seed will limit income this year. Not repairing the fence may allow cattle into the fields and destroy the crop.

Farmers will need to think carefully about the many short-term decisions to be made. They also need to anticipate what the long-term effect of short-term decisions are likely to be.

Space for notes and questions for the facilitator

Farm management decisions — social capital

How does social capital affect farm management decisions?

Some farm management decisions involving social capital affect the farm directly. Other farm management decisions involving social capital affect common property: common forests, grazing land and water to which the farm family has access. Examples of the kind of decisions that farmers take that may involve social capital are given below.

Decisions affecting the farm directly

1. What are the sources of cropland available to me? How do I access that land?

2. What sources of labour are available to me? How do I access it?

3. What sources of finance are available to me? Can I borrow from family members? Should I be part of a group to negotiate better terms?

4. Should I buy my own tractor or alternatively hire from a tractor pool? Is it possible to borrow from a neighbour?

5. Should I market my own farm produce? Should I be part of an organized marketing group?

6. Should I buy my own inputs and materials? Should I work with others to buy in bulk?

Farm management decisions — social capital (continued)

Decisions affecting common property (off-farm)

7. How can I access water for irrigation? Is there adequate water for irrigation?

8. Should we establish a community forest plantation?

9. How should we as a community treat the watershed? How should we organize ourselves?

10. What are the sources of grazing land available to me? How do I access this land and vegetation? What are my responsibilities?

These questions and similar ones are likely to have an impact on the inputs and outputs related to farm production and sales. Some of the decisions regarding social capital relate to the individual farm holding. Others concern the utilization of common resources. All of these decisions have an impact on the farmer's resource base and income. Farm household decisions are inseparable from the social relations of farming.

Social capital can lower the costs of performing farm operations. In this way it can improve the efficiency of farming. This often results in financial savings and increased income. Farmers coming together as a group facilitate cooperation and foster confidence. Social capital is useful in promoting collective action such as water saving and communal grazing. It helps to ensure that farmers get greater benefits when negotiating with powerful bodies. For example better prices might be negotiated for bulk sales of produce or purchases of inputs. Social capital can also promote better use of natural and other resources, if managed correctly.

Farm management decisions — social capital (continued)

Joint or group interventions contribute to the formation of social capital by developing expertise within the group, such as working together for a common good, learning and implementing formal rules and procedures, democratic election of leaders and participatory decision-making in allocation of credit, and inputs for farm enterprise development.

Social capital arrangements provide farmers and other members of the rural community with full control over the use of resources. There are many benefits from such an association at grassroots level: higher productivity, reduced costs and increased efficiency, building of democratic group organization and enhanced self-reliance among the poor. Thus, the strength of social capital arrangements lies in the processes that they offer and their economic and social benefits.

Sharing oxen*

An inter-group committee in Zambia operates a successful oxen hire service for its member groups. The oxen that are used for ploughing rice and maize fields are rotated among the groups, each of which contributes to a fund for veterinary supplies. Before the ploughing season, the committee draws up a work plan assigning the oxen to each group for two weeks. Group members wishing to use the animals pay a fee of just 30¢ a day. Thanks to this collective system farmers now pay less that $1 for services that using hired oxen would cost up to $10.

* Participation in Practice, Lessons from the FAO People's Participation Programme, FAO 1990.

Worksheet — Farm management resources sustainability

Questions	Sustainable recommendations
Natural capital	
Human capital	
Physical capital	

Worksheet — Farm management resources sustainability (continued)

Questions	Sustainable recommendations
Financial capital	
Social capital	

Preparing for Session 3.3
Inputs, markets
and farm management

Learning outcomes
Understanding (i) the range of decisions
farmers make about inputs, equipment and markets,
(ii) the role of the extension worker
in supporting the farmer in making decisions
about inputs, equipment and markets

Training aids
Exercise 3.3A (Mind map of marketing questions),
Exercise 3.3B (Supporting farmers with input
and marketing decisions)
Handout 3.3A (Inputs, markets and farm management)
Handout 3.3B (Worksheet — Mind map formats)

Notes

Inputs, markets and farm management

This session essentially provides checklists for extension workers to help farmers make good decisions about inputs, equipment and markets. It also helps extension workers identify their role in the farmer's decision-making process.

Opening statement

As a class we have looked at farm management decisions about resources on the production unit. It is clear that the decision-making boundary of the farm extends to include the off-farm input and market systems. Thus, farm management also requires that decisions be made regarding these. Let us now review Handout 3.3A (Inputs, markets and farm management).

Outline of Handout 3.3A (Inputs, markets and farm management)

Decisions about inputs

- Farmers require inputs, equipment and materials in order to produce outputs for the market.
- Farmers need to know which inputs to use and where to get them.
- Farmers need to determine whether the additional cost of using inputs will generate sufficient additional income to cover these costs.

Most inputs can be obtained from a number of sources:

- the farmer's own farm;
- another farm;
- private suppliers;
- local general dealers;
- farmers' cooperatives;
- product distributors.

In each case, the farmer must consider the price, quality and availability offered by the various sources of inputs.

Choice of inputs and equipment

When deciding on inputs and equipment a farmer should ask:

- Is it technically effective?
- Is it of dependable quality?
- Is its price reasonable?
- Is it available locally in particular when farmers need to use it?
- Is it offered for sale in appropriate sizes or amounts?

Each input (supplies or equipment) must have the following qualities:

- technical effectiveness;
- quality and dependability;
- good price—quality relationship;
- available when needed;
- appropriate quantities/packaging offered for sale.

Choice of input and equipment supplier

- Farmers need to know who are reliable and trustworthy suppliers.
- Farmers need to know what each supplier offers in terms of prices, quality and availability of inputs and equipment.

Operations and maintenance

- Maintaining capital is a key factor in profitability.
- Maintenance helps resources retain their productive power.
- Good farm management includes care for all of the physical capital on the farm.
- The value of the maintenance must be measured against the income it generates.

Checklist of questions related to marketing when planning for the market

- Decisions about markets are among the most important decisions a farmer will make.
- Decisions about markets can also be among the most difficult to make because markets generally represent the unknown.
- The farmer can make decisions based on the best available information regarding the following market issues:

    - the market
    - the product
    - the marketing chain

Exercise introduction

We have looked briefly at some of the decisions to be made about inputs on the farm and about the market. In order for us to engage in the many questions that farmers should ask themselves to help make better marketing decisions, we shall now do Exercise 3.3A (Mind map of marketing questions).

Exercise 3.3A
Mind map of marketing questions

Purpose: To visualize the range of questions to be asked to make good marketing decisions. (Participants should have read Handout 3.3A prior to this exercise.)

Method: Mind mapping.

Materials: (i) Flip chart paper or newsprint, (ii) thick marking pens (same three colours per team).

Allow about 60 minutes for this exercise

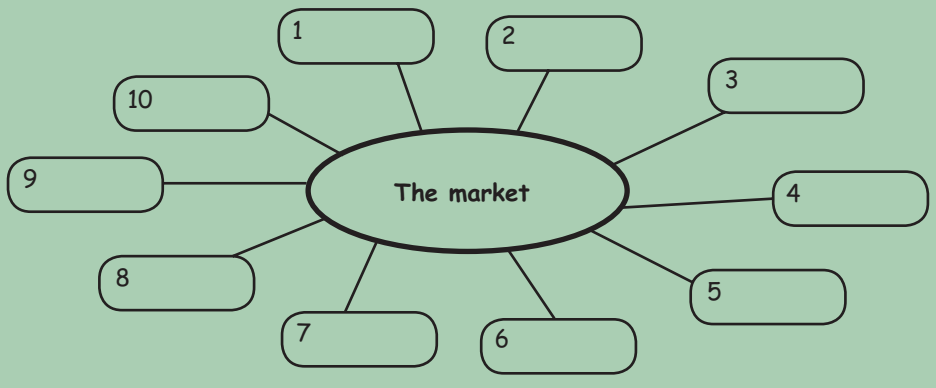
Procedure

1. Divide the participants into teams of 5—6 members each.

2. Give each team three sheets of flip chart paper/newsprint and a set of marking pens.

3. Referring to Handout 3.3A, each team is to read through the checklist of questions under the three main headings of: (i) the market, (ii) the product, (iii) the marketing chain. They should identify the 8—10 most relevant/ important questions under each heading that they feel a farmer in their area should ask to improve their decisions about marketing.

4. Once they have agreed on the key questions, they should put them into a mind map as shown below.



Exercise 3.3A (continued)

5. They should repeat the exercise for each of the main areas: The market, the product and the marketing chain. Each team should use the same colour pen for the mind map. (This will help with clarity during presentations.)

6. Once the teams have completed their three mind maps, ask each team to present their maps to the rest of the participants. Start with "The Market".

Note
As the students present and discuss, keep track of key learning points.

7. When all the teams have presented their "Market" mind map, encourage the teams to discuss their reasons for making the choices they made. There is no need to come to a consensus. It is important that the teams learn from each other about how and why they chose the questions they chose.

8. Next have the teams present their mind maps on "The Product". Again, when each team has presented their mind map, encourage discussion around how and why each team chose the questions they chose.

9. Next have the teams present their mind maps on "The Marketing Chain". Again, when each team has presented their mind map, encourage discussion around how and why each team chose the questions they chose.

Exercise 3.3A (continued)

10. When the discussions are complete review key learning points. Cover the points you have noted from the discussion. Additional points are set out below:

Additional learning points

- To make good decisions about marketing, the farmers need to learn as much as possible about the marketing environment for their products.
- They need to understand the market itself.
- They need to understand their products in that market.
- They need to understand how their products will be handled from farm to market.
- They should decide ahead of time on the key questions to investigate so that they do not become overwhelmed with too much information that cannot be handled.

Exercise introduction

While farmers are responsible for their farms, extension workers are responsible for assisting farmers in making profitable farm management decisions. Exercise 3.3B (Supporting farmers with input and marketing decisions) will help us to better perform our roles as extension workers.

Exercise 3.3B
Supporting farmers with input and marketing decisions

Purpose: To help participants clarify their role in supporting farmers with input and marketing decisions. (Have participants refer to Handout 3.3A.)

Method: Brainstorming, mind mapping.

Materials: (i) Writing paper, (ii) flip chart paper or newsprint, (iii) thick marking pens, (iv) prestik.

Allow 45 minutes for this exercise

Procedure

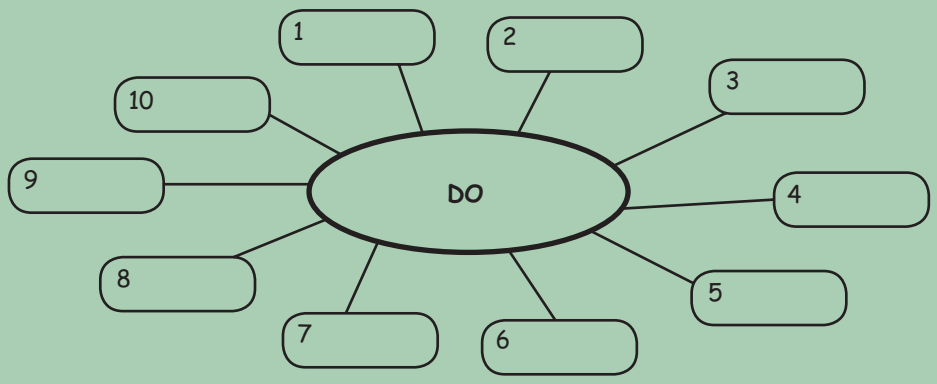
1. Ask the participants to get into the teams they were in for the market mind maps. Give each team two sheets of writing paper, two sheets of newsprint or flip chart paper and two marking pens of different colours.

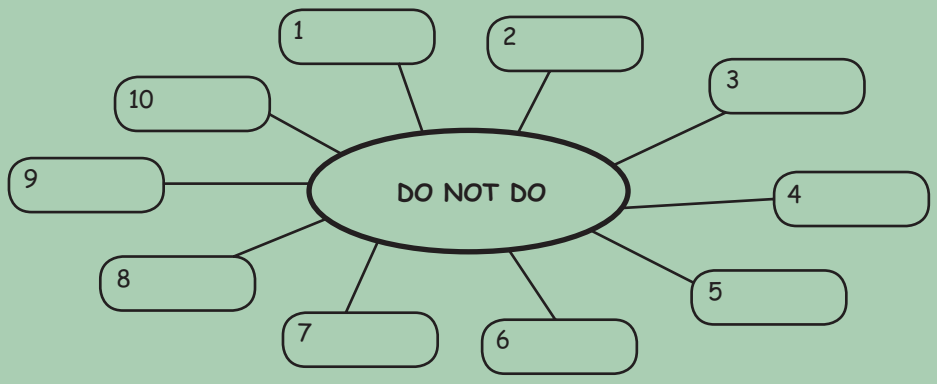
2. At the top of one sheet of the writing paper the team should write: "DO". At the top of the second sheet of writing paper they should write: "DO NOT DO".

3. Each team should now discuss the role the extension worker should play in supporting the farmer in input, equipment and marketing decisions. They should agree on 5—10 things extension workers SHOULD do and 5—10 things extension workers SHOULD NOT do.

4. When they have agreed on the two lists, they should capture them into mind maps as shown in the examples on the next page. Make sure each team uses the same colour for "DO" and "DO NOT DO". (See Handout 3.3B for a worksheet of mind map formats.)

Exercise 3.3B (continued)





5. When the teams have completed their work, ask each team to present their mind maps. Each team presents both mind maps. In the presentation the teams should explain their choices. Questions from the other participants should be limited to questions for clarification (more open discussion will be held after all the mind maps have been presented).

On the wall, stick the "DO" maps together and the "DO NOT DO" maps together.

6. When all the mind maps are presented, encourage discussion about the choices made by each team. The aim is to create a good understanding of what supports the farmer in making decisions (as opposed to the extension worker making decisions for the farmer). Additional points are set out on the opposite page.

Exercise 3.3B (continued)

Additional points to be covered

Extension workers have an important role to assist farmers in making management decisions about inputs, equipment and markets. Extension workers can:

- help farmers to ask the right questions about sources of inputs and equipment and about the inputs and equipment needed;
- provide farmers with information about inputs and equipment including:
    - research information on the technical effectiveness of the inputs and equipment;
    - experiences of other farmers with the inputs and equipment;
    - availability of inputs and equipment in the area.
- help farmers with reliable information about markets including:
    - prices;
    - quality requirements;
    - handling;
    - packaging and transport;
    - niche marketing opportunities.

Extension support for input and marketing decisions should always include information and guidance on the impact of the inputs and markets on farm profitability.

Inputs, markets and farm management

We have looked at farm management decisions about resources on the production unit. We recall that the decision-making boundary of the farm extends to include the input and output systems. Thus, farm management also requires that decisions be made regarding inputs and markets.

Decisions about inputs

As noted earlier, farmers require inputs, equipment and materials in order to produce outputs for the market. While most of the inputs and materials may come from the farm itself, such as livestock feed, compost, farm yard manure, some of the inputs required by the farmer have to be manufactured and specially prepared.

Farmers need to know which inputs to use and where to get them. They need to determine whether the additional cost of using inputs will generate sufficient additional income to cover these costs.

In our earlier discussion about inputs, we identified that most inputs can be obtained from these sources:

- the farmer's own farm;
- another farm;
- private suppliers;
- local general dealers;
- farmers' cooperatives;
- product distributors.

In each case, the farmer must consider the price, quality and availability offered by the various sources of inputs.

Inputs, markets and farm management (continued)

Choice of inputs and equipment

Questions to ask when deciding on inputs and equipment:

___ Is it technically effective?
___ Is it of dependable quality?
___ Is its price reasonable?
___ Is it available locally, in particular when farmers need to use it?
___ Is it offered for sale in appropriate sizes or amounts?

Qualities that input (supplies or equipment) must have

Technical effectiveness. Seed, fertilizer or other items must be technically effective. Does the seed produce as promised? Does the fertilizer perform as intended? Does the livestock medicine really work? Does the implement do the job it is supposed to do? Is the input or equipment appropriate to the farmer's farm system? The question of technical effectiveness is the first one on which a farmer must be satisfied before buying a new input.

Quality and dependability. Sustained quality is another important characteristic for inputs and equipment. Is equipment built to last? Does it come with a guarantee? Is the seed within its expiry date? Do the pesticides contain any illegal chemicals? Have the feeds been properly mixed? Is the supplier reliable and honest? Farmers, especially smallholder farmers, cannot afford to lose money on poor quality inputs or equipment.

Price relationships. Farmers should not buy fertilizer or other inputs just because its price is low. The inputs must also be effective and of a certain quality. But in all events farmers must take into account the price, especially the relationship between prices and inputs and the prices they can get for their products. Farmers need to be aware that the supplier needs to make a profit as well. The supplier must cover the cost of transporting them from the manufacturing plant, seed farm or seaport to the local market. This cost plus others and a markup for profit is included in the price of the input or equipment for sale.

Inputs, markets and farm management (continued)

Availability when needed. The need for each input is highly seasonal. Seeds must be available shortly before planting and can seldom be sold at any other time of the year. Fertilizers must be applied at specific times, and few farmers have facilities for storing them satisfactorily. The same is true of pesticides, although small amounts of them can be held for future use. This means suppliers of inputs and equipment for sale must know when each separate input will be needed by farmers and have adequate supplies of each one on hand ahead of time so that farmers may get them quickly when they are needed. A supplier who cannot or does not do this is not a reliable supplier.

Quantity offered for sale. The size of the containers in which many supplies are offered for sale is also important. Too frequently containers hold more than a small farmer needs at any one time, and farmers may not have facilities for storing the extra amount until the following year when it may be needed again.

Choice of input and equipment supplier

In addition to knowing which input to buy, farmers also need to know who are reliable and trustworthy suppliers of inputs, equipment, machinery, spare parts and maintenance supplies. Farmers also need to know what each supplier offers in terms of prices, quality and availability of inputs and equipment.

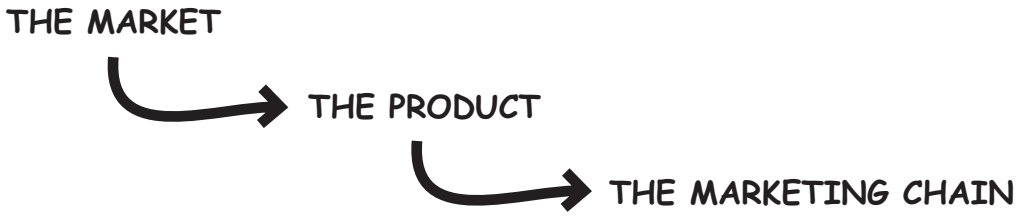
Operations and maintenance

One of the key factors in profitability is maintaining capital. The better equipment is maintained, the longer it will retain its productive power. Good farm management includes care for all of the physical capital on the farm. This includes proper storage of inputs, such as seed and fertilizer, proper storage and maintenance of tools and equipment, such as hoes, ploughs and tractors, and the regular maintenance of building, fences and farm roads. Maintenance costs money, thus as with all farm management decisions, the value of the maintenance must be measured against the income it generates.

Inputs, markets and farm management (continued)

Decisions about the market

Decisions about markets are among the most important decisions a farmer will make. They can also be among the most difficult to make because markets generally represent the unknown. The farmer cannot be certain of the supply of products that will be on the market. The farmer cannot be certain about the demand for specific products. The farmer cannot be certain about the prices on the market. However, the farmer can make decisions that are informed by knowledge of how markets have performed in the past. The farmer can make decisions based on the best available information regarding the following market issues:



What can farmers learn about the market for the products they want to sell? The following questions will help build confidence about marketing decisions.

The market

Markets and buyers

___ How is the crop/livestock produce marketed at present?
___ What are the main markets and where is produce sold?
___ What has been the demand for the products?
___ Who buys the produce and when? In what quantities?
___ What is the best day for arrival in the market?
___ Who are the most important intermediaries or buyers?
___ Which buyers have the best reputation?

Inputs, markets and farm management (continued)

Prices and pricing

___ What prices are paid?
___ Is there a wide variation between the prices received by farmers for similar produce in the same area? If so, why?
___ Is there competition between buyers?
___ Do buyers provide credit to farmers and on what conditions?
___ Do buyers expect credit from farmers in the form of deferred payment?
___ What are current price levels, price policies, conditions of sale and payment terms found in the market?
___ Is the farmer a price taker or a price maker?
___ What market prices are obtained (average, maximum, minimum, effect of different quality standards and seasonal conditions on price)?
___ How can premium prices be attained?
___ If the farmer is a price maker, what price strategy should be followed? And what is the percentage markup? Does the set price leave a margin for profit?
___ What are the various cost factors to be considered in determining the pricing policy?
___ How does the location of the market affect prices?
___ How does time of day affect prices?
___ How much does the price normally fluctuate during the year?
___ What credit does the buyer require and how does this affect price?

Promotion

___ Is the market aware of the product?
___ Does the market know the volume available and how to purchase the product?
___ Does the product need promotion?
___ How can producers give all possible advance notice of changes in their ability to provide the goods?

Inputs, markets and farm management (continued)

Marketing costs and margins

___ What are the overall costs of marketing and what are the marketing margins?

Sales

___ What factors are likely to affect sales? (weather, special festivals, day of arrival in market)?
___ What are the potentials and techniques for developing sales?

The product

Product type and form

___ What products are farmers interested in producing?
___ What market forms (fresh, processed)?

Competition

___ How competitive is the market?
___ Who are the main suppliers to that market?
___ Is the marketing plan being adjusted to reflect changes in the competition?

Market potential

___ What is the demand to be satisfied?
___ How large is the market? How much can the market absorb?
___ Which market is the farmer willing and able to satisfy?
___ What percentage of produce should farmers be interested in producing?

Quality standards, packaging

___ What are the grades and quality standards of the produce?
___ What type of packaging is required? What is the cost of packaging?

Inputs, markets and farm management (continued)

The marketing chain

Product preparation and packing

___ Who can/should prepare and pack the product according to the market requirements?
___ What is the cost of preparation and packing?

Handling

___ Who can/should handle the product?

Transport

___ What is the best way to transport goods to the market?
___ Who provides transportation?
___ What is the unit price of transport to the different markets?
___ How long do the journeys take? How frequently does the transport leave the area?
___ How efficient are the transport links?
___ Should the transport of produce be pooled or sent individually?

Delivery of products

___ How should the product be delivered?
___ What method of transportation does the consumer require?
___ What methods of transportation does the producer or trader have?
___ Can small farmers meet the markets' delivery requirements?
___ Is the crop/livestock produce stored? If so, where and by whom? How much of the product should be stored? What storage arrangements are required?
___ Are storage and stocking required to meet the buyers' delivery schedule?
___ Are associations and cooperatives a necessary link in reaching the market?
___ Are goods delivered directly to the buyer by producers?
___ What size units does the buyer require?

Inputs, markets and farm management (continued)

Supporting farmers with inputs and marketing decisions

Extension workers have an important role to assist farmers in making management decisions about inputs, equipment and markets. They can help farmers to ask the right questions about sources of inputs and equipment, and about the inputs and equipment themselves. They also can provide farmers with information about inputs and equipment including:

___ research information on the technical effectiveness of the inputs and equipment;
___ experiences of other farmers with the inputs and equipment;
___ availability of inputs and equipment in the area.

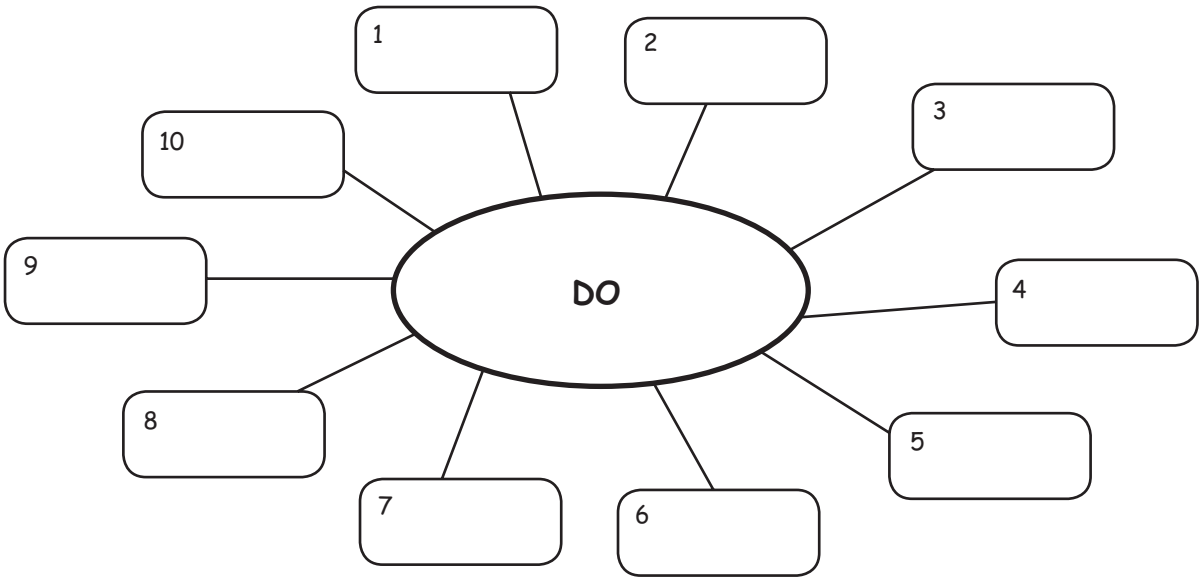
Extension workers can help farmers with reliable information about markets including:

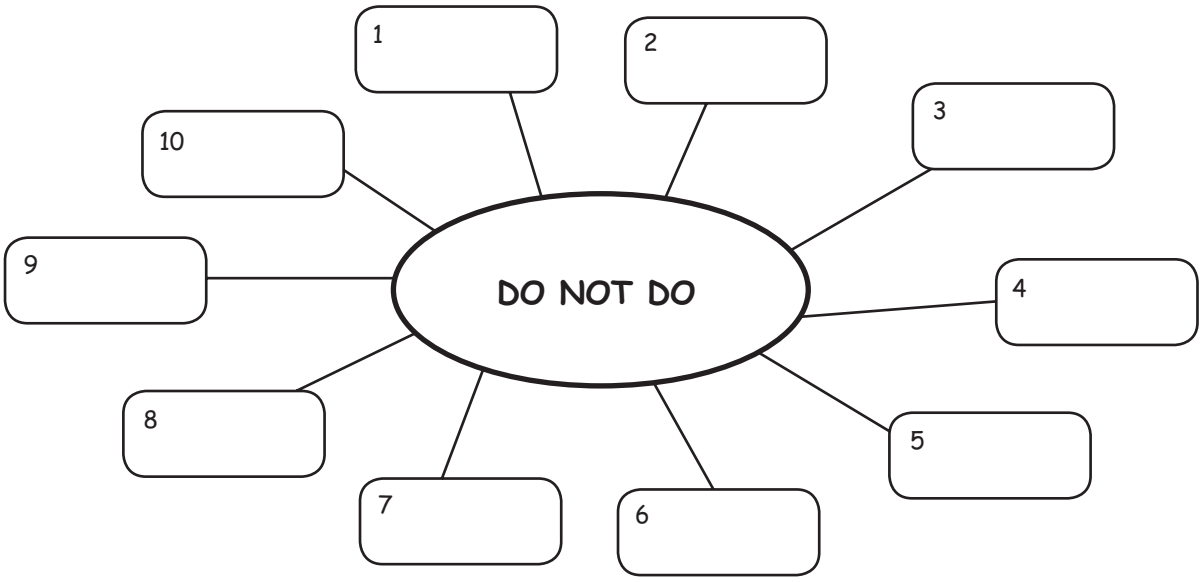
___ prices;
___ quality requirements;
___ handling;
___ packaging and transport;
___ niche marketing opportunities.

Remember

Extension support for input and marketing decisions should always include information and guidance on the impact of the inputs and markets on farm profitability.

Worksheet — Mind map formats





Preparing for Session 3.4
Risk, vulnerability and sustainability

Learning outcomes
Understanding (i) the concept and
different types of risk,
(ii) farm-family strategies to cope with risk,
(iii) the concepts of vulnerability
and sustainability

Training aids
Exercise 3.4A (Vulnerability analysis — sustainability analysis)
Handout 3.4A (Risk, vulnerability and sustainability)
Handout 3.4B (Sustainability analysis)
Handout 3.4C (Worksheet — Recording sustainability analysis)

Notes

Risk, vulnerability and sustainability

This session introduces the concept of risk and sustainability. The participants will learn about different types of risk and what makes farmers and their farms vulnerable. They will work with the idea of mapping sustainability to locate areas in the farming system that need strengthening.

Opening statement

The risks that farmers face are usually beyond their control. Therefore they must develop strategies to cope with them. To begin our discussions of this topic, let us review Handout 3.4A (Risk, vulnerability and sustainability).

The outline on the following pages is provided to help the facilitator conduct the review.

Outline of Handout 3.4A (Risk, vulnerability and sustainability)

What is risk?

- uncertainties that farmers face and that can negatively affect their farming activities;
- can occur as stresses (general negative pressure) or shocks (sudden negative change);
- not usually under the control of the farmers themselves, thus they develop strategies to cope with them.

Types of risk

Production and technical risks

- uncertainties about weather, soils, pests, diseases and wildlife, which cannot be predicted accurately;
- the introduction of a new technology.

Marketing or price risk

- uncertainty about prices, which vary from year to year or even daily;
- uncertainty about supply and demand of a product;
- uncertainty about costs of inputs.

Financial risk

- uncertainty about the interest rates lenders charge;
- uncertainty about money lenders' willingness to continue lending;
- uncertainty about the ability of the farm to generate the cash flows necessary for debt payments.

Institutional risk

- unpredictable changes in the provision of services, such as the supply of credit, purchased inputs and information from traditional and modern institutions.

Human or personal risk

- uncertainties about problems of human health and personal relationships that affect the farm business (e.g. HIV/Aids, malaria, labour migration).

Vulnerability and the effect of risk

- Vulnerability is the ability to recover from a stress or a shock.
- Stresses erode the value or productivity of capital.
- Shocks cause the sudden loss of a resource.
- Part of coping with stress is reducing vulnerability to stresses and shocks.
- The less vulnerable the resources, the more sustainable the farm.
- As a result of vulnerability to risk, farmers often trade-off between maximizing profits and minimizing risks.

Risk-reducing strategies

- choosing low risk enterprises;
- diversification: growing many things;
- growing crops on different land parcels or plots;
- growing crops at different times;
- selecting and changing production practices;
- maintaining flexibility;
- maintaining reserves;
- spreading crop and livestock sales;
- partial processing;
- traditional institutions and social arrangements;
- maintaining resources.

Sustainability

The balance between vulnerability and risk:

- availability
- accessibility
- affordability
- appropriateness
- reliability (trustworthiness)

Exercise introduction

Now that we have reviewed risk from a theoretical point of view, let's see how it applies to the farm situation. In Exercise 3.4A (Vulnerability analysis — sustainability analysis), participants will draw upon their knowledge to determine the degree of vulnerability of their farm's resources. This will give an indication of farm sustainability.

Exercise 3.4A
Vulnerability analysis — sustainability analysis

Purpose: To analyse the strength and vulnerability of the farm's resources and to map the vulnerability/sustainability of the farm. (Participants should have read Handout 3.4A prior to this exercise.)

Method: Group discussion, representative mapping.

Materials: (i) Handouts 3.4B (Sustainability analysis) and C (Worksheet — Recording sustainability analysis), (ii) pen and paper, (iii) heavy paper or poster board, (iv) thick marking pens, (v) scissors.

** Handout 2.2H from the prevoius module*

Allow 60 minutes for this exercise

Procedure

1. Ask the participants to get into their farm teams.

2. Using the maps and lists they created in Module 2, Sessions 1—4, each team should review the capital base of their farm. They should look at each resource in each capital grouping and discuss the sustainability of the resource. Handout 3.4B provides guidance for assessing sustainability. The results of the team's discussion can be recorded in the table provided in Handout 3.4C.

3. Ask each team to present and explain their 'maps'. Allow (encourage) questions and discussion to create a richer understanding of the concept of vulnerability/sustainability.

Exercise 3.4A (continued)

Learning points

- Farmers need to be aware of the risks they face.
- They may be aware of the production and marketing risks, but they are not always aware of the other forms of risk.
- It is useful for farmers to understand the relative vulnerability/sustainability of their farms by assessing the ability of their resources to recover from shocks and stresses.
- The more vulnerable the capital, the less sustainable the farm.
- The less vulnerable the capital, the more sustainable the farm.
- Farmers need to identify and weigh up the costs and benefits of various risk-reducing strategies.
- Farmers need to be able to assess their vulnerability/ sustainability in terms of:

  - availability
  - accessibility
  - affordability
  - appropriateness
  - reliability (trustworthiness)

Note

At the close of this session, return to the introduction and review the learning points as a reminder to the participants. Encourage the participants to ask and participate in answering questions about the content of this Module.

Space for notes and questions for the facilitator

Risk, vulnerability and sustainability

What is risk?

Small-scale farmers in Africa are particularly exposed to uncertainties of weather, prices and disease. Many farmers live on the edge of extreme insecurity, sometimes falling just below, and sometimes rising just above the threshold of survival. Farmers do not know whether rainfall will be good or bad over the season. They do not know if the crop will be infected by disease. These are risks. Risks are usually not under the control of the farmers themselves, thus they develop strategies to cope with them.

Types of risk

Risks have a direct impact on the farm family and their options to increase profitability and farm income. Good farm management includes making decisions to reduce vulnerability to risk. Risk can be classified as follows.

Production and technical risk. Crop and livestock performance are affected by weather, soils, pests, diseases and wildlife. These cannot be predicted accurately. Farmers experience a wide range of weather conditions and refer to them simply as a "good" year, "normal" year and "bad" year. Poor rainfall leads to poor plant growth, which may lead to reduced livestock fodder supplies and livestock production. Pests or diseases can also cause major yield losses. Seed is planted and inputs, such as fertilizer, are applied before the farmer knows what the weather will be. Inputs do not change the weather.

Risk, vulnerability and sustainability (continued)

Marketing or price risk. The prices of farm products may vary from year to year or even on a daily basis. These changes are usually beyond the control of the individual farmer. Supply of a product is affected by a combination of production decisions made by many farmers and the weather. Demand for a product is affected by the level of income of consumers, the strength of the general economy, the supply of competing products, and by changing tastes and eating habits. Costs of production are another source of price risk. While input prices do not usually change suddenly, they generally increase steadily year to year. Some inputs, such as petrol and diesel, are subject to sudden price increases.

Financial risk. Financial risk occurs when farmers borrow money to cover their farm and family needs. Risk may be caused by uncertainty about the interest rates lenders charge and their willingness to continue lending. On the other end, financial risk is affected by the ability of the farm to generate the cash flows necessary for debt payments.

Institutional risk. Institutions include organizations and businesses on which farmers rely for inputs, markets, information or finance. Unpredictable changes in the provision of services, such as the supply of credit, purchased inputs and information from traditional and modern institutions, are also risks faced by farmers.

Human or personal risk. Human risk refers to problems of human health and personal relationships that affect the farm business. Illness and death threaten to disrupt farm performance through loss of labour or reduced productivity of labour. Labour migration to towns and cities reduces availability of labour to farms.

Risk, vulnerability and sustainability (continued)

Production, marketing, financial, institutional and personal risks exist on most farms and are often interrelated. The ability to repay debts depends on production levels and prices received for produce sold. Financing of production depends on the ability to borrow capital and the performance of the institution to supply capital in time. The different types of risk often need to be considered together.

Vulnerability and the effect of risk

The real danger of risk is found in the degree of vulnerability of the farm and its resources. Vulnerability can be defined as the ability to recover from a stress or a shock.

Stresses erode the productivity or value of capital. For example, if farmers do not manage their soil well, they may lose topsoil, which reduces the land's productivity. Poor health of the farmer's family reduces their labour productivity. Poorly maintained roads become rutted and damage produce as it is transported to market. Poorly kept livestock fetch lower prices. Shocks cause the sudden loss of a resource. For example, a flood may wipe out a farm. Animals that are not treated for pests may die. Equipment that is not cared for properly may break beyond repair.

Part of coping with risk is reducing vulnerability. The less vulnerable the resources, the more sustainable the farm. High vulnerability leads to greater negative affect of risk. The vulnerability of the family's livelihood often makes it difficult to cope with risks, making the family less able to control or influence their environment to reduce or recover from stresses and shocks. As a result, they become even more vulnerable to risk.

Risk, vulnerability and sustainability (continued)

Risks influence the amount and costs of inputs farmers use. These risks also affect crop yields and product prices. As a result, farm profits are always uncertain. But not all of these factors have the same effect on farm profits. As a result of vulnerability to risk, farmers often trade-off between maximizing profits and minimizing risks.

Risk-reducing strategies

The way farmers deal with risk depends on their personalities, their family situations and the extent to which they wish to gamble. No two farm families are the same. Some farmers like to take more risk than others. Decisions also depend on the situation of the farmer. For example, does the farmer have savings to make sure that the family will not go hungry if the crop fails? Are there money reserves that allow farmers to repay loans? Generally, the higher the demands on the family for cash, the less likely will the family be able to absorb risk. The family is more vulnerable.

A number of common risk-reducing strategies are listed below, although many farmers may simply see them as good farm management. They are:

Choosing low risk enterprises. Based on their knowledge and experience, farmers may select enterprises or crop varieties that are usually reliable in preference to enterprises that result in variable yields between one year and the next. Low risk enterprises often give lower, but more predictable incomes.

Diversification: growing many things. Farmers may diversify their farms to reduce risk. Diversifying means producing more than one enterprise together on the farm. This can be done by producing more than one or two different crops or combining them with livestock.

Risk, vulnerability and sustainability (continued)

Diversifying is done with the expectation that all enterprises will not fail together. If one crop does not do well, the farmer has other crops on which to rely. This way, the farmer's income is not totally dependent on a single enterprise. If one enterprise fails, the income from the other enterprises is expected to be sufficient to keep going. Intercropping is a common form of diversification. However, the benefit of diversification is often offset by increased costs. The second enterprise may make very little money. The income farmers make from the two crops may not be as high as if they specialized in growing just one crop.

Growing crops on different land parcels or plots. Farmers also rotate crops to protect their soils and stop diseases building up. This reduces costs and increases yields. Growing crops in different locations on the farm reduces the impact of localized disease and microclimatic factors. But in order to increase the scale of their crop production, farmers must cultivate over a wide area, which costs more money. Again the protection from risk needs to be weighed against the reduced income.

Growing crops at different times. Staggered planting of the same crop can be used to ensure an even supply of food over as long a period as possible. Staggered planting can help cope with uncertain rainfall. Earlier planted crops may suffer, but later planted crops may still do well because the rains come at a better time for them.

Selecting and changing production practices. Farmers can spread risk by using different production programmes. Some farmers may buy inputs that control diseases or pests, or support animal health. These inputs reduce the chances of low yields. For example, drought-resistant seed varieties reduce the likelihood of crop failure when low rainfall occurs. Farmers may use pesticides and fungicides to reduce the risk of low yields. However, because profits

Risk, vulnerability and sustainability (continued)

are also affected by the prices of inputs, using costly inputs could increase the risk of income shortfall; more stable yields from using costly inputs may not lead to a more stable income. Farmers may use low cost, conservation practices, such as composting and mulching, as a way to manage risks and reduce the amount and cost of purchased inputs. Determining whether or not an input reduces risk depends on the type of risks that the farmer is trying to address. The added cost of doing this has to be compared against what could happen if they did not.

Maintaining flexibility. Flexibility of the farming system allows farmers to shift from one cropping pattern to another without a negative effect on farm profitability. Farmers may change the area of land planted or the number of livestock kept if, for example, market prices change markedly. To avoid risking expenditure on inputs, a farmer may decide not to plant when rainfall is low. Intensive small stock farmers raising pigs or poultry might vary the use of their housing in response to price changes. If farmers believe prices will be good, they may increase production by intensifying the use of the facilities. If they believe prices will be low, they may try to increase efficiency and cut costs. However, the costs associated with maintaining flexibility are often higher than farmers are willing to pay.

Maintaining reserves. Reserves are a quantity of something stored for the future or for possible emergencies. They can be kept by farmers in the form of money, physical inputs, final products and food. Keeping reserves of inputs and products could protect farmers from the risk of price changes. Food reserves also provide some security against the risk of crop failure.

Risk, vulnerability and sustainability (continued)

Spreading crop and livestock sales. Spreading sales means making several sales of a product during a year and can be used to reduce risk. Farmers with marketing flexibility can spread cash sales and obtain a price similar to the seasonal average price. This method of selling enables a farmer to avoid selling all production at the lowest price in the market.

Partial processing. Drying perishable products, such as vegetables, fruits and meats, can also be used as a strategy to reduce risk. Dried foods can be sold or used at times when the particular food item is out of season or in short supply. This strategy can be used together with spreading sales and maintaining reserves.

Traditional institutions and social arrangements. The customs and organization of traditional society tend to provide the individual family with a measure of security against risk. As part of a survival strategy, the close bonds between community members has resulted in mutual assistance and self-help when required. This may relieve the situation in cases of sickness, injury or death to an individual member, although it is less effective in situations where risk affects the entire community as a whole.

Maintaining resources. One of the key strategies to reduce the effect of risk is to maintain the farm's resources. Proper care of land, infrastructure and equipment; keeping labour healthy and well-trained; wise investment of cash; prompt repayment of debt and being trustworthy in all their dealings — all of these will help to reduce the vulnerability of a farmer's natural, human, physical, financial and social capital from the affects of risk.

Risk, vulnerability and sustainability (continued)

Sustainability

Sustainability is, in a sense, a balance between risk and vulnerability. As stated earlier, the more vulnerable a farm is, the less sustainable it is. In terms of farm management, it is useful to assess sustainability in terms of the vulnerability of the farm's resources. Such an assessment can be made in terms of the following basic factors:

- availability
- accessibility
- affordability
- appropriateness
- reliability (trustworthiness)

Availability. A resource is considered available when it is in regular supply. In some African countries, there is a shortage of land. In other countries labour is in short supply. If farm profits are dependent on a resource that is in short supply, the farm is vulnerable and therefore less sustainable.

Accessibility. A resource is considered accessible when it is available and within reach of the farmer. In many African countries, land is accessible only to men, not women. Markets often require membership, and membership is exclusive. Some social capital is accessible only by select members of the community. Similarly, credit may be conditioned upon private ownership of land, making it inaccessible to many smallholder farmers. If a farmer plans a farm around a resource that cannot be readily accessed, then the farm is more vulnerable, making it less sustainable.

Affordability. A resource is considered affordable when it is available at a price that allows for profits. Many technologies are not accessible to smallholder farmers because the technologies are available only at high prices.

Risk, vulnerability and sustainability (continued)

Sometimes this is a problem of quantities, other times it is a problem of exclusivity. Either way, the most suitable resource in terms of production efficiency may simply cost too much.

Appropriateness. Many resources are available and accessible, but not appropriate to the farmer's particular situation. For example, a vegetable farmer looking to hire land needs to make sure that the land is suitable for irrigation. Often, inputs, such as seed and fertilizer, are available only in quantities too large for the farmer to handle. Often equipment choices are limited to those that require large land sizes to make them viable.

Another aspect of appropriateness is social or cultural acceptability. In many African cultures, pork is taboo. Thus, even if it is a profitable enterprise, it may be inappropriate.

As with the other factors, when the profitability of a farm relies on a resource that is inappropriate, the farm is less sustainable.

Reliability (trustworthiness). A resource is considered reliable when it produces consistent performance or behaviour. Land that is known to be in good condition is reliable. A supplier that supplies the right inputs at the right time is reliable. Reliability is linked to trustworthiness. Can a farmer trust the supplier to deliver according to his word? Will the equipment or seed variety perform as advertised or promised? Is the market information usually correct?

If a farmer must rely on a resource (particularly a human resource such as labour or supplier) and it is not reliable or trustworthy, the farmer is highly vulnerable and their farm is not sustainable.

Space for notes and questions for the facilitator

Sustainability analysis

In your farm teams, use the maps and lists you created in Module 2, Sessions 2—3, to review the capital base of your farm. Look at each resource in each capital grouping and discuss the sustainability of the resource. Sustainability is really an assessment of risk. The only difference is that, in addition to looking at what is uncertain, it also looks at what is known about the stresses and shocks to the farming resources. Use the information provided below to begin your assessment.

Sustainability can be assessed by considering the following questions

Production and technical risks (natural capital; physical capital)

___ What do you know about the weather, soils, pests and diseases that might negatively affect your crops? Are there times of the year when rainfall is short or when certain diseases occur?

___ Are you using a new technology that you are uncertain about?

___ What is the condition of your land? Is it getting better or getting worse?

___ What is the condition of your buildings and equipment? Is it getting better or getting worse?

___ How does the condition of roads, communications and other infrastructure affect access to or use of the resource?

___ How does the transport system in your area/region affect input supply, access to markets, access to lands?

Sustainability analysis (continued)

Marketing or price risk (financial capital)

___ How reliable are your markets? Have they been stable or are they changing (positively or negatively)?
___ How stable have prices been over the last few years?
___ Have they been stable or are they changing (positively or negatively)?

Financial risk (financial capital)

___ How have interest rates changed in the last few years?
___ What is your relationship with the moneylenders you use?
___ How reliable are these moneylenders?

Institutional risk (social capital)

___ How reliable are your suppliers of inputs and information (e.g. seed, fertilizer, credit, traction)?
___ How effective is the social capital system in your community for shared inputs (labour, land, inputs)?

Human or personal risk (human capital)

___ What is the health status of your labour supply (i.e. incidence of AIDS, malaria)?
___ How reliable is your hired labour supply? Is it affected by migrations or other factors?
___ How effective is the social capital system in your community for shared labour?

An example of a sustainability analysis is provided on the following pages. A worksheet for recording a sustainability analysis is provided in Handout 3.4C.

Sustainibility analysis (continued)

Note: the example here is based on the unpacking of the Thebete household.

Sustainability table

Capital	Sustainability (e.g. limiting factors)
Natural • 1 field • Usually millet and groundnuts • Access to stream • Access to a variety of common natural resources; thatch, herbs, weaving grass, building materials	Drought last year; planted only millet. Ate next year's groundnut seed (cannot plant this year). Weeds limited millet harvest Usually dry May — Nov
Human • Own labour in fields • Knowledge of which crops to grow under different conditions • Natural resource management • Weaving skills • Physically strong (carrying and building) • Children help with selling	FFW* takes time May use FFW as backup instead of NRM** strategy to cope with drought Dependency

* FFW: Food for work
** NRM: Natural Resource and Environmental Management

Sustainibility analysis (continued)

Sustainability table

Capital	Sustainability (e.g. limiting factors)
Physical — Own • 1 goat • A few chickens • 1 hoe • Household stock *Physical — Community* • Rural roads to enable marketing of surplus crop • Church • Primary school • Clinic • 2 boreholes (working) • 1 hand-dug well (working) • 2 other wells (dry)	Sold cow to feed family
Financial — Own • Income from wild fruit • Income from basket weaving	Prices low; over supply
Social • FFW safety net • Wild fruit • Tenure security, which enabled her to retain her land after husband's death	Dependency

Worksheet — Recording sustainability analysis

Capital	Sustainability (e.g. limiting factors)
Natural	
Human	

Worksheet — Recording sustainability analysis (continued)

Capital	Sustainability (e.g. limiting factors)
Physical	
Financial	

Preparing for Session 3.5
Information and farm management

Learning outcomes
Understanding (i) the role of information in farm management, (ii) the difference between data and information, (iii) sources of data and information, (iv) the role of the extension worker with farm management information

Training aids
Exercise 3.5A (Information flow)
Handout 3.5A (Information and farm management)
Handout 3.5B (Information flow map)

Notes

Information and farm management

This session explores the role of information in farm management decision-making. It also explores the role of the extension worker in supporting farmers in locating and using information.

Opening statement

Farmers require timely and appropriate information at every stage in the farm management decision-making process. Let us begin this session by reviewing Handout 3.5A (Information and farm management).

The outline on the following pages is provided to help the facilitator conduct the review.

Outline of Handout 3.5A (Information and farm management)

Farmer decision-making

- Farming is essentially about making decisions.
- To make profitable decisions, farmers need data and information.
- Extension workers need to be good at communicating with farmers and passing on new knowledge and skills.
- Extension workers need to have knowledge of sources of information and be able to obtain it quickly.
- Farmers make a range of decisions about inputs, production and markets.

INPUTS → PRODUCTION → MARKETS

For inputs, farmers need to know

- Who are the reliable suppliers?
- Where can they obtain credit?
- What is a fair interest rate for loans?
- What inputs are available/which are the most appropriate inputs?
- What prices will ensure profit/how will prices affect profit?

For production, farmers need to know

- What resources do they have available/what is their condition?
- What crops/enterprises are best suited to their resources?
- What skills are needed for each enterprise?
- What inputs and labour are required for each enterprise?
- What technologies are most appropriate for their resources?

For markets, farmers need to know

- What markets exist?
- Where can they sell their products?
- What are the quality requirements?
- What are the packaging and related requirements?
- How can they get their products to the various markets? What will this cost?
- What prices can they expect for their products?
- How will prices affect profits?

These questions represent a great deal of data and information. Good farm management depends on good, reliable and relevant information.

Extension workers:

- Need to be good at communicating with farmers and passing on new knowledge and skills.
- Must have knowledge of sources of data and information and be able to obtain it quickly.
- Must have the ability to assess the value and relevance of bits of information in solving particular problems in the local situation.
- Must know the difference between data and information.

The difference between data and information

- "Data" refers to the raw numbers and facts such as prices, costs, quantities.
- "Information" is data that is processed in a way that is useful for decision-making.

The relationship between data, information and decision-making

- Data is useful only when it has been processed into information.
- Data must be processed in a way that will make it relevant to the farmers' individual situations.
- It is one of the tasks of the extension worker to turn data into such information. Some guidelines to help with this are:

    - The combining and interpretation of the data needs to match the issues of real concern to the farmers (these may differ for different groups of farmers).
    - The level of detail needs to match the educational level and literacy of the farmer.
    - The use of definitions of terms and methods of presentation must make sense to the farmer's numeric background and technical knowledge.
    - The level of complexity of the message must be suited to the farmer and the farming system.
    - Graphics and other visual diagrams will be particularly useful in focusing the farmer's interest and aiding understanding.

Data and information sources

Farmers and extension workers can obtain data in two ways:

- They individually or together collect data first hand (also called primary data).
- They can use data collected by someone else.

Sources of first-hand data

- farmers;
- farmer records;
- community, group, church/religious leaders;
- government officials, including extension staff;
- remote sensing and computer terminals;
- weather stations and laboratories.

Sources of data collected by others (secondary data)

- lending institutions;
- veterinary and fishery institutions;
- publications and journals;
- television and radio programmes;
- development projects;
- NGOs (non-governmental organizations);
- agricultural input dealers;
- national statistics.

Extension worker's role in data and information

As farmers become more market-oriented, extension workers must also become more market-oriented. Their role includes:

- gathering data and information on their own;
- working with farmers to gather data;
- working with farmers to process data into useful information;
- helping/training farmers in data gathering and processing skills.

Extension workers need to be familiar with how farmers obtain data and information so that they will be better able to facilitate the process. Special care must be taken to ensure that data and information is not only about production; input and market information is just as vital to the profitability of the farm.

Exercise introduction

When farmers begin to look for information or data, they should first understand what they need to know. Searching for information must answer a question. In order to find the 'right' answer, they must ask the 'right' question. Exercise 3.5A (Information flow) will help you to identify some of these questions.

Exercise 3.5A
Information flow

Purpose: To explore the flow of information based on the different uses. (Participants should have read Handout 3.5A prior to this exercise.)

Method: Group discussion, diagramming.

Materials: (i) Handouts 3.5B (Diagram — Information flow map), (ii) flip chart paper or newsprint, (iii) thick marking pens, (iv) strips of paper, each with one of the following words: environment, production, technology, labour, finance, market, input supply.

Allow 50 minutes for this exercise

Procedure

Part one

1. Organize the participants into their farm teams. Give each team 3—4 sheets of flip chart paper.

2. Using the information from Module 1 Session 4 and what has been learned so far, the participants should discuss the information flow as they pertain to their farm teams. Where can they get data and information about: production, environment, technology, finances, inputs, markets and labour?

   Illustrate the table below to assist them, indicating the type of information needed, the source of information and its flow.

Type of information	Source of information	Location	Flow of information	Reliablity (high, moderate, low)

   Production information started with a researcher, which may be communicated to the extension worker and then onto a group of farmers.

Exercise 3.5A (continued)

In another case, market information may start with farmers, be communicated to a different group of farmers, then to an extension worker and back to another group of farmers. The final column should provide an indication of the reliability of the information received.

3. The groups should proceed to draw an information flow map. See example in Handout 3.5B. The information map should indicate where the farm/farmer gets information, location and type of information received. Different thickness of arrows can be used to indicate the sustainability (reliability, appropriateness, etc.) of the source information.

4. Ask each team to share its flow map. Encourage discussion about where and what type of information is most commonly received by the farm/farmer.

Part two

Allow 20 minutes for this

5. Give each team a strip of paper with one of the following titles: environment, market, production, technology, finances, inputs and labour. Distribute one sheet of paper to each of the groups. One group, for example, will receive a sheet of paper with production given as a heading. Each team should then select a single enterprise from their virtual farms. Using their assigned area of information they should agree on a question that they would like to answer and for which they will need information (e.g. for 'environment' a question might be: what technology is most environmentally appropriate for my farm?).

6. Using the results from part one (i.e. information flow), make a mind map of the information they would need and the source of that information to answer their question.

Exercise 3.5A (continued)

7. When the mind maps are done, ask each team to present and explain their mind maps. As the teams present, encourage discussion from the rest of the participants.

   Possible discussion questions:

- What type of activities on the farm are affected or impacted by the information?
- What is the effect of lack of information on the enterprises?

Learning points

- Information requirements change depending on the question being asked.
- The same data may be used to answer different questions, thus it is important that farmers know clearly the questions that they want to answer.
- The extension worker needs to carefully assess how to support and assist the farmer in making decisions about inputs, equipment and markets.

Keep these mind maps.
They will be needed in Session 4.9

Space for notes and questions for the facilitator

Information and farm management

Farmer decision-making

Farmers are constantly making decisions. They make decisions about their farm resources. They make decisions about what to produce, how to produce, how much to produce, and where and when to sell.

Farmers require timely and appropriate information at every stage in the farm management decision-making process. Information is needed to diagnose the farm, to set objectives, to plan, implement and control farm activities, and to make more efficient use of their limited resources.

Information is also needed to allow the farmer to monitor and evaluate the performance of the farm. The better skilled farmers are at using data and information, the better will be their farm decisions.

In addition to being able to access and interpret data and information and to communicate this with farmers, extension workers will also need to be skilled in helping farmers develop these skills as well. Assisting farmers to obtain information to make input, production and marketing decisions is an important part of an extension worker's work. It is not sufficient to provide information on production only; input and market information is just as vital to the profitability of the farm.

Information and farm management (continued)

Therefore, as farmers become more market-oriented, extension workers must also become more market-oriented. If farmers cannot sell what they produce, then much of the extension advice on production techniques will have been wasted.

Further, farmers' circumstances are not static. There are often changes occurring that influence the farming operations. Changes in prices of products might lead to changes in the combination of enterprises, in the pattern of resource use or in management practices. Therefore, whenever there is a change in the circumstances of a farmer, it may be necessary for the extension worker to review the suitability of recommended technologies and new enterprises. Staying on top of these changes requires a good command of relevant data and information.

Clearly, extension workers have an important role in the process of information gathering, interpretation and dissemination. They can be a vital conduit, feeding information to the farmer and the rural community.

In brief, farmers make a range of decisions within the full decision-making boundaries of their farms. They make decisions about inputs, production and markets.

INPUTS → PRODUCTION → MARKETS

Information and farm management (continued)

For inputs, farmers need to know:

- Who are the reliable suppliers?
- Where can they obtain credit?
- What is a fair interest rate for credit?
- What inputs are available/which are the most appropriate inputs?
- What prices will ensure profits/how will prices affect profit?

For production, farmers need to know:

- What resources do they have available? What is their condition?
- What crops/enterprises are best suited to their resources?
- What skills are needed for each enterprise?
- What inputs and labour are required for each enterprise?
- What technologies are most appropriate for their resources?

For markets, farmers need to know:

- What markets exist?
- Where can they sell their products?
- What are the quality requirements?
- What are the packaging and related requirements?
- How can they get their products to the various markets? What will this cost?
- What prices can they expect for their products?
- How will prices affect profits?

Information and farm management (continued)

Each of these questions represents a great deal of data and information. Good farm management depends on good, reliable and relevant information.

Extension workers need to be good at communicating with farmers and passing on new knowledge and skills. In order to be effective as agents of information exchange, they have to have knowledge of sources of data and information and be able to obtain it quickly for many of the problems that the farmer faces. Sources could include: the experience of good farmers, the extension service itself, private companies, research workers, up-to-date reference books, libraries, friends, teachers, agents selling equipment and inputs, transport companies, traders, wholesalers and retailers.

An important skill is the ability to assess the value and relevance of bits of information in solving particular problems in the local situation. It is also important to know the difference between data and information.

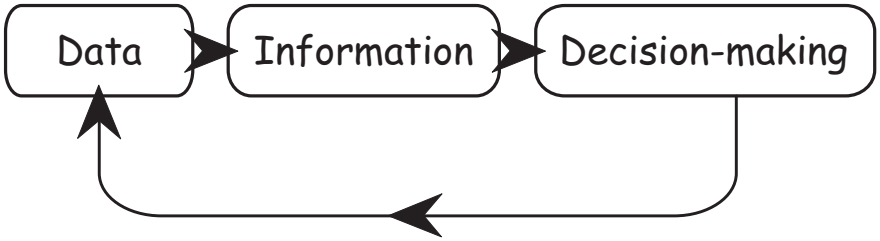
What is the difference between data and information?

"Data" refers to the raw numbers and facts such as prices, costs, quantities. "Information" is data that is processed in a way that is useful for decision-making.

Information increases farmer's knowledge, which leads to improved decision-making and thereby results in higher income and livelihood outcomes. Access to appropriate information empowers farmers and assists them in their efforts to become more food secure and more profitable.

Information and farm management (continued)

The relationship between data, information and decision-making is shown below.



Data can be categorized into different types, all of which should facilitate the decision-making process. They are summarized as follows:

Categories	Specific data
Technical and physical	**Soil characteristics:** soil type, soil texture, soil analysis data, etc. **Weather:** rainfall, humidity, temperature, storms, drought **Land characteristics:** slope, topography, elevation, carrying capacity, etc. **Production:** yields per unit of land, yield per unit of labour **Production technology:** fertilizer, disease control, seed variety, harvest and post-harvest technologies, etc. **Labour:** source of labour, seasonal labour distribution, gender, etc.
Economic	**Prices:** prices of inputs and products **Buyers:** prices, quality requirements, terms of payment, etc. **Supply and demand:** conditions **Sources of credit:** conditions, terms of payment, interest rates, etc.
Social	**Community culture:** customs beliefs and traditions **Community organization:** farmer associations, cooperatives, civic groups, religious groups, etc.
Institutional	**Support services:** extension, research, banking, etc. **Private organizations:** NGOs and other private organizations **Government organizations:** International (e.g. UN), regional, national, provincial, local
Political	**Government:** policies and priorities

Information and farm management (continued)

Data is useful only when it has been processed into information. And farmers need information that will help them make decisions about their farms. Therefore, data must be processed in a way that will make it relevant to the farmers' individual situations. It is one of the tasks of the extension worker to turn data into such information.

The following guidelines will help extension workers change data into appropriate information:

1. The combining and interpretation of the data need to match the issues of real concern to the farmers (these may differ for different groups of farmers).

2. The level of detail needs to match the educational level and literacy of the farmer.

3. Use definitions of terms and methods of presentation that make sense to the farmer's numeric background and technical knowledge.

4. The level of complexity of the message must be suited to the farmer and the farming system.

5. Graphics and other visual diagrams will be particularly useful in focusing the farmer's interest and aiding understanding.

Data and information sources

Farmers and extension workers can obtain data in two ways:

- They individually or together collect data first hand.
- They can use data collected by someone else.

Information and farm management (continued)

Data collected first-hand. This is also called primary data. Primary data is the data an extension worker and farmer collects either independently or together. The data is collected directly from respondent(s). The following table gives some examples of data that can be collected first-hand.

Source	Type of data collected
Farmers Semi-structured interviews, questionnaires, direct observation, case studies, etc.	Data on farm inputs, farmgate prices, yields, etc.
Farmer records Examination of farm records	Historical production and marketing information including crop yields, livestock production and cost (Note: Production records might show how successful the farmer was at managing the farm in the past. The combination of historical results and the risk preferences of the farmer is useful in the planning process as well as to identify possible risk management strategies for the future.)
Community, group, church/religious leaders Key informant interviews, semi-structured interviews	Information about members of the community or population under study to identify lead farmers with whom the extension workers can work Information about the status of social capital arrangements
Government officials, including extension staff Key informant interviews, semi-structured interviews; review of government documents	Information relating to land holdings, the farmers benefiting from government programmes or involved in trials and demonstrations, etc. Information about farmer-led initiatives, farmer responses to technologies and about government initiatives (e.g. infrastructure development) that may impact on farmers' decisions
Remote sensing and computer terminals Direct reading from instruments	Technical data relevant to agriculture
Weather stations and laboratories Review of published data; direct readings	Rainfall, soils, vegetation, etc.

Information and farm management (continued)

Data collected by others. Data used by a farmer or extension worker, which has been collected by others is usually called secondary data. The data could have been collected for some other purpose different from that of the farmers or extension worker, but it can still be very useful. There are a number of these sources available to farmers and extension workers.

Source	Type of data collected
Lending institutions	Data on lending for agricultural enterprises and ventures
Veterinary and fishery institutions	Data on livestock numbers and fish population stocking rates. This data is often useful when planning grazing schemes or fish farming enterprises
Publications and journals	Any issue related to farm management
Television and radio programmes	Data is provided on a regular basis particularly on market prices of major agricultural commodities
Development projects	Baseline surveys and evaluations
NGOs (non-governmental organizations)	Wide range of issues, depending on their particular areas of focus
Agricultural input dealers	Product specifications, performance, prices, availability, etc.
National statistics	Historical yield and price information (Note: national data is often an average of the information collected from many farms and as such it does not tell the farmers exactly what they can get. Comparing historical farm yields to that of similar farms in the same area is an additional source of information on how farmers can improve farm performance.)

Information and farm management (continued)

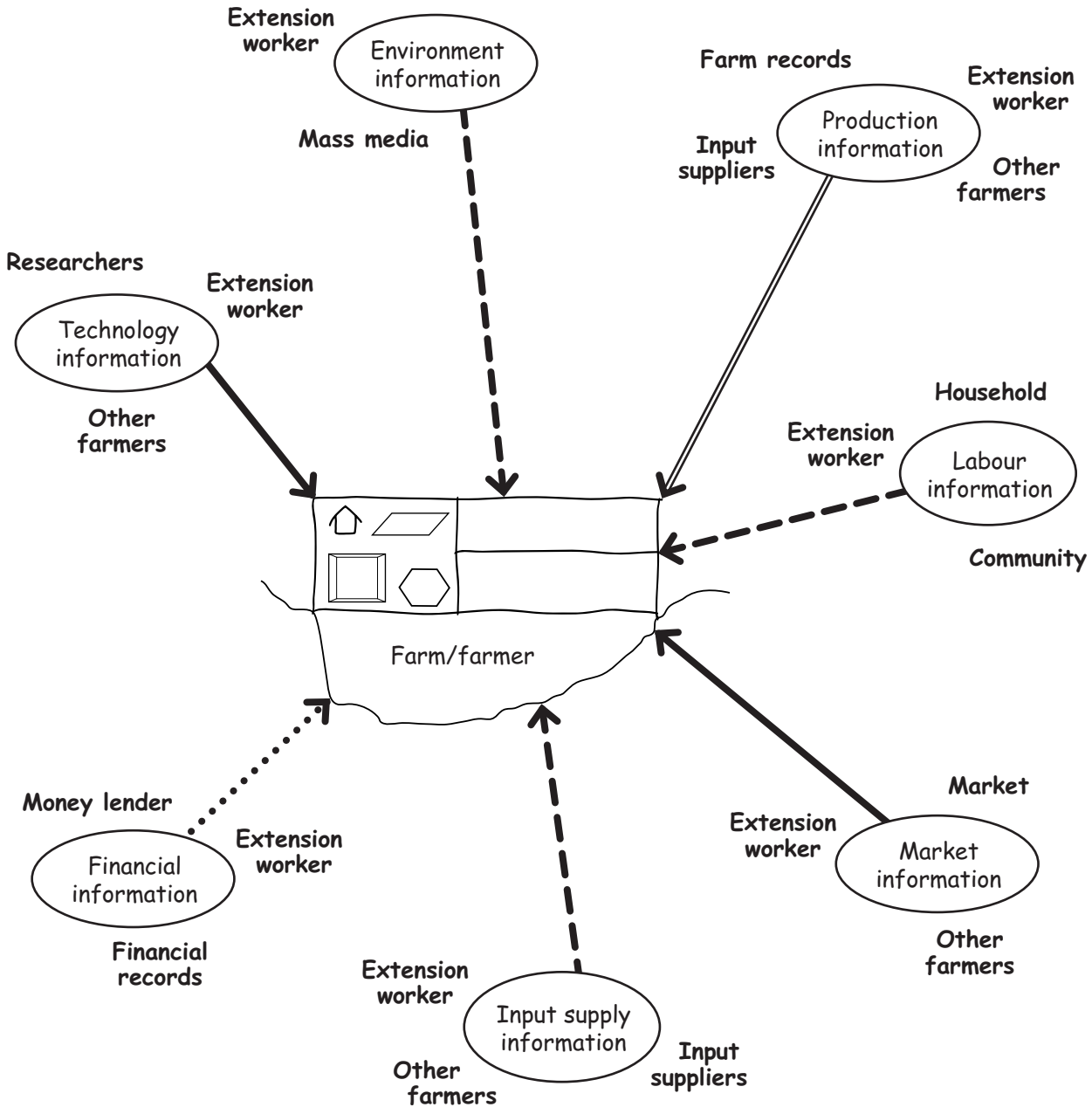
Summary of an extension worker's role in data and information

As noted earlier, as farmers become more market-oriented, extension workers must also become more market-oriented. Gathering data and information on their own, working with farmers to gather data, working with farmers to process data into useful information, and helping/training farmers in data gathering and processing skills are all important parts of an extension worker's work.

Most farmers tend to develop information from processing data gathered from their own experience. They may gather production data from their own farms or from other farmers. Market data often comes from contact with traders (buyers). Input data comes from contact with suppliers. When the extension workers are familiar with how farmers in their area currently obtain data and information, they will be better able to facilitate the process.

Special care must be taken to ensure that data and information is not only about production; input and market information is just as vital to the profitability of the farm.

Diagram — Information flow map



Review of Module 3

In this segment the participants have explored the critical role of the farmer as a decision-maker for each of the five types of "capitals" used in farm management. (This review also includes an exercise.)

The facilitator may handle the exercise in one of two ways. If time permits and the participants are not too tired, then the exercise can be done in the classroom. Otherwise, if it fits into the timing well, it can be given as an overnight assignment and the participants can report in the morning. (The facilitator can then continue with the review outline following the exercise.)

Review exercise 3
Farm management decision-making

Purpose: To ensure that the learning outcomes have been attained.

Method: Group discussion, mind mapping.

Materials: (i) Flip chart paper or newsprint, (ii) thick marking pens.

Allow 90 minutes for this exercise

Procedure

1. Randomly divide the participants into five teams. Give each team two sheets of flip chart paper and a set of marking pens.

2. Assign each group one of the sessions to work on: Group 1—Session 1, Group 2—Session 2, etc.

3. Each group is to work on two tasks:

   Task 1: Develop a mind map of the main learning points as they relate to the learning outcomes. (Draw this on the flip chart paper).

   Task 2: Draw a picture that can be used to tell farmers about the points raised in the mind map developed in Task 1. The picture should be farming related. It is not a diagram, but a picture of a farm or market, etc.

4. When each group has completed their mind map and picture, ask them to present them to the rest of the participants. Encourage discussion and guide the discussion where necessary to ensure the 'correct' learning has taken place. The learning outcomes and key learning points for each session are set out below.

The following outline will guide the facilitator in a brief review of the activities of this module.

Session 3.1
The farmer and decision-making

Purpose of this session:
To explore the concept and dynamics of decision-making.

Learning outcomes

Understanding (i) farm/family goals, (ii) the farmer as manager, (iii) the farm management decision-making process, (iv) the different roles of family members in farm management decision-making.

Session 3.2
Resources and farm management

Purpose of this session:
To explore the utilization of farm and household resources.

Learning outcomes

Understanding (i) the importance of maintaining the value and productive power of resources, (ii) the role of farm management in sustainable use of resources.

Session 3.3
Inputs, markets and farm management

Purpose of this session:
To review the kinds of decisions required concerning inputs brought onto the farm and about the marketing environment.

Learning outcomes

Understanding (i) the range of decisions farmers make about inputs, equipment and markets, (ii) the role of the extension worker in supporting the farmer in making decisions about inputs, equipment and markets.

Session 3.4
Risk, vulnerability and sustainability

Purpose of this session:
To weigh the costs and benefits
of various risk-reducing strategies.

Learning outcomes

Understanding (i) the concept and different types of risk,
(ii) farm-family strategies to cope with risk,
(iii) the concepts of vulnerability and sustainability.

Session 3.5
Information and farm management

Purpose of this session:
To explore the value and importance
of information for farm management.

Learning outcomes

Understanding (i) the role of information in farm management,
(ii) the difference between data and information,
(iii) sources of data and information,
(iv) the role of the extension worker
with farm management information.

Closing questions

Ask the participants if they believe that
the overall purpose of the module has been achieved
and if they have improved their understanding of
(i) the farmer/farm family goals (ii) the farmer decision-
making process (iii) farm management and marketing
decisions (iv) risk management practices
and sustainability and (v) information requirements
for better decision-making.

Notes

Notes

Notes

Notes

The following is a list of the AGSF series TRAINING MATERIALS FOR AGRICULTURAL MANAGEMENT, MARKETING AND FINANCE

1. Farm planning and management for trainers of extension workers in the Caribbean, 2004 (CD-ROM, English).
2. Horticultural marketing extension techniques, 2004 (CD-ROM, English).
3. Farm planning and management for trainers of extension workers. Asia, 2006 (Hard copy and CD-ROM, English).
4. Integrating environmental and economic accounting at the farm level, 2005 (CD-ROM, English).
5. Curso de gestión de agronegocios en empresas asociativas rurales en América Latina y el Caribe, 2005 (CD-ROM, Español).
6. Market-oriented farm management for trainers of extension workers. Africa, 2007 (Hard copy and CD-ROM, English).

In preparation

- Farm planning and management for trainers of extension workers. Latin America (CD-ROM, in Spanish).
- Training manuals on farmer business schools. Asia and Africa.

Other work

- FAO Pacific Farm Management and Marketing Series 3, Helping small farmers think about better growing and marketing (Hard copy)*.

* Copies soon to be available from AGSF

For further copies of this publication
and the information on FAO's activities
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Web site: http://www.fao.org/ag/ags/index_en.html

This publication is also available on the Internet at:
http://www.fao.org/ag/ags/subjects/en/farmMgmt/training.html

A farmer must make many short- and long-term decisions about inputs, production and marketing. In Module 3 we shall explore the range of decisions to be made, who makes them and what information is needed to make good farm management decisions.

TRAINING MATERIALS FOR AGRICULTURAL MANAGEMENT, MARKETING AND FINANCE

6

Market-oriented farm management for trainers of extension workers

AFRICA

Module 4
FARM MANAGEMENT TOOLS

For further copies of this publication
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TRAINING MATERIALS FOR AGRICULTURAL MANAGEMENT, MARKETING AND FINANCE

6

Market-oriented farm management for trainers of extension workers

AFRICA

Module 4
FARM MANAGEMENT TOOLS

Food and Agriculture Organization of the United Nations
Rome, 2007

ISBN 92-5

FARM MANAGEMENT TOOLS

This module includes nine common tools used in farm management. All of the tools can be used at the level of the farm and its individual enterprises to analyse and plan farm management activities. They can be used for diagnosis of an existing situation, planning for the future and for monitoring progress of farmers throughout the year. Here the participants will learn when to apply the different tools and how to use them effectively.

Opening statement

Now that we have explored the place of market-oriented farm management in agriculture, we are in a position to learn tools that farmers can use to make decisions on their farms and households. Just as there are many types of decisions that farmers make, there are many tools that will help the farmer make these decisions. Some of the tools will be basic and simple to use. Others will be specialized and more complex.

Preparing for Session 4.1
Constraints and opportunities analysis

Learning outcomes
Understanding (i) the purpose of the instrument,
(ii) ability to know when to use the method,
(iii) ability to carry out the method

Training aids
Exercise 4.1A (Constraints tree analysis)
Handout 4.1A (Constraints and opportunities analysis)
Handout 4.1B (Worksheet — Constraints tree format)
Handout 4.1C (Worksheet — Constraints and opportunities analysis matrix)
Handout 4.1D (Constraints and opportunities checklist questions)

Notes

Constraints and opportunities analysis

This session explains what a constraints and opportunities analysis is and how it is conducted. It explains that it is an instrument that can be used to identify weaknesses and potentials within the farming system and its parts. The causes of those weaknesses will also be identified as well as strategies for building on potential strengths.

Opening statement

We shall begin this session by reviewing the main points in Handout 4.1A (Constraints and opportunities analysis). This tool will help farmers identify weaknesses (constraints) and potentials (opportunities) within the whole farm system or in its parts. Participants should feel free to ask questions.

The outline on the following page is provided to help the facilitator conduct the review.

Outline of Handout 4.1A (Constraints and opportunities analysis)

What is a constraints and opportunities analysis?

The constraints and opportunities analysis is an instrument intended to:

- identify weaknesses and potentials within the whole farm system or its parts and the causes of those weaknesses;
- develop strategies for building on the potentials.

What is a constraint?

A constraint is a situation that prevents the goals set by the farmer from being attained. Constraints can be physical, climatic, economic, institutional, social and political.

What is an opportunity?

Opportunities are favourable factors such as:

- existing and potential technologies and practices;
- energy and motivation of the human resource base;
- existing and potential new market niches;
- availability of support services.

The opportunities can improve the success of the farm. These opportunities should be identified in relation to the constraints in order to design improvements.

How is the tool applied?

- identify the enterprise;
- identify the constraints (using the "Constraints tree");
- identify objectives and opportunities;
- identify changes to be made to current practices/enterprise;
- what resources are needed (technical, financial and human);
- appraise the improvements on the farming system.

Exercise introduction

Identifying the constraints within a farm system and understanding how they interrelate provides a useful tool to analyse weaknesses and suggest solutions.

In Exercise 4.1A (Constraints tree analysis) we shall learn how to use the tree format illustrated and, then, to make use of the opportunities for improvement that present themselves.

Exercise 4.1A
Constraints tree analysis

Purpose: To identify constraints and possible strategies to overcome them. (Participants should have read Handout 4.1A prior to this exercise.)

Materials: (i) Handouts 4.1B (Worksheet — Constraints tree format) and C (Constraints and opportunities checklist questions), (ii) flip chart paper or newsprint, (iii) thick marking pens.
**Exercise 3.4A from previous module*

Allow 90 minutes for this exercise

Procedure

1. Divide the group into farm teams.

2. Ask the participants to take out Handouts A, B and C, and their record of the analysis done on their virtual farm in Exercise 3.4C.

3. Working with their farm map, each team should choose one enterprise and indicate what is the status of the enterprise in terms of income or profit. Using the constraints tree format given in Handout 4.1B or one of the large sheets of paper, each team should build a tree that traces the constraints that affect the level of income (profit) from their chosen enterprise.

4. Ask each team to present its constraints tree. Walk them through a logic test to 'test' the logical flow of their constraints tree. Does one factor lead to the next? Is the last/lowest block at the bottom of each branch the lowest level constraint?

Exercise 4.1A (continued)

5. After the discussion, each team should now work on a constraints and opportunities matrix. This is given in Handout 4.1C. Alternatively each team should draw a constraints and opportunities analysis matrix on the second large sheet of paper. Teams should first capture the key constraints and the lowest level constraints (see the example in Handout 4.1A). A checklist of constraints and opportunities questions is provided in Handout 4.1C.

6. Then each team should discuss and agree on opportunities emerging from the constraints. They should enter these in the matrix.

7. For each of the opportunities, the teams should identify and agree on changes that could be made. They should write these into the matrix.

8. For each of the agreed changes, the teams should identify the resources needed and who is responsible to implement the changes. They should enter these in the matrix.

9. Each team should then discuss, identify and note any effects they expect these changes will have on the enterprise or the whole farm. This is to test that the change actually does address the constraint.

10. Have each team present their matrices. Encourage discussion.
    The following questions may help guide the discussion:

- Do the changes planned address the lowest level constraints?
- What commonality of actions can be seen where two or more constraints can be addressed by the same change?
- Are the changes practical; are they within the power of the farmer?
- What about opportunities that may present themselves that are not related to a constraint? Can you use a similar approach to analyse the farm's resources and identify opportunities for improvement (without necessarily fixing something that is wrong)?

Space for notes and questions for the facilitator

Constraints and opportunities analysis

The constraints and opportunities analysis is an instrument used to identify specific problems within the farming system as a whole or within individual enterprises. The instrument helps a farmer identify weaknesses and potentials within the whole system or its parts. It also helps identify the causes of those weaknesses. And it helps the farmer develop strategies for overcoming the weaknesses and building on the potentials identified.

The instrument may not necessarily solve all the problems, but it will identify what the farmers can do by themselves and where they will need help from outside.

In short, the constraints and opportunities analysis is used to diagnose the situation of the farm or selected enterprises. It is used most effectively with groups of farmers.

Constraints

In order to use a constraints analysis, one must first understand what a constraint is. A constraint is a situation or factor that prevents the goals set by the farmer being attained. Constraints can be physical, climatic, economic, institutional, social and political. Some of them may fall within the control of the farmer while others may not.

A farmer uses a constraints analysis to trace the source or cause of a problem. Most problems are symptoms of other problems. While they may be a real constraint, they may in turn come from another problem. It is important that farmers are aware of the cause of their problems so that they do not waste resources treating a symptom alone.

Constraints and opportunities analysis (continued)

For example, let us say a farmer identifies low income as a constraint in an enterprise. Is this the cause of the problem? What is the cause of the low income? Low income may be because of low yield, low price or both. Low yields may be because of low input use, which may occur as a result of high costs or non-availability of inputs, lack of technology, attack of pests and diseases, or lack of irrigation water. On the other side, low prices may be because of poor quality of production, seasonality of the produce, oversupplies of produce in the market, lack of market information, poor quality of produce, lack of storage facilities, lack of drying facilities and others.

The constraints analysis takes into account all factors so that proposed actions could be taken to address the constraints.

Constraints may also be related to the physical factors (such as soil type, climate), or to socio-cultural, policy and institutions over which farmers have no control. These constraints are not always obvious, thus they need to be pointed out. For example, a lack of market is often considered a constraint, but lack of market may be because of poor infrastructure over which the farmers have no control. Poor infrastructure is the real constraint. In cases such as this, production of products that are highly perishable, bulky and that require transport need to be examined in the light of these constraints.

When the farmers know what the real constraints are, they will know which they can change and those they cannot change. Then they will be in a position to make decisions about how to improve farm profitability by addressing those constraints that they can influence.

Constraints and opportunities analysis (continued)

Opportunities

In planning for improvements of the farm, opportunities need to be considered in the light of the identified constraints. Favourable factors include existing technologies and practices, the energy and high motivation of the human resource base, existing market niches and the availability of support services that could enhance the success of the farm. These opportunities should be identified in relation to the constraints in order to design improved farm plans.

Conducting a constraints and opportunities analysis

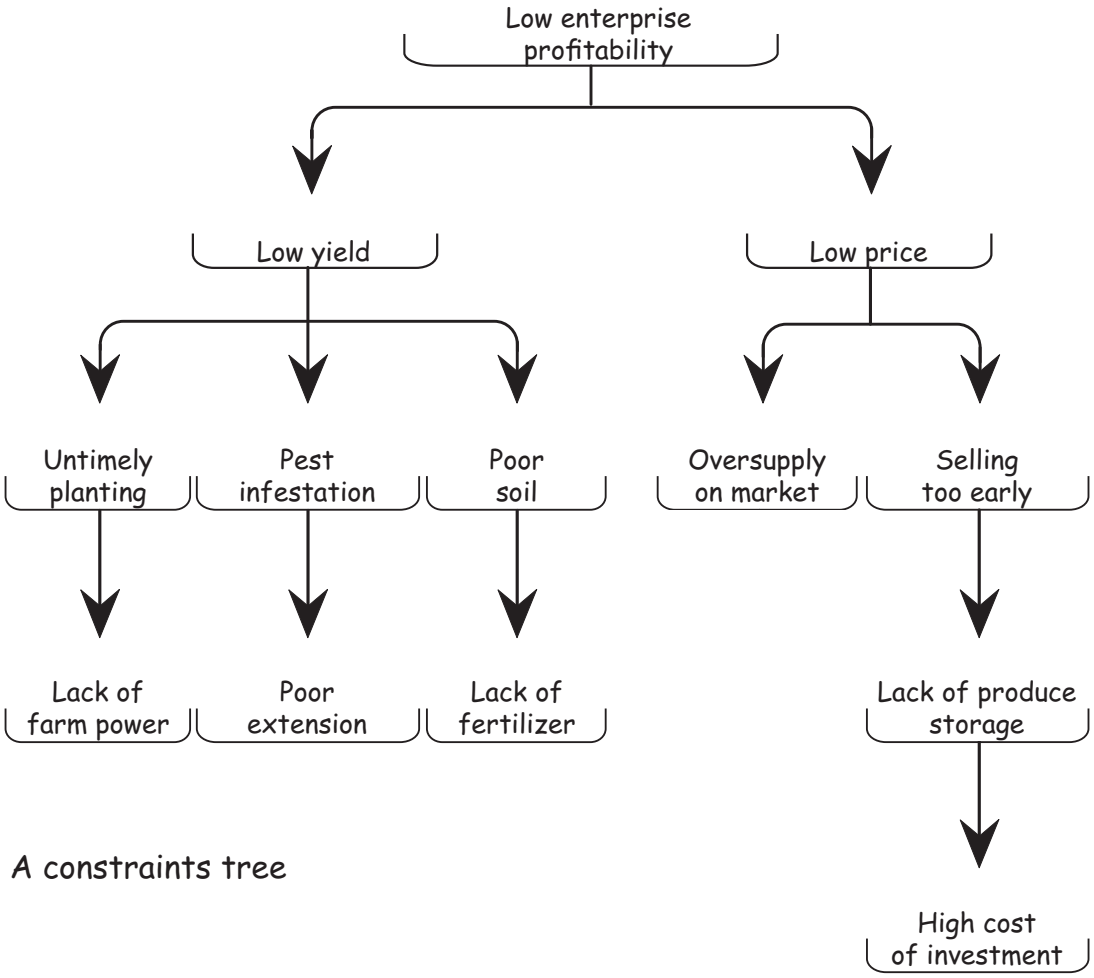
To conduct a constraints analysis requires two tools: a constraints tree and a constraints analysis matrix.

A constraints tree helps the farmer trace the actual constraint by refining and digging deeper into the issue. In the example given in figure on the next page, the farmer experiences low enterprise profitability. Low profitability is found to be caused by low yield and low price. In this example, low yield is found to be caused by three different factors: untimely planting, pest infestation and poor soil. Low price is found to be caused by two factors: poor quality produce and selling early. Each of these factors is in turn caused by another factor. This process of identifying the causal constraints continues until it reaches a logical conclusion within the immediate knowledge of the farmer.

Note

It is important that the constraints identified must be real and not just possible. In other words, they must be things the farmer knows or believes to be true about the farm or farm situation.

Constraints and opportunities analysis (continued)



A constraints tree

Constraints and opportunities analysis

After a constraints tree has been completed, list the constraints and identify the opportunities that present themselves. A format and instructions are shown on the next page and worksheets for both a constraints tree and an analysis matrix are provided in Handouts 4.1B and C.

Constraints and opportunities analysis (continued)

Constraints and opportunities analysis matrix

Enterprise:					
Key constraints	Lowest level constraints	Opportunities	Changes to be made to current practice	Resources needed	Who is responsible

Steps for completing the matrix are set out below:

1. *Enterprise:* Write the farm enterprise that you are engaged in.

2. *Key constraints:* Using the constraints tree analysis as a guide, identify the key constraints in each particular enterprise. List all the constraints except the last one. (The last one is the lowest level constraint.)

3. *Lowest level constraints:* These are the constraints listed at the end of a particular listing of constraints. They are usually the boxes at the bottom of the constraints tree.

4. *Opportunities:* Decide and write down a specific opportunity to address each of the identified lowest level constraints, write specific opportunities.

Constraints will present new objectives or opportunities to pursue. In some cases, something will need to be fixed. In other cases, the constraints may point to an opportunity not considered before.

Constraints and opportunities analysis (continued)

5. *Changes to be made to current practice:* Specify the changes to be made to current practices. Consider the following when deciding what changes to make:

- *Practices:* In what way does my current management practice need to be changed to address the constraint identified?
- *Technology:* What are the current technologies available? What new technologies can be adapted for improving the enterprise?

Changes should reduce or remove existing constraints; they should focus on the lowest level constraint. Changes can relate to enterprises, the farm and the non-farm area. For example, at the enterprise level, changes may mean changing an agricultural practice. At the whole-farm level, the changes may include the introduction of alternative enterprises.

6. *Resources:* What resources are needed (technical, financial and human)? Is there room for expanding the existing resources for the enterprise selected?

7. *Who is responsible:* Identify the person(s) responsible for implementing the identified changes.

8. Once changes and resources have been identified, the overall effects on the farm system should be appraised. In practice, many enterprises are technically and economically interrelated. For example, higher grain yields may increase the availability of straw as feed for livestock. A small change may affect the whole farm-household system, posing many questions to be answered by farmers and extension workers.

Constraints and opportunities analysis (continued)

The following is an example of a completed constraints analysis matrix using the information from the constraints tree shown earlier.

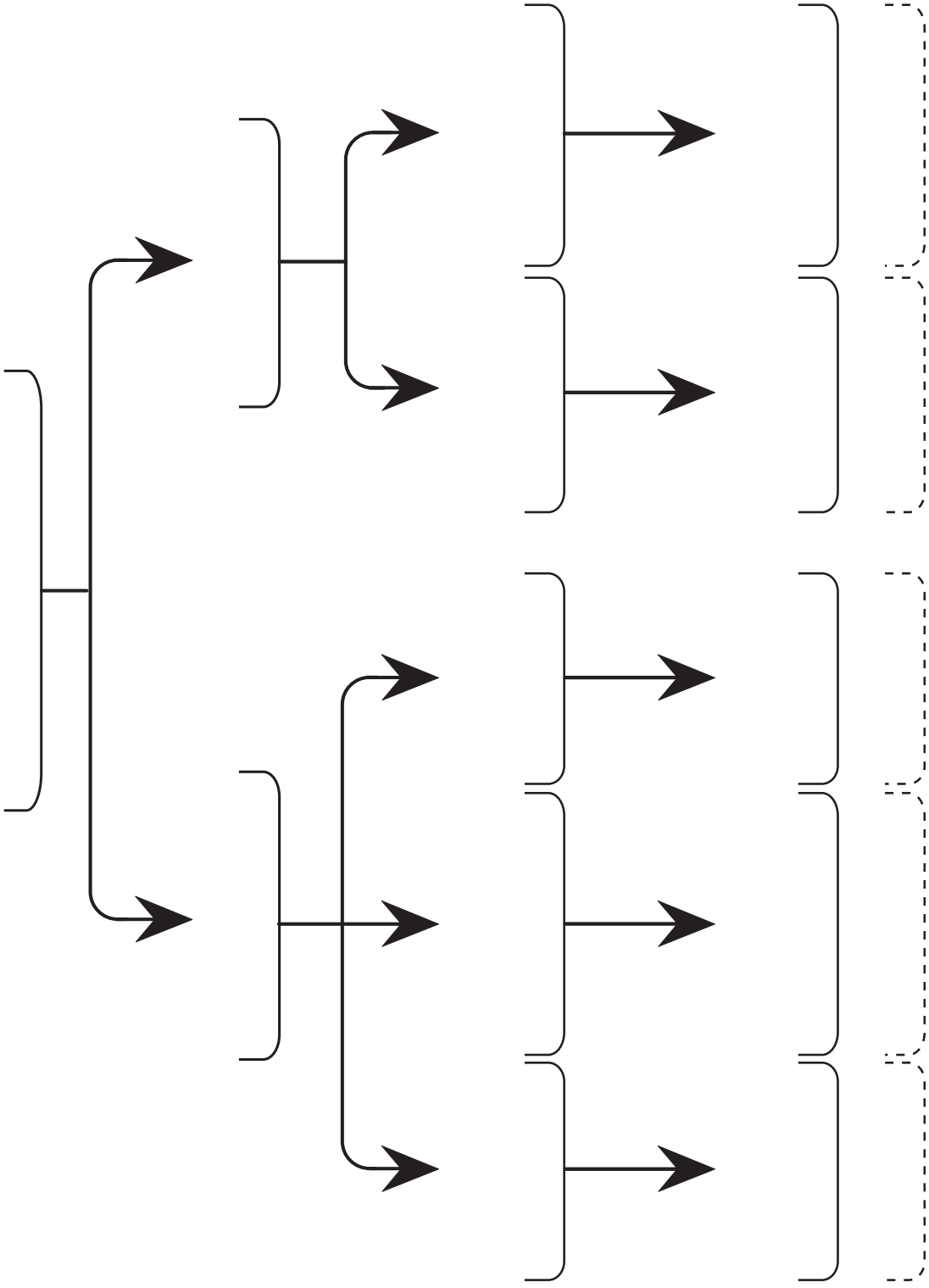
Constraints and opportunities analysis matrix

Enterprise:

Key constraints	*Lowest level constraints*	*Opportunities*	*Changes to be made to current practice*	*Resources needed*	*Who is responsible*
Low profitability Low price	Oversupply on market	Introduce a higher value crop; soyabeans	Plant half the maize lands under soyabeans	Extension information on how to grow soya-beans.	Farmer with support from extension service
Low profitability Low price Sell too early Lack of product storage	High cost of investment relative to ability to finance	Investigate alternative options; seek loan	Train labour to pack and store for the market	Training support from extension service	Farmer with support from extension service
Low profitability Low yield Untimely planting	Lack of farm power	Negotiate with brother-in-law to use tractor	Use tractor on at least 50% of the farm		
Low profitability Low yield Pest infestation	Poor extension information	Learn about integrated pest management at FFS	Apply ISP on fields	Training	Farmer with support from extension service
Low profitability Low yield Poor soil	Lack of fertilizer	Buy fertilizer	Apply fertilizer on 50% of crops	Guidelines on using fertilizers	Farmer with support from extension service

There is no single right or wrong set of answers. Each analysis will differ depending on the resource base of the farm, the farmer's attitude toward risk or the reliability of information. What is most important is that farmers begin to apply a systematic process of identifying constraints and opportunities. This will help to improve farm management skills. This will contribute to the sustainability and profitability of farm livelihood.

Worksheet — Constraints tree format



Worksheet — Constraints and opportunities analysis matrix

Enterprise:

Key constraints	*Lowest level constraints*	*Opportunities*	*Changes to be made to current practice*	*Resources needed*	*Who is responsible*

Worksheet — Constraints and opportunities analysis matrix (continued)

Enterprise:

Key constraints	*Lowest level constraints*	*Opportunities*	*Changes to be made to current practice*	*Resources needed*	*Who is responsible*

Constraints and opportunities checklist questions

The following are some questions that can be used to help a farmer in identifying effects of proposed changes to address the identified constraints and objectives. In this case the changes being investigated are intensification, diversification and alternatives regarding finances.

Intensification

___ Which enterprises can be made more productive through improved production techniques?
___ Which production techniques are available but unknown to most farmers?
___ What will be the changes in costs of production per unit?
___ What will be the changes in gross production per unit?
___ What is the effect of this change on the cash flow of the farmer?
___ Is there adequate labour available to make the change?
___ Are the necessary inputs and materials available?
___ Are the suppliers of key inputs able to provide more inputs of the same quality on time?
___ Will the extra production be sold at the same price?
___ Will the extra production be available for sale or will the farm household use the extra production for home consumption?
___ If the extra production is used for consumption, is the extra production substituting any other consumption and releasing cash?
___ Will the farm household reduce the production of this other crop (releasing land for alternative production or fallow)?
___ If extra inputs are available on credit, will the farm household use the inputs on the crop it was intended for?
___ What will be the input requirements and outputs under conditions of low rainfall and other risks?

Constraints and opportunities checklist questions (continued)

Diversification

___ What are the market opportunities that exist?
___ Are there opportunities for increasing sales to the current market?
___ Are there opportunities for selling produce in other markets in the vicinity?
___ Are there opportunities to market produce in more distant markets?
___ Are there opportunities to diversify production and introduce new enterprises?
___ What are the expected costs and revenues from doing so?
___ What is the effect of this change on the cash flow of the farmer?
___ Is there adequate labour available to make the change?
___ Are the necessary inputs and materials available?

Alternatives

___ What to propose if the farmers do not have sufficient cash in the proposed period?
___ Whether the supplier delivers fertilizer on credit?
___ If not, are there other institutions that could provide credit?
___ If yes, what would be the extra cost?
___ When must the farmer repay the credit?

Learning points

These questions will show that each proposed change in the farm system has to be evaluated in terms of all its possible short- and long-term effects on the farm-household system. They also show the interrelationship between the farm and supporting systems.

Preparing for Session 4.2
Gross margin budgets

Learning outcomes
Understanding (i) the purpose of this instrument in diagnosis and planning,
(ii) the application of the budget tool for forward planning,
(iii) the use of the tool in choosing between alternatives,
(iv) when to apply the budgeting tool,
(v) how to apply the tool.
Ability to (i) know when to use the method,
(ii) carry out the method
(what are the steps in enterprise budgeting?)
How to budget for (i) annual crops/enterprises,
(ii) livestock and perennials

Training aids
Exercise 4.2A (Constructing a gross margin)
Handout 4.2A (Gross margin budgets)
Handout 4.2B (Steps for calculating gross margins)
Handout 4.2C (Worksheet — Gross margin template: actual hectares)
Handout 4.2D (Worksheet — Gross margin template: one hectare)
Handout 4.2E (Worksheet — Gross margin template: livestock enterprise)

Notes

Gross margin budgets

This session explains the concept of a gross margin and its relation to production costs, gross income and profit. A gross margin is a simple and powerful tool for analysis and planning. Participants will look at the components of a gross margin and learn the procedure for calculating a gross margin and knowing when to apply it.

Opening statement

Gross margin is a useful and practical tool for assessing the profitability of farm enterprises. We shall begin by reviewing the main points in Handout 4.2A (Gross margin budgets). Participants should feel free to answer questions.

The outline on the following pages is provided to help the facilitator conduct the review.

Outline of Handout 4.2A (Gross margin budgets)

Main points covered in the handout

- Gross margin measures the relative profitability of the enterprise (not the actual profit.) It will guide farmers on which enterprise to engage in given the resources available.
- The basic formula for calculating a gross margin is:

Gross margin = Gross income - Cost of production

- To calculate the gross margin, the costs must be categorized into variable and fixed costs.
- For crops, gross margin analysis is usually done on a per hectare basis, if land is the most limiting resource and for livestock enterprises on a per head basis.
- In many cases, another resource such as family labour might be of greater concern. For example, some farmers might have extra land but few family members to do all the required work. In this case, gross margins can be calculated on a person-day basis.
- Farm profit is determined by:

Whole farm income (profit) = Gross margins of all farm enterprises - Fixed costs

How can a gross margin be used?

- to make comparisons between farmers within the same area;
- to make comparisons for a single farmer over time;
- as a planning tool in evaluating the potential value of alternative technologies and/or enterprises.

Advantages of gross margins

- The information required is simple.
- The information required can be easily collected.
- The analysis is easy to complete.
- The results are easy for both farmers and extension workers to understand.

The results can help extension workers to decide whether to encourage farmers to adopt a technology or introduce a new farm enterprise.

Exercise introduction

Let us continue our review of this handout by following up with Exercise 4.2A (Constructing a gross margin). Here we will follow a series of steps in the calculation of representative gross margins.

Exercise 4.2A
Constructing a gross margin

Purpose: To construct a per hectare gross margin for selected enterprises using a group consensus approach. The intention of this exercise is to elicit the opinions of the course participants in constructing a gross margin. (Participants should have read Handout 4.2A prior to this exercise.)

Methods: Group participation.

Materials: (i) Handouts 4.2B (Steps for calculating gross margins), C (Worksheet — Gross margin template: actual hectares), D (Worksheet — Gross margin template: one hectare) and E (Worksheet — Gross margin template: livestock enterprise) (ii) flip chart paper or newsprint, (iii) thick marking pens.

Allow about 120 minutes for this exercise

This should provide enough time for instruction and development of the major elements of a process budget. About 10 minutes should be devoted to introductions and a short explanation of the usefulness and need for enterprise budgets.

Procedure

1. Get the participants into their farm teams.

2. Distribute two copies each of Handouts 4.2C and D (Gross margin templates). Distribute one copy of Handouts 4.2B (Steps for calculating gross margins) and 4.2E (Gross margin template for livestock enterprise).

3. Briefly describe the content and the information needed for each template.

4. Each team must choose one crop and one livestock enterprise. The groups should already have agreed on the farm size. They need to decide on the level of technology that they will use.

Exercise 4.2A (continued)

5. Each team should follow the steps outlined in Handout 4.2B. They will need to reach consensus on the enterprise budget. The gross margin that they calculate should be representative of the production practices, input combinations, costs, production level and farmgate prices the team has identified.

Encourage the participants to define every step taken in growing the crop from land preparation to the point when the harvested crop leaves the farmgate. The equipment used should also be identified along with a description of the cultural practices.

Encourage the groups to reach consensus even though there will be differences in the husbandry techniques that each participant knows. If no consensus can be reached, the group should agree to develop two different budgets: one for a production system using higher technology and another using a lower technology.

6. After completing the 'brainstorming' ask the groups to organize their information on their crops into the gross margin format. Encourage them to verify the data they have collected. (Remember, they must calculate a gross margin for a crop and a livestock enterprise.)

Each team must decide how they want to start the calculations. Do they want to work from the actual hectares and convert to a per hectare gross margin? Or do they want to work from per hectare basis and convert to the actual gross margin for their enterprise?

7. The final version of the gross margin budgets should reflect the consensus of the group. Ensure that the specific process/enterprise budget is a fair description of the inputs, costs and returns associated with growing the crop.

8. Discuss results: Open a discussion with the participants on how they could use this enterprise budget template. If the participants run short of ideas you could prompt them into thinking that the budget could be used to compare individual farm situations.

Be sure the participants are clear on the whole enterprise gross margin and the unit based hectare gross margin.

Exercise 4.2A (continued)

The whole enterprise gross margin calculates the gross margin based on the actual number of hectares. This indicates profitability of a particular sized farm, but cannot generally be used for comparing relative profitability unless it is converted to a unit based gross margin.

The unit based gross margin is based on one hectare or livestock unit, etc. This indicates profitability per unit. It can be used for comparing farms and enterprises. It can be used to calculate profitability of a whole enterprise if it is converted to a whole enterprise gross margin.

Space for notes and questions for the facilitator

Gross margin budgets

What is a gross margin budget?

The term *gross margin* generally refers to the remaining income from an enterprise after the variable costs are deducted (Gross income less variable costs). *A gross margin budget* is a fairly detailed estimate of the output, cost, and profitability of individual crop and livestock enterprises. The gross margin budget includes all costs involved in producing the enterprise. It is not profit because it does not include all costs (it excludes fixed costs that the enterprise shares with other enterprises). But it is an indication of the profitability of an enterprise. If an enterprise does not have a positive gross margin, then that enterprise is not profitable.

The gross margin budget can be used to compare the performance of a single enterprise using different farming practices and technologies. Similarly, it can be used to calculate the potential profitability of growing an entirely new crop if farmers wish to diversify their products.

A gross margin is usually calculated on a unit basis. It can be calculated on a per hectare basis, or as a return to labour, based on the number of days worked by the farmer and the farm family. These would be expressed as $ per ha, $ per worker, $ per person day, respectively.

Farmers who market some farm products should know the costs of production and should be able to calculate the gross margin. This will allow them to analyse the current performance of an enterprise using current prices and input—output information. Using the gross margin they can project information into the future. This will help them plan and make decisions. This is called budgeting.

Gross margin budget (continued)

Components of the gross margin

The gross margin is made up of two major parts:

- gross income
- variable costs

The basic calculation for a gross margin is as follows:

Gross margin = Gross income - Variable costs

Further on in this handout, we will discuss the concepts of gross income and variable costs.

How can gross margin be used?

Gross margin is a simple, useful and practical tool for assessing the comparative profitability of different farm enterprises or different technologies. Gross margin analysis can be done by extension workers and by literate farmers who can do simple arithmetic.

Note

Refer to participatory methods to learn non-number based methods of calculating gross margins. This will make it possible for less literate and numerate farmers to make the comparisons. This, in turn, will assist these farmers to make better decisions about their farms as they move into market-oriented farming.

Gross margin budget (continued)

Gross margin analysis is particularly suitable for farmers who are selling increasing amounts of their farm production in the marketplace. Comparisons can be made:

- between farmers;
- within the same farm over time;
- between different technologies on the same enterprise.

Gross margin can be used as a planning tool in evaluating the potential value of alternative technologies and/or enterprises. This will help farmers make informed decisions about their future farming activities and about opportunities as they present themselves.

The advantages of gross margin analysis include:

- information required is simple and easily collected;
- analysis is easy to complete;
- results are easy for both farmers and extension workers to understand.

As will be discussed in more detail later, gross margins ensure that values for non-purchased inputs such as family labour, draft power and manure are included among the variable costs. When this is done, farmers begin to value these inputs more accurately. This in turn will help them make better decisions about non-purchased inputs.

The results from the gross margin analysis can be useful in helping:

- farmers decide whether or not to adapt a technology or change a farm enterprise;
- farmers decide whether or not to introduce new market-oriented enterprises;
- extension workers decide whether or not to encourage farmers to adopt a particular technology or enterprise.

Gross margin budget (continued)

Calculating a gross margin

The basic formula for calculating a gross margin is as follows:

Gross margin = Gross income - Variable costs

Gross income (value of production) for crop enterprises

Calculating gross income is different for annual crop enterprises and livestock and perennial crop enterprises. We shall start with crop enterprises. The gross income or value of production is the money received from the sales of produce plus the value of unsold produce.

The gross income is obtained by multiplying the physical output by the farmgate price of the product and valuing home consumption. The farmgate represents the point of first sale.

Gross income = Yield × Farmgate price

It is generally incorrect to calculate gross income for the enterprise by using the price at which the farmer sold the produce in the marketplace or elsewhere off the farm. If the farmgate price is not known, then it can be calculated by deducting the costs of transportation and other marketing expenses from the market price.

For example, let us say that a farmer had harvested 3 tonnes of cassava. Most of it was sold at the market for $200 per tonne. It cost $10 per tonne to take the cassava to the market. There were no other marketing expenses. The outcome of this is as follows:

Farmgate price: $200/tonne - $10/tonne = $190/tonne
Gross income was: $190/tonne x 3 tonnes = $570

Gross margin budget (continued)

When farmers are planning, they will not yet have sales, consumption and storage data for the crop that has not yet been planted. In this case they will want to estimate the gross income. To do this, they need data about yield and price. If they know that their farm produced 3 tonnes per ha last year and know the average farmgate price was $200 per tonne, then by using the following formula they can estimate the gross income per ha.

No matter how much farmers sell, consume or store the value of the crop (gross income) can be determined by multiplying yield by price.

In most cases, this simple calculation is adequate for basic comparisons and decision-making. However, a more detailed understanding of gross income highlights that the gross income from an enterprise comprises a number of sources of income:

- produce sold;
- produce consumed by the farmer's family/workers;
- the produce put into storage;
- by-products.

Produce sold

The money received from the amount of the product of the farm sold on the market is part of the gross income of the enterprise. Gross income from sales is calculated as follows:

Income from sales = **Quantity of produce sold** × **Farmgate price**

Gross margin budget (continued)

Produce consumed by the farmer's family/workers

Not all of the product produced on a farm will be sold. Some will be consumed (eaten) by the farm family or the workers. Even though this does not bring in cash to the farm, the product has a value and therefore is included in the gross income. The contribution to gross income from produce consumed is equal to the value of the produce consumed. This value is calculated as follows:

Value of produce consumed	=	Quantity of produce consumed	×	Farmgate price

The produce put into storage

Again, in some cases, some of the harvest will be stored. This may later be sold or consumed. But either way, it has a value and therefore contributes to the gross income for the enterprise. The contribution to gross income from produce stored is equal to the value of the produce stored. This value is calculated as follows:

Value of produce stored	=	Quantity of produce stored	×	Farmgate price

By-products

In addition to the main produce, the enterprise may also produce by-products. An example is stover from maize or the manure from a livestock enterprise. These by-products can be sold or used on the same or another enterprise.

Gross margin budget (continued)

In either case, they have value. If some or all of the by-product is sold, the contribution to gross income is equal to the income received from the sale of the by-product. This is calculated as follows:

Income from by-product = **Quantity of by-product sold** × **Price of by-product**

If some or all of the by-product is used on the farm, the contribution to gross income from by-products is equal to the value of the by-products. This value is calculated as follows:

Value of by-product used on the farm = **Quantity of by-product used** × **Price of by-product**

Thus the total value of the by-product is calculated as follows:

Total value of by-product used on the farm = **Income from by-product sold** + **Value of by-product used on the farm**

Therefore, the gross income of an enterprise is calculated as follows:

Income from sales
\+ ***Value of produce consumed***
\+ ***Value of stored produce***
\+ ***Value of by-products on the farm***

= ***Total gross income***

Gross margin budget (continued)

The next example calculates a gross income using some of the income sources discussed above.

Example
Gross income of one ha of maize

Maize grain sold	11 bags of 90 kg at $13/bag	=	$143.00
Grain consumed at home	2 bags of 90 kg at $13/bag	=	$26.00
Stover sold as by-products	5 tonnes at $9/tonne	=	$45.00
	Gross income	=	$214.00

Gross income for livestock enterprises and permanent crops

Farming activities for perennial crops (e.g. fruit trees) and livestock enterprises extend over more than a single year. In these cases, gross income is defined as the difference between the closing valuation of produce stored, plus sales (including marketable produce and by-products consumed on the farm) and the opening valuation of produce stored plus purchases.

Example of a gross income calculation for a livestock enterprise format

	Item	$	
	Closing valuation (at the end of year)		
-	Opening valuation (at the beginning of year)		
=	**Increase/decrease in value of stock (inventory change)**		**(A)**
	Income from sales (livestock)		
+	Income from sales (by-products)		
	Value of products used for home consumption		
=	Value of sales and consumption		
-	Purchases of animals (during the year)		
=	**Net sales**		**(B)**
	Gross income		**(A+B)**

Gross margin budget (continued)

The gross income calculated for perennial crops would use the same calculation method. Changes in value of tree crops and the value of produce stored on the farm would be part of the gross income calculation.

Because it is possible to produce more than a single short-term crop from the same land area within a year, a distinction needs to be made between gross income for a particular season and gross income for a particular year. The gross income of a crop for the year may be the sum of the gross income for two or more crops grown during the year.

Variable costs

Remember, gross margin is gross income less the variable costs.

Gross margin = **Gross income** - **Variable costs**

Costs associated with a farm can be divided into two kinds of costs: variable costs and fixed costs.

Total costs = **Variable costs** + **Fixed costs**

Variable costs. Variable costs are the costs of actual production. They apply to specific enterprises on the farm. These costs vary as output changes. These costs occur only if something is produced. They do not occur if nothing is produced. For example, labour is required in crop production. If a farmer has to hire labour, then as production is increased the need for hired labour also increases. If no yield is produced there is no need for hired labour.

Gross margin budget (continued)

Typical variable costs include the cost of seeds, fertilizers, sprays, fuel for machines, hired labour, livestock feed, and veterinary costs. Variable costs can be allocated to specific enterprises. An example of variable costs for maize is shown below.

Example

Variable costs for maize

Item	Unit	Quantity	Unit price ($)	Amount ($)
Seed	kg	10	0.90	9.00
Fertilizer	50 kg per bag	1	13.00	13.00
Manure	Tonnes	4	13.00	52.00
Pesticide	kg	4	2.00	8.00
			Total inputs and materials	82.00
Labour				
Land preparation	person-days	20	0.70	14.00
Planting/manuring	person-days	10	0.60	6.00
Weeding	person-days	15	0.60	9.00
Harvesting/ threshing	person-days	10	0.60	6.00
			Total labour	35.00
			Total variable costs	**117.00**

Fixed costs. The fixed costs apply to the farm as a whole. Fixed costs are costs that do not vary with changes in production output of a specific type of crop or livestock production. Fixed costs remain the same regardless of the output. Even if there is no output, there will still be fixed costs.

Gross margin budget (continued)

Fixed costs include, for example, the cost of purchasing a tractor or a piece of equipment that is used on the whole farm and the cost of a head of livestock. Most of the costs of keeping a tractor, equipment and draft cattle remain the same if the item is or is not fully used. Fixed costs are also known as overheads.

Fixed costs also include permanent labour, management and depreciation. (Depreciation is the cost of the declining value of capital items such as tractors, machinery and buildings. Depreciation is usually calculated as an annual payment. An example of the way depreciation is calculated is given at the end of the handout.)

Calculating gross margins

Basic calculation

As stated earlier, the gross margin for a crop or livestock enterprise is obtained by subtracting the variable costs from its gross income.

Gross margin = **Gross income** - **Variable costs**

Costs and income analysis are usually done after the harvesting of the crop at the end of the cropping season or year. In the case of perennial harvest, yields and prices vary during the year. Therefore, the time of analysing costs and income should be done for a given crop year. In such cases, it is important that inputs and output refer to the same year being considered for analysis.

Gross margin budget (continued)

A calculation of a gross margin (using the figures from the previous examples) for 1 ha of maize is shown below.

Gross income		$214.00
Variable costs	-	$117.00
Gross margin	=	$ 97.00

Scaling to units for comparison

To be able to make comparisons, the gross margin calculations must be made on the same unit basis, such as hectare, labour or water. If the information available to farmers is for more or less than one unit, then they need to convert it to one unit. See the two examples below.

Example

Farmer 1 with 0.75 ha of millet

At the end of a season, a check of the records finds the following:

Source of income	Quantity (Tonne)	Farmgate price ($)	Value ($)
Sales at market	1.0	200	200
Consumed	0.5	200	100
Stored	0.5	200	100
By-product	0.2	50	10

Total yield

Millet	2.0
By-product	0.2

Gross income **410**

Gross margin budget (continued)

The gross income for the millet enterprise is $410. Let us say that variable costs are $300. Using our formula, we find:

Gross income		$410
Variable costs	-	$300
Gross margin	=	$110

The gross margin from 0.75 ha is $110. But to make a comparison it is necessary to convert this to a unit basis, in this case ha. To do this, simply divide the actual gross margin by the actual hectares.

$110/0.75 ha = $147/1 ha

This farmer has a gross margin of $147 per hectare.

Example
Farmer 2 with 1.5 ha of millet

At the end of a season, a check of the records finds the following:

Source of income	Quantity (Tonne)	Farmgate price ($)	Value ($)
Sales at market	2.0	200	400
Consumed	0.5	200	100
Stored	1.5	200	300
By-product	0.5	50	25

Total yield

Millet	5.0
By-product	0.5

Gross income **825**

Gross margin budget (continued)

Let us say that this farmer has a total variable cost of $700. This would give us the following:

Gross income	$825
Variable costs	- $700
Gross margin	= $125

This gross margin of $125 is for 1.5 hectares. Therefore, if we want to compare Farmer 1 with Farmer 2, we need to convert it to a gross margin for 1 hectare:

$125/1.5 ha = $83.3/1 ha

This farmer has a gross margin of $83.3/ha.

The *total* gross margin for Farmer 1 is less than the *total* gross margin for Farmer 2. However, when converted to a unit basis, we find that although the enterprise is smaller, Farmer 1 has a higher gross margin per hectare than Farmer 2. Farmer 1 has a gross margin of $147/ha and Farmer 2 has a gross margin of $83.3/ha. Although Farmer 2 has a larger final income, Farmer 1 has a more profitable farm. It is likely that with more land, Farmer 1 would earn more income than Farmer 2.

The unit of measure for a gross margin is usually the unit of the most limiting factor. This may include land, labour, water or money invested. In the case of crops (and most trees), the unit of measure is normally per hectare (or acre) — that is, based on land. In the case of livestock, the unit of measure is production per head for livestock. And sometimes in the case of trees, the unit of measure is production per tree.

Gross margin budget (continued)

Converting from units to determine actual income

In many cases, the farmer will obtain gross margin information about a crop where the information is presented on a unit basis. A farmer who wants to know what the actual gross margin would really be needs to convert from a unit to the actual size. To do this, multiply the per hectare gross income by the actual number of hectares. Two different cases are shown in the next example.

Example
The gross margin for maize in the area is $200 per hectare

Case 1 — Farmer 1 has 0.8 ha, which yield...

0.8 ha × $200/1 ha = $160/0.8 ha

Case 2 — Farmer 2 has 1.6 ha, which yield...

1.6 ha × $200/1 ha = $320/1.6 ha

Farmer 1 can expect to have a total gross margin of $160, while Farmer 2 will have a total gross margin of $320.

Farm profit

The farm profit (or whole farm income) is an estimate of the overall profitability of the farm as a whole. Farm profit is calculated by combining the gross margins of each of the farm enterprises and deducting fixed costs. The final figure represents the profit or income of the farm. The income from the farm is necessary to cover the family living expenses. The basic formula is as follows:

Whole farm income (profit) = **Gross margins of all enterprises** - **Fixed costs**

Gross margin budget (continued)

The following example shows how to arrive at the whole farm profit.

Example
Calculation of whole farm profit

A farmer with 3.5 ha of land has the following gross margins from three enterprises:

Enterprise	Ha	Gross margin per hectare ($)	Gross margin ($)
Millet	1.5	150	225
Maize	0.5	120	60
Groundnuts	1.5	200	300
		Total	**585**

The whole farm gross margin is $585. To calculate the whole farm profit, deduct the fixed costs.

Whole farm gross margin	$585
Fixed costs	- $200
Farm profit	= $385

Because the fixed costs do not change very much with changes in production, if the farmer can increase the gross margins on the farm, profits will automatically increase. For this reason it is possible to plan in terms of gross margins and leave the farm profit to look after itself.

Because most small-scale farmers in Africa have very few fixed costs, the gross margin is a very useful indicator of overall farm profit. Farmers need only to plan in terms of gross margins.

Gross margin budget (continued)

Below is a calculation of the whole farm gross margin for a farm with livestock and crops.

Enterprise	Unit	Gross margin per unit ($)	Gross margin ($)
Millet	1.5 ha	150	225
Maize	0.5 ha	120	60
Groundnuts	1.5 ha	200	300
Goats	2 TLSU*	25	50
Total	3.5 Ha 2 TLSU		635
		Fixed costs	*200*
		Farm profit	**435**

*TLSU: Livestock units (in this case 2 goats)

Note

The unit for crops is hectares and the unit for the livestock is LSU (livestock units). The actual gross margin is calculated by multiplying the GM per unit by the number of units.

Summary points

- Gross margin measures the relative profitability of the enterprise. It does not measure the actual profit. It will guide farmers on which enterprise to engage in given the resources available. In order to calculate gross margin, it is necessary to sort costs into variable and fixed costs. The gross margin allocates the variable costs to their respective enterprises.

- If land is the most limiting resource, gross margin analysis is usually done on a per hectare basis for crops and on a per head basis for livestock.

Gross margin budget (continued)

- In many cases, another resource, such as family labour, might be the limiting resource. For example, some farmers might have extra land, but not enough family members to do all the required work. In this case, gross margins can be calculated leaving labour out of the calculation until the end. (This is calculated in Handout 4.2B)

- To calculate the profit for the whole farm, the gross margins for each of the enterprises are combined. From this total, the fixed costs are deducted. This shows the profit for the farm.

Additional reading

Summary of gross income

The factors that influence the gross income of an enterprise can be summarized as:

- The value of produce sold both directly or via intermediaries;
- The value of by-products and produce re-used on the farm — produce that is used again as input on the same farm (e.g. maize produced as grain and used as feed for the livestock enterprise);
- The value of produce consumed by farmers and their families (e.g. rice, beans, cassava) and valued at the farmgate price;
- The gain/loss in value of tree crops and livestock — increase or decrease in value of tree crops and livestock. It is the difference in value at the beginning of the year (opening valuation) and the value at the end of the year (closing valuation).

Gross margin budget (continued)

- The gain/loss in value of stored farm produce — in the case of products from a previous agricultural season and stored ready to be sold (e.g. cassava, yam). This is the difference in value from the time that the produce is stored to the time that it is sold.

More about variable costs — assigning (imputing) the value of key variable inputs

Cash and non-cash costs. Costs can be classified as cash or non-cash. Cash costs are those costs where the farmer actually pays out of pocket. Non-cash costs are those costs incurred but no actual cash payment is made. Examples of cash costs are fertilizers, farm chemicals purchased, hired labour or fuel and oil. Examples of non-cash costs are unpaid family labour, own seeds that are stored, use of draught animals owned by the farmer. The following notes refer to the valuation of non-cash items.

The estimation of variable costs is a little complicated by the need to assign value to inputs to the farm that are not 'bought' or 'hired' from the input supply market.

Family labour. Family labour is an example of an input that is not bought or hired. Family labour is an important input for most farmers, particularly when they are running farming systems that are only partially mechanized.

Different enterprises require very different levels of labour input. For example, vegetables require a much higher level of labour input than maize. Therefore, it would be somewhat unreasonable to compare the gross margin of vegetables to the gross margin of maize without taking into account the labour required.

Gross margin budget (continued)

In the calculation of the gross margin, the payment for hired labour is already taken into account as a part of the variable costs. However, in many cases, the labour on small farms comes largely from family sources. In order to make meaningful comparisons of different enterprises or of technologies relating to the same enterprise, it is necessary to estimate a cost for this family labour.

Estimating the cost of family labour is done by valuing family labour at what it would cost to hire such labour instead of using the family labour.

If little hired labour is used in the area then the *opportunity cost* of labour would not be very high. We say that the cost of family labour is *imputed* (assigned a value). The time required for different farm operations would need to be accounted for and the result multiplied by the opportunity cost. The less mechanized the farming is the more relevant it is to impute a value for family labour.

Labour opportunity cost

The real cost of family labour is the opportunity cost of family labour. Opportunity cost can be defined as the most valuable alternative you give up when you make a decision. For example, if a farmer works part time in town and decides to take a day off in order to work on the farm, in reality the farmer will be giving up the wages that would have been earned in town. This cost is just as real as paying a hired labourer to do the work for the farmer on the farm and often it is more than the cost of hiring labour.

Gross margin budget (continued)

Land

Sometimes an opportunity cost for land is included in the gross margin especially when comparing results from a number of different farmers — some of whom rent their land. To make a valid comparison the opportunity cost of land is imputed by what it would cost to rent it.

More about fixed costs — depreciation

If you buy something new, use it, and then try to sell it again you will not get the same price you paid for it. This loss in value is called *depreciation*. Depreciation is an important factor to consider when looking at the fixed costs of a farm.

Farm buildings, tools, machinery and equipment are expensive to buy. Such items are called *durable capital items*. We expect them to last a certain period of time before they need to be replaced. This period of time (during which we use the item) is called its *useful life*.

If the cost of these items were applied to a crop or livestock enterprise all at one time, then you would not get a true picture of how profitable that crop or livestock is. For example, if the total cost of a tractor were added to the other costs of a particular crop in one year, then the enterprise is likely to appear to be unprofitable. To give a truer picture of profitability, the cost of durable capital items has to be applied over several years.

A method is used to spread the costs of durable capital items over their useful life. It gives us a fairly accurate idea of what it costs to use the item for a year. Let's look at an example.

Gross margin budget (continued)

Say the cost of a tractor is $35 000. It has a useful life of 7 years. Therefore, each year, one-seventh of the cost of the tractor is taken off its value and added to the enterprise costs. The formula is as follows:

$$\textbf{Depreciation/year} = \frac{\textbf{Purchase price (\$)}}{\textbf{Useful life (years)}}$$

In the example given we get the following:

$$\frac{\$35\,000}{7 \text{ years}} = \$5\,000 \text{ per year}$$

Each year, for 7 years, $5 000 will be a fixed cost to the farm. This fixed cost remains on a yearly basis until the tractor comes to the end of its life.

Space for notes and questions for the facilitator

Steps for calculating gross margins

A gross margin is calculated separately for each enterprise.

1. Determine an average yield per hectare for the enterprise.

2. Determine the average farmgate price for the enterprise. (The farmer or extension worker will need to take the information on prices available in the market and deduct all of the marketing costs from the farmgate to the market.)

3. Calculate the gross income from sales per hectare (i.e. the average yield per hectare multiplied by the price at the farmgate).

4. Calculate the value of consumed and stored produce.

5. Calculate the non-labour variable cash costs of inputs and materials per hectare for the enterprise. These should include items such as the costs of seeds, fertilizer, pesticides, machinery services.

6. Estimate the labour costs per hectare per operation for each enterprise (e.g. land preparation, sowing, weeding or harvesting).

   First: Determine the number of hired person-days required per operation per hectare.

   Second: Determine the rate of pay for hired labour.

   Note: In some countries there is different rate of pay per hectare per operation. If this is the case, then the costs will be calculated per hectare per operation.

   In some countries labour is hired at a fixed rate per day. If this is the case, then the costs will be calculated on the total person-days.

Steps for calculating gross margin (continued)

Third: Calculate the cost of hired labour by multiplying the number of hired person-days per activity by the current wage rate for each activity.

7. Calculate the cost of family labour by multiplying the number of family labour person-days per activity by the opportunity cost of family labour (i.e. the current wage rate, as in step 6).

8. Calculate the total variable costs by summing the cost of inputs and materials, hired labour and family labour.

9. Calculate the gross margin per hectare by subtracting variable costs from the gross income.

10. Repeat this calculation for each enterprise on the farm.

Note

The procedure for calculating the gross margin in terms of returns to labour or per labour-day is similar to the above procedures except that the total family labour is not included. Returns to labour are calculated by taking total income less variable costs and dividing by the total labour days used.

$$\text{Returns to family labour} = \frac{\text{Total income - Variable costs}}{\text{Total family labour-days}}$$

11. Compare the gross margin with the daily rate of labour.

Worksheet — Gross margin template: actual hectares

Gross margin for: _____ Enterprise Actual ha: ___ **(A)**

Income

Item	Quantity (B)	Price (C)	Value (D) [B × C]
Total income from sales (E)			

Variable costs

Item	Quantity (F)	Unit cost (G)	Cost (H) [F × C]
Total variable costs (I) [sum of H]			
Enterprise gross margin (J) [H - I]			
Gross margin per hectare (J/A)			

Worksheet — Gross margin template: one hectare

Gross margin for: _____ Enterprise

Income

Item	Quantity	Price	Value
		Total income from sales	

Variable costs

Item	Quantity	Unit cost	Cost
		Total variable costs	
		Enterprise gross margin per hectare	

Worksheet — Gross margin template: livestock enterprise

Income

	Item	$	
	Closing valuation (at the end of year)		
-	Opening valuation (at the beginning of year)		
=	**Increase/decrease in value of stock (inventory change)**		**(A)**
	Income from sales (livestock)		
+	Income from sales (by-products)		
	Value of products used for home consumption		
=	Value of sales and consumption		
-	Purchases of animals (during the year)		
=	**Net sales**		**(B)**
	Gross income		**(A+B)**

Worksheet — Gross margin template: livestock enterprise (continued)

Variable costs

Item	Quantity	Unit cost	Cost

Total variable costs	
Enterprise gross margin per herd	
No. of livestock head	
Gross margin per head	

Preparing for Session 4.3
Marketing margins

Learning outcomes
Understanding (i) the purpose and instrument in diagnosis, (ii) when to use the method, (iii) how to carry out the methods

Training aids
Exercise 4.3A (Using marketing margins to choose a market)
Handout 4.3A (Marketing margins)

Notes

Marketing margins

In this session particpiants will learn the basics of calculating marketing margins. Through this they will be able to help farmers primarily to understand the reason for the often large difference between the prices they receive and the market prices.

Opening statement

The varying costs incurred along the marketing chain are often misunderstood. To better understand these let us explore the use of measured marketing margins. We will now review the main parts in Handout 4.3A (Marketing margins). Feel free to ask questions.

The outline on the following pages is provided to help the facilitator conduct the review.

Outline of Handout 4.3A (Marketing margins)

What are marketing margins?

- These are the differences between the value of a product at one stage in the marketing process and the value of the same product at another stage.
- Measuring this margin shows how much has been paid for the marketing services of the product.

When are marketing margins used?

- Calculating marketing costs and margins can help the farmer and/or extension worker decide which marketing procedure will provide the greatest benefit.
- Added or marginal costs must result in at least an equal marginal return; otherwise, the market is not profitable.

What are marketing costs and how are they calculated?

Marketing costs are the costs incurred when moving produce from the farm to the market. There are several stages involved. In each stage there are costs incurred. The stages are:

- produce preparation (cleaning, sorting and grading);
- packaging;
- handling (loading and unloading);
- transport;
- storage;
- losses (quality-related; quantity-related).

Other marketing costs

There are many other relatively small costs incurred when marketing agricultural produce. These costs include *fees*, *commissions* and *unofficial payments*. While they may be low in one country, they may make up a sizeable proportion of costs in another. Some examples follow:

- People using markets may have to pay market fees.
- People using markets may have to pay to have the produce weighed.
- Traders normally have to be licensed and pay licence fees.
- In some markets, wholesalers charge commissions.
- Taxes may have to be paid.
- Sometimes, *bribes* are needed to get produce through roadblocks or to get permission to operate a business.

All of these costs need to be included in the calculations.

How is the marketing margin used?

To choose between marketing channels, farmers can compare the marketing margins of the options. To do the calculations they need to know two things:

- the price that their produce is likely to sell for in the market;
- the marketing costs incurred to sell it in the market.

Profitability

- The farmer must calculate the impact of the marketing costs on farm profitability.
- If the additional costs of marketing do not bring at least an equal return in income (from a better price at a better market), then another marketing strategy should be considered or perhaps another product.

Note

The exercise in this session requires a list of commodities, market prices and marketing costs. The commodity prices should be realistic prices for each commodity as offered by a trader at the farm or at a wholesale market. The marketing costs should be related to marketing the product and should inculde handling, fees, transport among others.

Exercise introduction

In Exercise 4.3A (Using marketing margins to choose a market), we will choose marketing options by calculating marketing margins.

Exercise 4.3A
Using marketing margins to choose a market

Purpose: To decide on a marketing strategy for a given commodity based on the calculation of a marketing margin. (Participants should have read Handout 4.3A prior to this exercise.)

Methods: Calculations.

Materials: (i) Pen and paper, (ii) calculator, (iii) flip chart paper or newsprint, (iv) prices and marketing costs list of pre-selected commodities.

Allow about 120 minutes for this exercise

Procedure

1. Divide the group into their farm teams.

2. Assign each team a commodity and give each team the relevant price/ marketing costs list.

3. Each team must decide between selling the assigned commodity to a trader at the farm or at a wholesale market, or auction. To make the decision, teams will need to calculate the marketing margin for its allocated commodity. To do the calculations, they should follow the example presented in Handout 4.3A. They will need to calculate the following:

- quantity of each commodity to be sold;
- weighted average price per commodity;
- total marketing costs;
- marketing margin.

Exercise 4.3A (continued)

4. After completing the calculations, each team should discuss the results and decide whether they will sell to the trader or to the market themselves. They should record the decision and the reason(s) for the decision.

5. Ask each team to report their decisions and their reasons to the whole group. Discuss the results, paying special attention to those who decide not to market directly even when the marketing margin is higher than the price being offered by the trader.

Space for notes and questions for the facilitator

Marketing margins

Why is the price of a product in a shop or retail market often so much higher than the price paid to the farmer?

Getting a product from the farm to the consumer is part of the marketing process. Each of the different steps involved in moving produce from the farm to the consumer, along the *marketing chain* involves costs.

The costs of marketing are not always fully understood by farmers or consumers. We can understand that traders spend money on transport or packaging but there are many other less obvious costs. Because these costs are not always visible, those doing the marketing are often accused of making unreasonable profits. Farmers look at the prices paid to them by traders and compare them with the prices consumers pay for the same product. They often assume that farmers and consumers are being exploited. Likewise, consumers often feel prices are too high. To understand the difference between farmgate price and the final price of a product, we will look at marketing margins.

What are marketing margins?

A marketing margin is the difference between the value of a product at one stage in the marketing process and the value of the same product at another stage. Measuring this margin shows how much has been paid for the marketing services for the product at that stage of the marketing process. It is the added cost of marketing.

Marketing margins (continued)

When are marketing margins used?

Farmers producing for the market should be aware of the choices that are open to them with respect to marketing. For example, it may be possible for a farmer to sell horticultural produce in the local fresh market, or, alternatively, to sell to agroprocessing plants for canning or producing juices. Some farmers may consider selling to exporters. Farmers may also choose to work together as a group to market their produce jointly. In some cases they may decide to market through traders and wholesalers. In other cases they may decide to market directly to the retailer.

Calculating marketing costs and margins can help the farmer and/or extension worker decide which marketing procedure will give the best benefit. Added or marginal costs must result in at least an equal marginal return; otherwise, the market is not profitable.

What are marketing costs and how are they calculated?

Marketing costs are the costs incurred when moving produce from the farm to the market. There are several stages involved, in each there are costs incurred. The stages are:

- produce preparation
- packaging
- handling
- transport
- storage
- losses

Produce preparation

The first marketing cost incurred is *produce preparation*. This involves cleaning, sorting and grading. This may be done on or off the farm. Either way, the cost associated with preparation is a marketing cost.

Marketing margins (continued)

Packaging

The next cost that is normally faced is *packaging*. Types of packaging used may range from simple jute bags to plastic packaging for the direct transport of fruits to consumers in supermarkets. This too may be done on or off the farm.

Handling

Handling costs are incurred at all stages of the marketing chain. They include loading and unloading. Each time a product is handled the cost per kilogram is small. But a product may be handled many times before it reaches the market. The total of all of these small handling costs can end up being quite substantial.

Examples of handling processes

- farmer or labourer loads produce onto oxcart or other transport;
- labourer unloads produce at assembly market and it is weighed;
- a wholesaler or employee repackages the produce in the wholesaler's containers;
- produce is carried to and loaded on the wholesaler's truck;
- produce is unloaded at wholesale market and taken to premises occupied by the wholesaler's agent and weighed;
- produce is unpacked and sorted or graded;
- produce is repacked in the retailer's containers;
- produce is carried to the retailer's transport;
- produce is unloaded at the retailer's store;
- produce is repackaged into packaging used at the retailer's store.

Marketing margins (continued)

Transport

Once packed, produce is *transported*. Transport costs are incurred by farmers when they take their produce to the market. Sometimes transport costs are very clear because they involve the direct payment by a farmer to the transport owner each time a delivery is made. In other cases these costs are less direct, for example when the farmers own and operate their own vehicles. In the latter case, the farmer needs to determine the running costs of transport per kilometre. When the running costs and the quantity of products carried per trip are known, the cost of transport per kilogram or per tonne of product can be calculated. To calculate transport costs using their own vehicles, farmers need to know:

- vehicle running cost/km ($/km);
- quantity that can be carried per trip (kg or tonne/trip);
- distance to the market (km).

Example

Calculation of transport costs

Let us say that the farmer has a vehicle that can carry 200 kg of produce per trip. The running cost of the vehicle is $0.50/km. It is 10 km to the market.

	Detail	Amount	Unit
(A)	Running cost for transport	$0.50	per km
(B)	Distance to market	10	km
(C)	Cost per trip **(A × B)**	$5.00	per trip
(D)	Mass/weight per trip	200	kg
(E)	Cost per kg **(C/D)**	$0.025	per kg
(F)	Cost per tonne **(E × 1 000)**	$25.00	per tonne

* These are the costs per kg or tonne to transport 200 kg. If less than 200 kg is transported, then the costs will be higher. Thus, one way to reduce marketing costs is to use transport optimally.

Marketing margins (continued)

Storage

Storage is an important cost for many products. The main purpose of storage is to extend the availability of produce over a longer period than if it were sold immediately after harvest. The assumption behind storing produce for the market is that the price will rise sufficiently while the product is in store to cover the costs of storage. The costs of storage will vary, but they are usually very clear because they are paid for directly.

Losses

Losses are common when marketing agricultural produce. Even if nothing is actually thrown away products may lose weight in storage and transit. Post-harvest losses of produce, particularly fresh produce, can be substantial, both in terms of quantity and quality. This will affect both the amount of product for sale and the selling prices. The following are common causes of post-harvest (marketing) losses divided in terms of quantity and quality.

1. Quantity-related losses

    - Large quantities of the product on the market or 'gluts' (as often happens during the main season) often means that much will be thrown away unsold.
    - Moisture loss (reduces weight of the product, e.g. grains, fruit and vegetables).

2. Quality-related losses

    - Produce damaged while being handled or transported.
    - Produce deteriorates (including over-ripening) over the period it is waiting to be sold.
    - Moisture loss (particularly with fruit and vegetables).

Marketing margins (continued)

Example
The cost of loss

A trader purchases 2 kg of green peppers from a farmer at $5.00/kg. When the trader gets to market only 1.8 kg are still available for sale (e.g. a loss of 10 percent). The selling price of green peppers is $9.00/kg. Marketing costs are an additional $2.00/kg for the 2 kg of green peppers purchased.

Quantity lost	Market price of product	Value of loss
0.2 kg	$9.00/kg	$1.80

The impact of this loss on the margin to the trader can be calculated as follows:

Activity	Quantity	Price		Total	20 kg purchase	
Income from sales	1.8 kg	$9.00/kg		$16.20	$162.00	**(A)**
Purchases	2 kg	$5.00/kg	$10.00		$100.00	
Packing and transport	2 kg	$2.00/kg	$4.00		$40.00	
			Costs	**$14.00**	$140.00	**(B)**
			Margin to the trader	**$2.20**	**$22.00**	**(A-B)**

If the trader had prevented the loss, the margin would have been $4.00 ($2.20 + $1.80). This may seem insignificant, but if (as shown in the right-hand column) the trader had purchased 20 kg instead of 2 kg, their value of the loss would have been $18.00 and their margin $22.00 instead of $40.00. This is a substantial cost.

Marketing margins (continued)

Other marketing costs

There are many other relatively small costs incurred when marketing agricultural produce. These costs include *fees*, *commissions* and *unofficial payments*. While they may be low in one country they may make up a sizeable proportion of costs in another. Some examples follow:

- People using markets may have to pay market fees.
- People using markets may have to pay to have the produce weighed.
- Traders normally have to be licensed and pay licence fees.
- In some markets, wholesalers charge commissions.
- Taxes may have to be paid.
- Sometimes *bribes* are needed to get produce through roadblocks or to get permission to operate a business.

All of these costs need to be included in the calculations.

More on marketing costs

There are two types of marketing costs: *variable marketing costs* and *fixed marketing costs*. Variable costs are costs that are incurred if marketing activities are carried out (e.g. transport costs from the farm to the market, handling costs, packaging materials, parking fees, commissions based on weight). Fixed costs are costs that will be paid by the farmer whether or not marketing activities are carried out. Fixed marketing costs include taxes, insurance, fixed rent for the stalls, fixed salary of the workers involved in marketing, depreciation of the trucks, weighing scale and other equipment.

Marketing margins (continued)

Calculations

Once all the marketing costs have been calculated it is then necessary to put them together to work out the total marketing costs for the farmer.

Marketing margins are related to the prices received for produce. Costs have to be related to these prices. Farmers selling their produce directly to the market are likely to get different prices at different times of the year, and even at different times of the day. Farmers need to understand how the markets they use operate, because this will affect the marketing margins.

The marketing margin is the difference between the prices farmers receive for their produce and the costs incurred in marketing.

Example

Farmer selling tomatoes in the nearest rural market

A farmer harvests 100 kg of tomatoes. Of this volume there is a 10 percent because of damage and other causes. The remaining tomatoes (90 kg) are sold at the market at the prices shown in the table.

Quantity	Price	Income from sales
50 kg	$1.10/kg	$55.00
20 kg	$1.00/kg	$20.00
15 kg	$0.80/kg	$12.00
5 kg	$0.60/kg	$3.00
10 kg	not sold	$0.00
	Total income	**$90.00**

Then the average selling price per kilogram is ... **$90 ÷ 100 = $0.9**

Marketing margins (continued)

The farmer incurs other marketing costs charged over the season. These are:

Marketing cost	Amount
Market fees	$1.00
Handling labour	$2.00
Cost on route	$1.00
Transport	$0.50/10 kg box ($0.05/kg)
Packaging	$0.50/10 kg box ($0.05/kg)

Given all this information, it is now possible to calculate the marketing margin.

	Value ($/kg)	
Quantity sold		
0.9 kg × weighted average selling price of $0.90 per kg	0.81	**(A)**
Marketing costs		
Market fees	0.01	
Labour employed by farmer to pack, load and unload	0.02	
Cost on route	0.01	
Transport to wholesale market	0.05	
Packaging	0.05	
Total marketing costs	0.14	**(B)**
Marketing margin	**0.67**	**(A-B)**

Note

The market margin calculation should be conducted on a unit weight basis. You should be careful to convert all of the items to the same base. In this example the calculation is carried on a per kilogram basis.

Marketing margins (continued)

Exercise
How to use the marketing margin

Joan has a choice about marketing. She can sell directly to wholesale or local markets. She can also sell to traders who come to her farm. To decide which is the better option, she should be able to compare the marketing margins of the options.

However Joan will need to do some calculations in order to decide what is more worthwhile. She needs to know two things:

- the price that their produce is likely to sell for in the market;
- the marketing costs incurred to sell it in the market.

Joan will need to calculate the impact of the marketing costs on the profitability of her farm. If the additional costs of marketing do not bring her at least an equal return in income (from a better price at a better market), then she should consider another marketing strategy or perhaps another product.

Preparing for Session 4.4
Break-even budgets

Learning outcomes
Understanding (i) the purpose of the instrument,
(ii) when to use the method,
(iii) how to carry out the methods

Training aids
Exercise 4.4A (Break-even analysis case)
Handout 4.4A (Break-even budgets)
Handout 4.4B (Case exercise and worksheet — A break-even analysis)
Handout 4.4C (Solutions — A break-even analysis)

Notes

Break-even budgets

This session introduces a tool that extension workers can use to help farmers determine the break-even points of their enterprises. One use of this is to assist farmers become price-makers, not price-takers. The session will define the concept of breaking even and define a break-even budget. It will examine when a break-even budget should be used and demonstrate how it is calculated. Examples will be given of a break-even yield and a break-even price.

Opening statement

Today we will begin by reviewing the main points in Handout 4.4A (Break-even budgets). By understanding this technique we can analyse the relationship between costs and income at different prices. Feel free to ask questions at any time.

The outline on the following page is provided to help the facilitator conduct the review.

Review of Handout 4.4A (Break-even budgets)

What is a break-even budget?

- It is a technique for studying the relationship between costs and income at different levels of production.
- It estimates the maximum acceptable level of a cost item or the minimum acceptable level of a benefit, given an estimated level of cost.
- It looks at the level of the activity where income equals total cost, so that no profit (margin) is made. Break-even occurs where total cost and gross revenue are equal.

What is break-even yield?

The yield required to recover all the costs incurred in production at given prices of the product and input costs.

$$\text{Break-even yield (BY)} = \frac{\text{Total variable cost/ha}}{\text{Product price}}$$

What is break-even price?

The product price needed to recover all variable costs incurred in production at a given output level and cost of input.

$$\text{Break-even price (BP)} = \frac{\text{Total variable cost/ha}}{\text{Expected yield/ha}}$$

Exercise introduction

In Exercise 4.4A (Break-even analysis case) we will go over Handout 4.4B (Case exercise — a break-even analysis) to practice calculating gross margin, and the break-even yield and break-even price.

Exercise 4.4A
Break-even analysis case

Purpose: To practise break-even calculations. (Participants should have read Handout 4.4A prior to this exercise.)

Method: Case study analysis.

Materials: (i) Handouts 4.4B (Case exercise — A break-even analysis), C (Solutions — A break-even analysis), (ii) pencil and paper, (iii) calculators.

Allow about 30 minutes for this exercise
(depending on their skill with mathematics and tables)

Procedure

1. Distribute Handout 4.4B to each participant.

2. Set up teams of two members each. Give each team a number.

3. Ask each team to do the three tasks given in the handout. They are to write their answers clearly on the paper provided. They should put their team number on their papers.

4. Ask each team to hand in their answers to another team.

5. Distribute Handout 4.4C.

6. Go over the answers for each of the tasks. Ask each team to mark the papers they have been given and return them to the relevant team.

7. Go over the answers again. Encourage the participants to ask questions.

Space for notes and questions for the facilitator

Break-even budgets

We have previously estimated gross margins. The use of average costs and prices are the only sensible choices, but averages can be deceiving. Averages represent the common mid-point between two extremes and therefore give a picture that intentionally does not reflect either case.

In this discussion, we shall investigate what happens when we move away from the average or expected case and towards either of two extremes — the best case or the worst case. The break-even budget is an instrument used to determine the effect of these extreme possibilities.

Break-even analysis is a technique for studying the relationship between costs and income at different levels of production and different prices. A break-even budget estimates the point at which a farm's gross income is equal to its total variable costs.

On the one hand, the break-even gives an indication of maximum acceptable level of cost. That is, the point at which, if costs increase, the farm will not be profitable. On the other hand, the break-even gives the minimum acceptable level of a benefit given an estimated level of cost. That is, the point at which, if the income decreases, the farm will not be profitable.

In other words, a break-even budget looks at the level of the activity where income equals total cost, so that no profit (gross margin) is made. Again, break-even occurs where total variable cost and gross income are equal.

Break-even budgets (continued)

One can determine break-even points for yield and market price. The break-even essentially answers the following questions:

Yield: Given a known price and cost, at what level of production (yield) would the farm "break even" (costs equal income)?

Price: Given a known yield and cost, at what market price would the farm "break even" (costs equal income)?

Calculating break-even budgets in each of these areas can help farmers plan their farms, particularly when they are considering making a change in production/commodities (yield), inputs/mechanization (cost) or markets (price).

For example, a farmer might be interested in substituting one variety of tomato for another. If the production potential of the new variety is unknown, a break-even budget is constructed to estimate the minimum yield that would have to be achieved to make the change worthwhile. Alternatively, if the expected yield is known but the price is not, the budget could indicate the minimum price that must be obtained to make the change economically feasible. Cost variations could also be explored for the new variety using the break-even budget.

Break-even budgets (continued)

Example

Gross margin for 1 ha of maiza, Kenya

Item	Unit	Quantity	Unit price (Ksh)	Amount (Ksh)
Income				
Maize yield	Bag (90 kg)	20	1 000	20 000
Stover	Load	1	400	400
			Total income	20 400 **(A)**
Variable costs				
Seed	kg	10	70	700
Fertilizer	50 kg bag	1	1 000	1 000
Manure	Tonnes	4	1 000	4 000
Pesticide	kg	5	100	500
Land	Person-days	18	50	900
Planting/ manuring	Person-days	10	50	500
Weeding	Person-days	16	50	500
Harvesting/ threshing	Person-days	8	50	400
			Total variable costs	8 500 **(B)**
			Gross margin	**11 900** **(A-B)**

This example can be used
to calculate the break-even information.

Determining the break-even yield

Break-even yield (BY) is the yield required to recover all the costs incurred in production at given prices of the product and given input costs. The formula for calculating the break-even yield of a given enterprise is:

$$\textbf{Break-even yield/ha (BY)} = \frac{\textbf{Total variable cost/ha}}{\textbf{Product price}}$$

Break-even budgets (continued)

So the BY for the previous example is...

$$\text{Break-even yield/ha (BY)} = \frac{\text{Ksh 8 500/ha}}{\text{Ksh 1 000/bag}}$$

which gives...

Break-even yield/ha (BY) = 8.5 bags/ha

From the data presented, the break-even yield for Kenyan maize farms is 8.5 bags per ha. If the actual maize yield is higher than 8.5 bags per ha (the break-even yield), it will be profitable for the farmers to grow maize. Conversely, if maize yield is lower than its break-even yield (8.5 bags per ha), the farmer will incur a loss if they grow this crop.

Determining the break-even price

Break-even price of the product is the product price needed to recover all variable costs incurred in production at a given output level and cost of input.

$$\text{Break-even price/bag (BP)} = \frac{\text{Total variable cost/ha}}{\text{Expected yield/ha}}$$

$$\text{Break-even price/bag (BP)} = \frac{\text{Ksh 8 500/ha}}{\text{20 bags/ha}}$$

Break-even price/bag (BP) = Ksh 425/bag

The break-even price of maize is Ksh 425 per bag. This means, if the price of maize is above the break-even price, it will be profitable to grow maize. However, if the price of maize falls below Ksh 425 per bag, maize farmers will sustain a loss if they grow maize.

Space for notes and questions for the facilitator

Case exercise — A break-even analysis

A farmer in the Kisumu, Kenya, area has been growing rice on 1 ha of their land, for the last 5 years. After harvesting last year's yield, the farmer started to consider whether it is profitable to continue to maintain the rice enterprise. The income and costs of 1 ha of the rice enterprise are detailed below.

Item	Unit	Quantity	Unit price (Ksh)	Amount (Ksh)
Income				
Rice	Bag	15	900	13 500
			Total income	13 500
Variable costs				
Ploughing	ha	1	600	600
Planting	ha	1	300	350
Seed	kg	60	10	600
Fertilizer	kg	50	15	750
Pesticide	kg	4	100	400
Threshing	Bag	15	20	300
Labour	Person-days	200	40	8 000
			Total variable costs	11 000

Perform the following three tasks, based on the case described (worksheet provided on the next page).

Task 1. Calculate the gross margin.
Task 2. Calculate the break-even yield.
Task 3. Calculate the break-even price.

Worksheet — A break-even analysis

Task 1. Calculate the gross margin

Task 2. Calculate the break-even yield

Task 3. Calculate the break-even price

Solutions — A break-even analysis

Task 1. Calculate the gross margin

Gross margin = Gross income - Variable costs

Gross margin = Ksh 13 000 - Ksh 11 000

Gross margin = Ksh 2 000

Task 2. Calculate the break-even yield

$$\text{Break-even yield/ha (BY)} = \frac{\text{Total variable cost/ha}}{\text{Product price}}$$

$$\text{Break-even yield/ha (BY)} = \frac{\text{Ksh 11 000/ha}}{\text{Ksh 1 000/bag}}$$

Break-even yield/ha (BY) = 11 bags/ha

Task 3. Calculate the break-even price

$$\text{Break-even price/bag (BP)} = \frac{\text{Total variable cost/ha}}{\text{Expected yield/ha}}$$

$$\text{Break-even price/bag (BP)} = \frac{\text{Ksh 11 000/ha}}{\text{13 bags/ha}}$$

Break-even price/bag (BP) = Ksh 846.15/bag

Preparing for Session 4.5
Sensitivity analysis

Learning outcomes
Understanding (i) the purpose
of the instrument, (ii) when to use the method,
(iii) how to carry out the methods

Training aids
Exercise 4.5A (Sensitivity analysis calculations)
Handout 4.5A (Sensitivity analysis)
Handout 4.5B (Case scenarios —
A sensitivity analysis)
Handout 4.5C (Solutions — A sensitivity analysis)

Notes

Sensitivity analysis

This session introduces a tool that extension workers can use to help farmers take more informed decisions to cope with risk. The tool analyses the sensitivity of an enterprise to changes of factors such as yield, input price and market price.

Opening statement

Sensitivity analysis can be used to determine the outcome of change(s) that effect(s) enterprise profitability. This tool can be used with any of the planning and management techniques that we have discussed so far in this course. Let us now review Handout 4.5A, which explains in detail this procedure.

The outline on the following pages is provided to help the facilitator conduct the review.

Outline of Handout 4.5A (Sensitivity analysis)

What is a sensitivity analysis?

Sensitivity analysis is a farm management tool that can be used to identify the critical variables and their affect on projected profitability. This is a tool to help answer the question: "What if…?" or "What would happen if?"

What influences enterprise profitability?

- yield;
- the amount of the harvest that is marketed, rather than consumed on the farm;
- the price received for produce sold;
- the prices of inputs.

Exercise introduction

In Exercise 4.5A (Sensitivity analysis calculations), we shall practise some calculations in order to familiarize with the concepts of this analysis.

Exercise 4.5A
Sensitivity analysis calculations

Purpose: To practice sensitivity analysis. (Participants should have read Handout 4.5 prior to this exercise.)

Method: Number-based calculations.

Materials: (i) Handouts 4.5B (*Case scenarios — A sensitivity analysis*) and *C* (Solutions — *A sensitivity analysis*), (ii) pen and paper, (iii) calculator.

Allow 30 minutes for this exercise

Procedure

1. Divide the participants into teams of 2.
2. Distribute Handout 4.5B to each participant.
3. Assign one of the first four questions to each team.
4. Ask them to do the sensitivity analysis. They should write the complete calculations down and put their team number on the paper.
5. Ask each team to hand their paper to another team for marking.
6. Distribute Handout 4.5C for the solutions. Go over the answers to each scenario and have the papers marked.
7. Return the papers to each team. Discuss any questions.
8. Jointly work on Question 5. Ask participants to think through the consequences of increasing or decreasing the area planted to these crops and the effect on total variable costs. Discuss and answer any questions.

Space for notes and questions for the facilitator

Sensitivity analysis

What is a sensitivity analysis?

Sensitivity analysis is a farm management tool that can be used to identify the critical variables and their effect on projected profitability. This is a tool to help answer the question: "What if…?" or "What would happen if?"

- What if our production decreases? Or increases?
- What if the price of our product goes up? Or down?
- What if the cost of an input changes?
- What if the family increases the amount of crop it consumes?

This technique quantifies the outcome of a change in a single or combination of selected variables that effect enterprise profitability. Sensitivity analysis can be used with any of the farm business planning and management techniques that we have discussed to date to help make decisions on the farm.

What influences enterprise profitability?

Yields may be only one of the factors that influence enterprise profitability. Others include:

- the amount of the harvest that is marketed, rather than consumed on the farm;
- the price received for produce sold;
- the prices of inputs.

Where maize and other food crops are concerned, the amount of produce marketed by the farmer may be even more variable than yields. This is because the farmer markets only that portion of the food crop that is not required for on-farm consumption. If yields decrease, on-farm consumption may remain almost the same because the farmer will first reduce the amount of produce marketed before reducing on-farm consumption.

Sensitivity analysis (continued)

Yields and prices tend to move in opposite directions for food crops. When yields fall, there is a scarcity of the crop and prices tend to rise. When yields rise there is an abundance of the crop and prices tend to decline. The movement of prices and yields in opposite directions means that the enterprise budgets vary less than they would if prices were held constant or moved in the same direction as yields.

Thus yields, on-farm consumption and prices together influence the farmer's gross margin. This makes sensitivity analysis a very useful instrument to apply. This is illustrated by way of a simple farm budget that compares the situation in a normal rainfall year with the situation in a bad year. The normal year enterprise income is assumed to be $320, as given in the calculation below.

In a low rainfall, "bad year", production falls by 50 percent, but on-farm consumption requirements remain the same. Consequently, the quantity of produce marketed also decreases. Prices subsequently rise but the farmer's cash receipts are still greatly reduced.

	Normal year ($)	Bad year ($)
Produce yield (tonnes)	10	5
Produce consumed on-farms (tonnes)	2	2
Marketed produce (tonnes)	8	3
Farmgate price per tonne	40	55
Total enterprise cash income	320	165

The information on yields, consumption and prices under the "bad year" scenario provides one element of the total farm cash income. Cash expenditures may also change in a "bad year" depending on when the low rainfall occurs. At different times in the season, low rainfall will affect different activities.

Sensitivity analysis (continued)

When low rainfall is noted before the crop is planted and continues throughout the crop season, a farmer may anticipate the effects listed below.

Area of effect	Effect
Yield	Decrease
On-farm consumption of crop	No change
Product price	Increase
Land preparation cost	Decrease
Application of materials used in planting	Decrease
Application of materials used after planting	Decrease
Cost of purchased materials used in planting	Decrease
Cost of purchased materials used after planting	Decrease
Harvest costs	Decrease

If, however, the poor rains come only later in the season after the crop is in the ground, the following effects can be expected.

Area of effect	Effect
Yield	Decrease
On-farm consumption of crop	No change
Product price	Increase
Land preparation cost	Decrease
Application of materials used in planting	No change
Application of materials used after planting	Decrease
Cost of purchased materials used in planting	No change
Cost of purchased materials used after planting	Decrease
Harvest costs	Decrease

Sensitivity analysis (continued)

Applying a sensitivity analysis

The following example will help in understanding the concept of sensitivity analysis.

A maize farmer expects to generate a profit of Ksh 11 000 over the next year. The farmer is concerned because a neighbouring farm has suffered from a disease that has decreased crop yields by 25 percent. The question the farmer needs to answer is: *"How will my profits change if my crop gets the same disease?"*

The following data is given about the farm:

Current yield of maize	20 bags
Price of maize	Ksh 1 000
Total variable costs	Ksh 8 700
Gross margin	Ksh 11 300
Harvesting cost per bag	Ksh 20

Remember

The sensitivity analysis is used to calculate the change in gross margin that could occur following changes in selected key variables that affect profitability. In this case, yield could change and the farmer wants to determine how this will affect income and profits.

First, we calculate the change in the margin for maize in the event of the farmer's crop getting the same disease as the neighbour's crop.

Reduction in yield = **Current yield** × **% Reduction**

Sensitivity analysis (continued)

The implications are a 25 percent reduction in yield and the costs saved as a result of the drop in production.

Reduction in yield = 20 bags × 25% reduction

Reduction in yield = 5 bags

Second, we calculate the decrease in gross income as a result of the reduced yield.

Lost gross income = Reduction in yield × Prooduct price

Lost gross income = 5 bags × Ksh 1 000/bag

Lost gross income = Ksh 5 000

Third, we calculate the variable costs saved by the reduced yields. In this case the only variable cost affected by yield is the harvesting cost.

Reduced variable costs = Reduction in yield × Cost of harvesting

Reduced variable costs = 5 bags × Ksh 20/bag

Reduced variable costs = Ksh 100

Fourth, we calculate the overall reduction in Gross margin

Reduction in gross margin = Lost gross income - Reduced variable costs

Reduction in gross margin = Ksh 5 000 - Ksh 100

Reduction in gross margin = Ksh 4 900

Sensitivity analysis (continued)

Fifth, we calculate the new gross margin based on the projected loss in yield.

New gross margin	=	Original gross margin	-	Reduction in gross margin

New gross margin = Ksh 11 300 - Ksh 4 900

New gross margin = Ksh 6 400

A 25 percent reduction in the yield of maize results in a 56.6 percent decrease in gross margin. The conclusion is that the margin generated appears to be extremely sensitive to the problem and that appropriate management time should be devoted for its prevention.

Similar calculations can be done for changes in other aspects of the farm.

Link to assessing risk and vulnerability

Sensitivity analyses can help farmers determine how vulnerable they are to risks. Further, using results from sensitivity analyses and comparing them with break-even figures will provide even more information about vulnerability to risk. In a sense, they will have an idea of the risk boundaries of their farms. This is very useful farm management information to have when making decisions.

Space for notes and questions for the facilitator

Case scenarios — A sensitivity analysis

Mary has 2 ha of land on which she normally grows millet (1.5 ha) and tomatoes (0.5 ha). She has enough water to irrigate 0.6 ha of tomatoes. She recently attended a farmers association meeting where she learned three things:

- She learned that there was a shortage of tomatoes in the city. As a result, the price of tomatoes was going to increase from an average of $500 per tonne to possibly $550 per tonne.
- She also learned that they expected very late rains this year and that there could be a 20 percent decrease in her millet yield.
- She also learned that the price of manure was going to increase by as much as 20 percent in the next season.

After the meeting Mary went home. She needed to decide what to do about next year's crop; and she needed to know what was going to happen to this year's millet crop. What affect would these changes have on her profitability?

Using this information answer the following questions.

Millet gross margin information

Yield	1 t/ha
Price	$250/t
Total variable costs	$150/ha
Manure cost	$50/ha
Harvest cost	$10/ha

Tomato gross margin information

Yield	10 t/ha
Price	$500/t
Total variable costs	$3 000/ha
Manure cost	$500/ha
Harvest cost	$10/ha

For the participants

Question 1. What will be the effect of the increased tomato price on Mary's tomato profitability?

_____
_____
_____
_____
_____
_____
_____

Case scenarios — A sensitivity analysis (continued)

Question 2. What will be the effect of the decreased millet yield on Mary's millet profitability?

Question 3. What will be the effect of the increased manure price on Mary's millet profitability?

Question 4. What will be the effect of the increased manure price on Mary's tomato profitability?

Question 5. How much of each crop should Mary plant next year?

Space for notes and questions for the facilitator

Solutions — A sensitivity analysis

Before answering Handout 4.5B it is always advisable to determine the gross margin for each commodity.

GM for millet = $100/ha at 1.5 ha = $150
GM for tomatoes = $2 000/ha at 0.5 ha = $1 000

Question 1. What will be the effect of the increased tomato price on Mary's tomato profitability?

The change in profitability will be shown by a change in Mary's gross margin. A change in the price of tomatoes does not affect yield, it only affects income. There is no change to variable costs. Therefore, the change in gross margin will be equal to the change in gross income. We calculate the change in gross income as follows.

Change in gross income = Current yield/ha × Change in price/t × Actual ha

Change in gross income = 10t/ha × $(550 - 500)/t × 0.5 ha

Change in gross income = 10t/ha × $50/t × 0.5 ha

Change in gross income = $250

The increase in the price of tomatoes ($50/t) will cause Mary's gross income to increase by $250. And in this case, because there is no increase in variable costs, Mary's profit should increase by $250.

Solutions — A sensitivity analysis (continued)

Question 2. What will be the effect of the decreased millet yield on Mary's millet profitability?

First we must calculate the reduction in yield.

Reduction in yield = Current yield × % Reduction × Actual ha

Reduction in yield = 1t/ha × 20% × 1.5 ha

Reduction in yield = 0.3t

Second, we calculate the change in gross income. Because we are planning for reduction in yield, we know Mary will lose gross income.

Loss of gross income = Reduction in yield × Product price

Loss of gross income = 0.3t × $250/t

Loss of gross income = $75

Next we must calculate the change in variable costs. We shall suppose that the reduced yields assume the same land preparation, etc. for planting and that the only change in costs will be related to harvest. But we notice that the harvest costs are per hectare, not per tonne. So we shall assume this will not change. Therefore the effect on gross margin will be equal to the loss of gross income. Thus, Mary's profitability would decrease by $75 for her millet crop.

Solutions — A sensitivity analysis (continued)

Question 3. What will be the effect of the increased manure price on Mary's millet profitability?

The manure price is part of Mary's variable costs. An increase in the price of manure would increase variable costs and therefore decrease the gross margin. Assuming all other factors do not change, the change in manure price will inversely equal the change in gross margin.

The current manure price for millet is $50/ha. A 20 percent increase in the price of manure would mean an increase in the manure price for millet of $10/ha — resulting in a $15 increase on 1.5 ha.Thus, Mary's gross margin (profitability) for millet would decrease by $15.

Question 4. What will be the effect of the increased manure price on Mary's tomato profitability?

As with millet, the manure price is part of Mary's variable costs. An increase in the price of manure would increase variable costs and therefore decrease the gross margin. Assuming all other factors do not change, the change in manure price will inversely equal the change in gross margin.

The current manure price for tomatoes is $500/ha. A 20 percent increase in the price of manure would mean an increase in the manure price for tomatoes of $100/ha — resulting in a $50 increase on 0.5 ha. Thus, Mary's gross margin (profitability) for tomatoes would decrease by $50.

Her gross margin is_____

Solutions — A sensitivity analysis (continued)

Question 5. How much of each crop should Mary plant next year?

To answer this question, we need to determine the gross margin for each crop.

Millet

Yield	1t/ha
Price	$250/t
Total variable costs	$150/ha
Manure cost	$50/ha
Harvest cost	$10/ha

1 hectare		1.5 hectares	
Gross income	$250	Gross income	$375
Total variable costs	$150	Total variable costs	$225
Gross margin	$100	Gross margin	$150

Tomatoes

Yield	10t/ha
Price	$500/t
Total variable costs	$3 000/ha
Manure cost	$500/ha
Harvest cost	$10/ha

1 hectare		0.5 hectares	
Gross income	$5 000	Gross income	$2 500
Total variable costs	$3 000	Total variable costs	$1 500
Gross margin	$2 000	Gross margin	$1 000

Solutions — A sensitivity analysis (continued)

Anticipated changes

20%	increase in price of manure
$50	increase in the price of tomatoes
20%	decrease in the millet yield

Impact on gross margins

Millet, 1 hectare	
Gross income	$200
Total variable costs	$160
Gross margin	$40

Tomatoes, 1 hectare	
Gross income	$5 500
Total variable costs	$3 100
Gross margin	$2 400

The impact on the gross margins
is a decrease of 60% for millet
and an increase of 20% for tomatoes.

Mary can plant a maximum of 0.6 ha of tomatoes (because of a limit of water). So it is suggested that she plant 0.6 ha of tomatoes and 1.4 ha of millet. This will result in a combined gross margin of $1 496. Under the previous conditions, the combined gross margin was $1 150. This is an increase of 30 percent.

Preparing for Session 4.6
Food requirements

Learning outcomes
Understanding (i) the food requirements,
(ii) how to carry out the calculations

Training aids
Exercise 4.6A (How much land for food?)
Exercise 4.6B (Food flow planning)
Handout 4.6A (Planning for food needs)

Notes

Food requirements

Deciding how much land to dedicate to food production for the household is an important decision made by many farmers in Africa. This session introduces a tool that extension workers can use to help farmers and their households determine the amount of food required by a household and the possible amount of farm produce available for market. It is an important tool to help optimize land use and increase profitability while not compromising the basic food security of the family.

Opening statement

Providing food for a family is an important part of farming. Smaller-scale farmers must often make a choice between growing food for the family or growing crops for the market. Both have their benefits. Both have their risks.

Learning points

Farmers will often decide to grow crops both for food and for market. Those with enough land to do this are fortunate. In many cases the land may not be enough to provide for all the family requirements and also yield crops for the market. It may be necessary for the farmer to grow some of the family's needs and some crops for the market. The increase in income in sales may be used to purchase food for the farm household.

Exercise introduction

Exercise 4.6A (How much land for food?) will help us to understand how to use the land available to best advantage for family food needs.

Exercise 4.6A
How much land for food?

Purpose: To determine the food requirements for a family and the amount of land needed to produce it. (Participants should have read Handout 4.6A prior to this exercise.)

Method: Food requirement calculations and group discussion.

Materials: (i) Handout 4.6A (Planning for food needs), (ii) pen and paper, (iii) calculators.

Allow about 30 minutes for this exercise
(depending on skill with mathematics)

Procedure

1. Divide the group into their farm teams.

2. Randomly allocate to each farm a family size.

3. Each team farm is taken to be 2 ha in size.

4. Ask each team to calculate the food requirements based on the information in Handout 4.6A.

5. Ask each team to choose two food crops from one of the following:

Maize Wheat Rice Millet
Yams Cassava Sorghum

Note
You may want to change the list to reflect food crops that are common to the area from which the extension workers come.

Exercise 4.6A (continued)

6. Have them divide the total food requirement between the two crops. For example, if they need 1 440 kg, they may grow 1000 kg of one food crop and 440 kg of another food crop. Or they may wish to divide it equally. It is up to the farm family to decide.

7. Allocate yield information for the various crops. Be sure the range of yields given is realistic for the areas from which the extension workers come. Give each team a different yield for each crop so that no two teams have the same yields per crop. See the example given below.

*Crop**	Team 1	Team 2	Team 3	Team 4
Maize	3	4	5	6
Wheat	5	3	6	4
Rice	8	6	4	5
Millet	1	0.75	0.9	0.8
Yams	6	5	4	3
Cassava	4	6	3	5
Sorghum	5	4	3	2

*tonnes per hectare or per acre

8. Ask each team to calculate the amount of land required to ensure they produce enough food to meet their food requirements. Ask them also to calculate the amount of land remaining to plant cash crops.

9. Ask each team to report their decisions and calculations to the rest of the group.

Note

Handout 4.6A provides a guide to the basic mathematics, but some participants may need assistance with the mathematical concepts. Note also that the final area planted to food crops should be rounded to the nearest manageable figure. For example, if the calculations lead to .26 ha this should be rounded to either 0.25 or 0.3. When rounding down, the participants will need to confirm that they are growing enough food.

Exercise introduction

In the previous exercise, we looked at how to plan the farm so that the farm produces an annual quantity of staple food needed by the farm family.
However, equally as important is to assess the annual flow of food through the year.
Now let us look at Exercise 4.6B (Food flow planning), which will help us identify periods in the year when there could be food shortages.

Exercise 4.6B
Food flow planning

Purpose: To identify when food shortages on a smallholder farm might occur and to understand causes and solutions for these potential food shortages. (Have participants refer to Handout 4.6A.)

Methods: Food matrix, causal diagram and opportunities matrix.

Materials: (i) Thick marking pens, (ii) large sheets of paper.

Allow 60 minutes for this exercise

Procedure

1. Participants get into their farm teams.

2. Ask each team to discuss the food eaten by their farm family. This would include the food crops planned in the previous exercise plus any other foods they normally consume during the year (e.g. vegetables, eggs, milk).

3. Ask each team to set up a food matrix with the months across the top and the various foods eaten by the family along the left column.

4. Ask the teams to brainstorm on the demands for and availability of their range of foods over the course of a typical year. They should note the months during which there is a shortage of one or more of the identified foods.

5. Using a causal diagram, each team should identify why there is a shortage.

6. Using an opportunities matrix, each team should identify actions to be taken to resolve the cause of the food shortage.

Exercise 4.6B (continued)

7. Ask each team to share its findings with the rest of the participants.

8. Encourage discussion of these findings. Be sure to encourage the participants to relate their discussions to the real-life situations in which they work.

Learning points

Some of the main causes of food shortages include:

- poor food storage (e.g. including post-harvest technologies such as drying);
- poor food reserve management (i.e. consuming more than required per day);
- crises (e.g. deaths that necessitate special food consumption for funerals).

Household management is a key part of food management, which in turn is a key part of farm management.

Space for notes and questions for the facilitator

Planning for food needs

Self-sufficiency in food is a priority objective

For most farm families in Africa, self-sufficiency in food is the first objective. Consequently food production is a main objective for the farm. Self-sufficiency in food can either be obtained directly from the farm harvests or by use of cash to purchase from the market. A great majority of family farmers in Africa still prefer to produce their own coarse food needs. By coarse food is meant basic carbohydrate foodstuffs such as maize, root and tuber crops, sorghum, millet and rice.

Coarse foods are differentiated from other foodstuffs such as oilseeds, vegetables, fruit, fish, meat and dairy products. These are of higher per unit value, but are needed in smaller quantities. They are either produced or gathered on or around the farm or purchased on the market. Although they are of great importance for the qualitative value of nutrition, only coarse foodstuffs are taken in consideration in this session.

Families who suffer from food insufficiency generally also suffer from malnutrition. It is important to note that having sufficient coarse grains is only one part of food security. Food security also includes access to other important food groups.

Food and market-oriented farming

As farmers become more market-oriented they need to keep in mind the family's food requirements. Can they risk growing only for the market and buying all the family's food? Or should they grow some food for their family and some crops to sell? How much of their land should be planted to food crops for the family? How much land can be planted to crops to be taken to the market?

Planning for food needs (continued)

To decide, the farmer first needs to know how much food the family will need for the year. The amount of food (coarse grains) an average person (child or adult) needs per day is 0.65 kg. This works out to about 240 kg per year. Therefore, the farmer simply needs to multiply 240 kg times the number of family members to know how many kilograms of coarse grains will be needed each year to feed the family. The figures for various sizes of families are given below.

Family size (people)	Food required each day (kg)
1	240
2	480
3	720
4	960
5	1 200
6	1 440
7	1 680
8	1 920
9	2 160
10	2 400

What to grow?

Now that the farmer knows how much food the family is going to need each year, two things are required: (i) what grains they want to eat and (ii) whether to grow these grains or buy them using money from crops sold on the market.

What grains do they want to eat?

This is a matter of personal preference and a matter of what is available.

Planning for food needs (continued)

Grow food or buy food?

This is a serious family and farm management decision. It really is about risk.

Buying food. Can the crop planted for the market make enough profit to feed the family? Risk can be reduced by:

- investigating the market and learning about what crops get what prices;
- investigating access to the market in terms of roads, transport and facilities;
- honestly assessing family farming skills and what can be grown confidently.

Growing food. This is limited by what crops can be grown in the area and the knowledge needed to grow. Again there is a risk. Are the crops planted for food suitable? Can risk be reduced by making a careful calculation of family food needs and then converting this into hectares?

The extension worker should be prepared to advise farmers on food crop options. Eventually a decision will have to be made.

Let us take a case where a farmer has chosen to grow all the food for family needs and to grow other crops to sell.

How much land is needed for planting food?

The amount of land the farmer needs depends on:

- the total amount of food needed;
- the types of crops to be grown;
- the expected yields of the chosen crop(s).

Planning for food needs (continued)

Example

A farmer with a family of six people

Sarah calculates that she will need 1 440 kg of grains to feed the family for the year.

She has 2.5 ha of land for planting. They are in two parcels. One is 1.8 ha and the other is 0.7 ha. Her crop choices are millet and maize. She wants to have them in equal quantities for her family. In other words, she wants 720 kg of millet and 720 kg of maize to give her the 1 440 kg. She knows she can get 3 tonnes per hectare growing maize and 0.75 tonnes per hectare growing millet. How much land does she need to plant to maize? How much to millet?

Maize

Sarah knows that 1 ha of maize will give her 3 tonnes. This is the same as 3 000 kg. She wants only 720 kg. This is now a case of simple mathematics.

If she can get 3 000 kg from 1 hectare ...

$$\frac{\textbf{3 000 kg}}{\textbf{1 ha}}$$

How many hectares does she need to get 720 kg?

$$\frac{\textbf{720 kg}}{\textbf{X ha}}$$

We can set these equations equal to each other ...

$$\frac{\textbf{3 000 kg}}{\textbf{1 ha}} = \frac{\textbf{720 kg}}{\textbf{X ha}}$$

Planning for food needs (continued)

Which gives us ...

$$3\ 000\ X = 720$$

$$X = \frac{720}{3\ 000} = 0.24$$

Therefore, Sarah needs to plant 0.24 ha of maize. This is very close to 0.25 ($\frac{1}{4}$ ha).

Let's check the answer.

If she plants 0.25 ha ($\frac{1}{4}$ ha) of maize, she can expect 0.25 of the yield.

$$0.25\ ha \times 3\ 000\ kg/ha = 750\ kg$$

Therefore, if she plants $\frac{1}{4}$ ha of maize, she will have enough maize to feed her family.

Millet

Sarah knows that 1 ha of millet will give her 0.75 tonnes of millet. This is the same as 750 kg. She needs 720 kg. The calculations are similar to those for maize.

$$\frac{750\ kg}{1\ ha} = \frac{720\ kg}{X\ ha}$$

$$750\ X = 720\ ha$$

$$X = 0.96\ ha$$

This means she should plant 0.96 ha. This is almost 1 ha.

So now Sarah knows that she must plant 0.25 ha of her land to maize and 1 ha of her land to millet.

Planning for food needs (continued)

In order to make sure her family has the food they need for the year she will use 1.25 ha of her land.

Her total land size is 2.5 ha. After planting the maize and the millet, she will have 1.25 ha (2.5 – 1.25 ha) left to plant crops for the market.

To make the decision of what to plant on the remaining 1.25 ha, Sarah can use the enterprise budgets to calculate gross margins. In addition, she will also want to:

- look at opportunity costs and risk;
- plan her market;
- check on the sustainability of the input/output support for different crop choices;
- check on her labour.

Food flow planning

In addition to understanding the quantity of food required in a year, it is also important to know when there is likely to be a shortage of food. This can be done through a simple matrix exercise in which the family consults about when different foods are available and when they are not. The following matrix is an example for a food flow.

Planning for food needs (continued)

Example

Food flow for a family of six

(coarse grain requirement: 1 140 kg)

Months	J	F	M	A	M	J	J	A	S	O	N	D	
Foods													Total
Maize (kg)	80	80	0	0	0	80	80	80	80	80	80	80	720
Sorghum (kg)	90	40	40	35	35	65	65	65	65	65	65	90	720
Total	170	120	40	35	35	145	145	145	145	145	145	170	1 440
Coarse grain requirement (kg)	120	120	120	120	120	120	120	120	120	120	120	120	1 440
Shortfall/ surplus	50	0	-80	-85	-85	25	25	25	25	25	25	50	0

This food flow shows that this family has a shortfall of grains in the months leading up to the harvest. An investigation would highlight that one of the reasons they have this shortfall is because they consume too much each month. A causal diagram would help the family identify why it is consuming more than is needed. (Note: it may be that the quantities shown in a food flow matrix may be expressed in bags rather than kilograms.)

Preparing for Session 4.7
Labour planning

Learning outcomes
Understanding (i) the purpose of the seasonal labour calendar, (ii) when and how to apply the seasonal labour calendar, (iii) its use in identifying solutions, (iv) the impact of stresses and shocks on labour

Training aids
Exercise 4.7A (Preparing a seasonal labour calendar)
Handout 4.7A (Labour planning)

Notes

Labour planning

All farms require some form of labour to carry out various activities. If it is not well planned, profits will decrease. This session introduces a tool that extension workers can use to help farmers analyse their labour needs against labour availability. The session will define labour analysis and examine when it should be used, and demonstrate how it is conducted. It will also examine the effect of changes on the labour balance over the season and explore suggested solutions.

Opening statement

We shall begin this session by reviewing the main points in Handout 4.7A (Labour planning), in which we shall discuss both the importance of labour planning and the possible use of a seasonal labour calendar. As always, feel free to ask any questions.

The outline on the following page is provided to help the facilitator conduct the review.

Outline of Handout 4.7A (Labour planning)

- Labour refers to the people who do the physical work on the farm.
- Labour can be provided in kind (without pay) by the family.
- It can be hired.
- It can be secured through a social capital arrangement.
- Labour costs are often a high percentage of the total costs of production.
- Farmers need to plan carefully for labour.
- Planning labour for an individual enterprise affects the labour for the whole farm.
- A seasonal labour calendar is often used to analyse and plan farm labour.

Exercise introduction

In Exercise 4.7A we shall assess the labour requirements for a farm seasonally and for the whole year. During the exercise participants may wish to focus on identifying the periods of serious labour bottlenecks and obvious labour idleness (under-employment). We shall also practise creating our own seasonal labour calendars.

Exercise 4.7A
Preparing a seasonal labour calendar

Purpose: To identify and plan labour requirements for a farm. (Participants should have read Handout 4.7A prior to this exercise.)

Method: Matrix.

Materials: (i) Flip chart paper or newsprint, (ii) thick marking pens.

Allow about 90 minutes for this exercise

Procedure

1. Participants get into their farm teams.

2. Ask each team to draw a matrix similar to the one shown in Handout 4.7A (Labour planning). (14 columns, ±15 rows)

3. The teams should identify the activities undertaken for all the enterprises on their virtual farms. These should be listed in the left-hand column.

4. The teams should identify the regular household activities. These should also be recorded in the left-hand column.

5. For each activity the team should discuss and agree on the monthly labour requirements under the appropriate month. This should be converted into person-days by multiplying by 26 days per month.

6. The team should total the labour requirements for each month. There should be three monthly totals: one for the farm activities, one for the household activities and one that totals the labour requirement for farm and household activities.

7. When the labour requirements are finished, the team should look at family labour availability during the year. This should be recorded for each month.

Exercise 4.7A (continued)

8. Beneath the family labour availability row, the team can calculate and record the labour surpluses or shortages.

This indicates the times when labour will need to be hired. They should also discuss stresses and shocks which may impact on the availability of labour. This would include such things as illnesses, attendance at school or migration.

9. Each team should discuss and make a plan to meet the labour requirements in the months where there is shortfall.

10. Ask each team to present their calendars. Encourage discussion.

Learning points

- What are some of the main causes of labour shortfalls?
- How do farmers deal with labour shortfalls?
- What coping strategies can be employed by farmers to save on labour?
- What do farmers do with labour surpluses?
- What is the labour availability by gender?
- How could shared labour be factored in?
- How can surplus labour in the family be utilized?

Space for notes and questions for the facilitator

Labour planning

Importance of labour planning

Labour refers to the people who do the physical work on the farm. All farms need labour to carry out basic activities of farming. Pre-production activities, production activities, and marketing activities all require someone to do the work. Labour can be provided in kind (without pay) by the family. It can be hired. Or it can be secured through a social capital arrangement.

Labour costs are often a high percentage of the total costs of production. Therefore, it is important to plan carefully the use of family, hired and social labour. The use of labour can be planned on two levels. It can be planned for the individual enterprise and for the whole farm.

At the level of the individual enterprise, labour planning is used to improve the performance of the different operations associated with the enterprise and to ensure that the right number of workers are engaged when required.

At the farm level, use of labour throughout the year is assessed. The planning of labour for an individual enterprise affects the labour requirements for the whole farm. The two are closely linked. If a farmer makes any change that affects labour in an individual enterprise, the farmer will need to examine the impact of this change on the labour requirements and resources for the whole farm. Similarly, if there is some change to the overall farm operation, the farmer will need to examine the impact on the individual enterprises.

Labour planning (continued)

A tool often used to analyse labour requirements and resources is to use a seasonal labour calendar. This calendar can give a visual assessment of labour on individual enterprises and on the farm as a whole over a given period of time (e.g. month, season, cropping cycle, year).

Procedure for a seasonal labour calendar

In planning the use of labour on the farm over a season, seasonal labour requirements for each enterprise and other household activities can be drawn up. The procedure for constructing the labour seasonal calendar is as follows:

1. List the different *farm* activities to be undertaken during the year or at a particular season by the family.

2. List the *household* activities to be done also during the year or the season.

Note

In most cases in Africa, women work both on the farm and in the household. Therefore it is essential that planning for farm labour include the household. This will give a clearer picture of the total demand for labour by a farming household. Alternatively the labour planning could also be broken down by gender.

3. Assess the labour requirements for each enterprise and household activity.

4. Asses the person-days required.

Labour planning (continued)

5. Assess the family members who will be available to work both for household and farm activities at different periods of the year.

6. Calculate the person-days available per month.

7. Examine the labour supply based on the availability of family members and labour shortages or where you require additional labour.

8. Formulate a strategy for dealing with labour shortfalls and surpluses (labour peaks and troughs).

It is important to consider the peaks and troughs of seasonal labour availability in relation to the farm labour requirements. By modifying the cropping pattern and making changes to the enterprise operations it is possible to achieve a better allocation of labour and ensure its more efficient use. Periods of trough can be used for general farm maintenance or to generate income through off-farm activities. Labour requirements during the peak periods (e.g. land preparation, planting, weeding or harvesting) could be met through the employment of either part-time or causal work or alternatively the introduction or use of more efficient mechanization or draught power.

An example of a seasonal calendar framework is given on the next page.

Labour planning (continued)

Example

Seasonal labour calendar in person-days for labour required

(1 ha maize, 1 ha sweet potatoes and 10 livestock on communal land)

This assumes that a farm family can work for 26 days per month.

Months	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**	
Farm activities													Total
Buying inputs		4					4						8
Ploughing			8							8	8		24
Planting				10							10	10	30
Weeding	10	10		10	10						10	10	60
Fertilizing				14						14	14	14	56
Herding cattle	24	24	24	24	24	24	24	24	24	24	24	24	288
Harvesting					30	46	30				30	30	166
Remove stover							3					5	8
Marketing					8	8	8				8	8	40
Farm maintainance	4	4	4	4	4	4	4	4	4	4	4	4	48
Total farm labour	38	42	36	62	76	82	73	28	28	50	108	105	728

Labour planning (continued)

Months	J	F	M	A	M	J	J	A	S	O	N	D	
Household activities													Total
Fetching water	5	5	5	5	5	5	5	5	5	5	5	5	60
Fetching firewood and fuel	3	3	3	3	3	3	3	3	3	3	3	3	36
Food preparation	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	6
Cleaning	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	6
Tending to children	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	6
House repairs	0	0	0	1	0	0	1	0	0	0	1	0	3
Total household labour	9.5	9.5	9.5	10.5	9.5	9.5	10.5	9.5	9.5	9.5	10.5	9.5	117
Total labour required (person-days)	**47.5**	**51.5**	**45.5**	**72.5**	**85.5**	**91.5**	**83.5**	**37.5**	**37.5**	**59.5**	**118.5**	**114.5**	**845**
Family members available	5	3	3	4	4	3	4	3	4	4	4	5	46
Family members available (person-days)	130	78	78	104	104	78	104	78	104	104	104	130	1 196
Additional labour requirements (person-days)	**0**	**0**	**0**	**0**	**0**	**13.5**	**0**	**0**	**0**	**0**	**0**	**0**	

Preparing for Session 4.8
Cash flow

Learning outcomes
Understanding (i) the purpose of the tool,
(ii) when and how to apply the tool,
(iii) its use in identifying solutions,
(iv) the impact of changes on cash,
(v) the farm and household income and expenses,
(vi) the timing and volume of cash shortfall
and ways of addressing them

Training aids
Exercise 4.8A (Cash flow: problems
and possibilities)
Exercise 4.8B (Cash flow analysis)
Handout 4.8A (Cash flow)
Handout 4.8B (Guidelines for cash flow
analysis exercise)
Handout 4.8C (Information for dairy enterprise)

Notes

Cash flow

It is often the case that a farm that is profitable based on gross margin calculations ends up with a cash shortfall at the end of the season. This session introduces the concept and practice of developing a cash flow to enable a farmer to see where the money goes and where it comes from. This puts farmers in a better position to control their financial situation.

Opening statement

Let's begin the session by reviewing the main points in Handout 4.8A (Cash flow). While gross margin is concerned with the profitability of the farm enterprise, cash flow is concerned with examining if the necessary finance is available for implementation.

The outline on the following pages is provided to help the facilitator conduct the review.

Outline of Handout 4.8A (Cash flow)

What is a cash flow?

The farm cash flow is the flow of money into the farm from sales and the flow of money out of the farm through purchases and other payments.

For smallholder farmers where the farm and household are closely linked, the cash flow also includes other income flows into the household and payments made by the household.

The cash flow helps the farmer determine the financial performance of the household as a whole.

It guides the farmer in assessing whether they will have enough money to carry out their plan or if they will be short of money in any month.

It enables the farmer to find the time of the year where additional financial resources may be required.

Net cash flow: the difference between the inflows and outflows. This is found by simply subtracting the money spent over the year from the money received.

Cash inflow is made up of:

- sales of produce marketed;
- income from wage labour and other employment;
- gifts;
- loans.

Cash outflow is made up of:

- purchases and payments for inputs for the farm (e.g. hired labour, fertilizers, seed, pesticides, animal feeds, salt licks);
- land preparation costs, purchase of new machinery and other operational costs;
- household expenses (e.g. medicine, food, school fees, taxes, gifts);
- debt and interest.

The farm should try to generate a positive cash flow.

Use of cash flow

Cash flow budgets are important in:

- developing the farm plan;
- choosing between alternative farm enterprises;
- comparing actual and budgeted results (to enable corrective action to be taken on time);
- arranging for loans.

Exercise introduction

We shall complete the review of this handout by doing the following two exercises. First, we shall look at farm problems as the might relate to cash flow in Exercise 4.8A (Cash flow: problems and possibilities). Second, we shall work out a cash flow from the gross margin information on your farms using Exercise 4.8B (Cash flow analysis).

Exercise 4.8A
Cash flow: problems and possibilities

Purpose: To explore cash flow problems and solutions. (Participants should have read Handout 4.8A prior to this exercise.)

Method: Brainstorming.

Materials: (i) Pen and paper.

Allow 45 minutes for this exercise

Procedure

1. Divide the participants into teams of four or five. Do not use the farm teams. Give each team a sheet of paper and ask them to draw a line down the middle of the paper, from top to bottom.

2. Discuss and agree on three problems that farmers commonly face related to income (cash inflow) and expenditure (cash outflow) and how they usually solve them.

In the left column they should record the problems.
In the right column they should record the solutions.

3. Ask each team to share their findings. Encourage discussion and how the problems might be addressed using a cash flow.

The list opposite could serve as the basis for a discussion.

For the facilitator

Low profitability. Cash flow problems may be an indication of the problem of low profitability. The first step would be to analyse the profitability of each of the farm enterprises using the gross margin. Increasing profit and profitability is often the best way to remedy cash flow problems.

Unexpected cash problems. One way to prevent cash flow problems is to identify problems before they occur. Cash flow would give the farmers time to alter their plans and remedy the problems by timing cash inflows and cash outflows.

Low profitability together with low cash inflow. This calls for a careful look at the combination of enterprises on the farm. Perhaps another crop rotation or livestock enterprise would increase cash inflow and allow the farmer to increase profitability at the same time.

High production costs. An effective way to improve cash flow is through cost control. Is the farmer using the best seeds and seeding rates? Is fertilization at the right level? Can the use of commercial fertilizer be reduced through the use of manure? Can integrated pest management help?

Need to increase selling flexibility. The best approach to this problem is to improve the farmer's marketing strategy. For non-perishable products, the farmer has some flexibility in timing sales. Improving farm profitability should be the main goal in formulating a marketing strategy.

Increase cash inflow. Family members may seek part-time or full-time employment off the farm. Any additional costs related to off-farm employment, such as transportation and clothing, need to be considered carefully.

Increase cash availability. Selling livestock or other capital assets is a common way of dealing with cash flow problems. The farmer should sell unproductive assets first to ensure that the farm business can still operate and generate income.

Exercise 4.8B
Cash flow analysis

Purpose: To practise analysing the farm household cash flows. (Participants should have read Handout 4.8B prior to this exercise.)

Method: Cash flow analysis case study.

Materials: (i) Handouts 4.8B (Guidelines for cash flow analysis exercise) and C (Information for dairy enterprise), (ii) pen and paper, (iii) calculator.

Allow 30 minutes for this exercise

Procedure

1. Ask the participants to get into their farm teams. Give each participant a copy of Handout 4.8B.

2. Remind the participants of the basic steps to follow to construct a cash flow:

   (i) inflow and outflow: list the income and expenditure items when they occur in the year;
   (ii) prepare a cash flow table;
   (iii) calculate the monthly net cash flow;
   (iv) calculate the cumulative net cash flow;
   (v) analyse the net cash flow.

3. Using the information generated so far in this training programme, each team should develop a cash flow for their farm. They should follow the steps in Handouts 4.8A and B, and complete the worksheet provided in Handout 4.8B.

4. Ask each team to report briefly on their cash flows. Encourage discussion. Help with corrections as needed.

Exercise 4.8B (continued)

5. The next step in the exercise is to add a dairy enterprise to your farms. This will have to be included in the cash flow. The information is presented in Handout 4.8C (Information for dairy enterprise).

6. Distribute Handout 4.8C to the participants. Ask each team to work out the impact of introducing the dairy enterprise to the family farm. They should consider the following questions:

   - Does the enterprise make a profit?
   - How many cows should the family buy?
   - Can the family afford to finance the enterprise?
   - Will they have to take out a loan?

7. Ask each team to present its findings to the rest of the participants. Encourage discussion.

Space for notes and questions for the facilitator

Cash flow

What is a cash flow?

We have previously discussed gross margin as a tool to assess the profitability of an enterprise. Gross margin indicates how worthwhile a change may be if the quantities and prices assumed are realized. When a new enterprise is introduced into the farming system a gross margin is usually prepared to assess whether the enterprise generates enough income to cover expenditures. But this is only a part of the analysis.

It is also useful to assess the overall effect of the enterprise on the household finances. To do this, the farmer needs to prepare a cash flow. The cash flow is simply the flow of money into the farm from sales and the flow of money out of the farm through purchases and other payments.

While it is common to prepare a cash flow for a farm, in the case of smallholder farm families, it is more useful to include the household in the cash flow calculations. For many smallholder farms, just as with labour, the farm finances and the household finances are very closely interlinked.

The farmers can use the cash flow to determine the financial performance of their households as a whole. It will help them to assess whether their families will have enough money to carry out their plan or if they will be short of money in any month. It enables the farmer to find the time of the year when additional financial resources may be required.

Cash flow (continued)

There is an important difference between a gross margin and a cash flow. The gross margin looks at the overall performance of the farm and its enterprises. When accounting for income, a gross margin will include the value of products consumed by the family. In a cash flow, only actual cash income is included; even though crops consumed by the family have value, they are not sold, and they do not generate cash. Therefore they are not included in the cash flow. Similarly, costs such as family labour, which are often not actually paid, are included in the gross margin, but are not included in the cash flow.

This difference is important because although an enterprise may be profitable in terms of gross margin — if the farmer is not selling enough of the crop — then the cash needed to pay inputs, hired labour and other cash costs may not be generated.

Net cash flow

The net cash flow is the difference between the cash inflows and cash outflows. Net cash flow is calculated by subtracting the money (cash) spent over the year from the money received. (Non-cash items, such as crops consumed by the family, unpaid family labour and depreciation, are not included in the flow of cash.)

Net cash flow = **Cash inflow** - **Cash outflow**

Cash inflow is made up of:

- sales of produce marketed;
- income from wage labour and other employment;
- gifts;
- loans.

Cash flow (continued)

Cash outflow is made up of:

- purchases and payments for inputs for the farm (e.g. hired labour, fertilizers, seed, pesticides, animal feeds, salt licks);
- land preparation costs, purchase of new machinery and other operational costs;
- household expenses (e.g. medicine, food, school fees, taxes, gifts);
- debt and interest.

The farm should try to generate a positive cash flow. This comes about by ensuring that more cash flows into the farm than out of the farm. Analysis of a farm cash flow generates a detailed projection of the farmer's ability or inability to finance an enterprise. In the absence of records, details of household expenditure usually have to be estimated.

Use of cash flow

Farmers can use a cash flow to analyse their farms, plan for the future and to monitor farm activities. Controlling the flow of cash in and out of their farm is an important task of the farmer. Cash flow budgets are important in:

- developing the farm plan;
- choosing between alternative farm enterprises;
- comparing actual and budgeted results (to enable corrective action to be taken on time);
- arranging for loans.

Cash flow (continued)

As a planning tool, the cash flow can be used to see the effect of a small change on the farming system or the financial impact of a complete farm plan. It can be used to examine whether the financing is available within the farm household, or alternatively if there is a need to take out a loan. In cases where the farmer has already decided to take a loan, the cash flow will also indicate whether and when the interest and debt can be repaid.

How to construct a cash flow

As noted earlier, the main feature of a cash flow is that it focuses specifically on cash. The non-cash items included in gross margin analysis are not included in a cash flow. Non-cash items such as depreciation, the value of family labour and food consumed at home are excluded.

Also as noted earlier, the cash flow for smallholder farmers includes the on-farm and off-farm (household) inflows and outflows. It should cover all cash income and expenditures for the farm household. It should include loans that the farm household receive from moneylenders, friends and lending institutions as cash inflows. And it should include repayment of these loans (principal and interest) as cash outflows.

A cash flow can be calculated on a monthly, quarterly or annual basis. Annual cash flows are common for longer term investments such as livestock and tree crops. Monthly and quarterly cash flows are well suited to annual crops.

Cash flow (continued)

A farmer can construct a cash flow on what is currently being done or on the basis of what is intended over the next year. In the example that follows, we shall construct a cash flow budget to examine the projected cash situation of a plan to introduce a new enterprise. We shall look at cash flow projections on a monthly basis over one year.

Let us imagine a farm household that earns some income from selling maize and cassava and rearing dairy cows. They also have some chickens. The family has three children attending school. The farmer wishes to introduce beans into the system, knows that the enterprise is profitable but wonders whether there are enough funds to finance the enterprise.

When the farmers plan the farm programme for next year, they want to find answers to the following questions:

- How much money are the farm enterprises likely to generate and how much cash expenditure will be needed to cover costs?
- When will they receive the money (inflow) and when will the money be needed (outflow)?
- If the amount of money they expect to receive over the year does not cover the amount needed, how can they make up the difference? Will it be made up by savings? Do they have reserves? Do they have access to loans?

Cash flow (continued)

Prepare the cash flow as follows:

1. Identify inflow and outflow

List the income and expenditure items and when they occur in the year, as shown in the time plan schedule below.

Cash inflow			**Cash outflow**		
Description	*Month*	*Income ($)*	*Description*	*Month*	*Expenditure ($)*
Sale of maize	January	270	Money spent on farm inputs (maize)	March	300
	March	300		September	300
	September	300	Money spent on farm inputs (cassava)		37
	October	100	Money spent on farm inputs (livestock)	January	30
	November	100		February—September	400
Sale of cassava	April	340		October—December	90
	August	120	Brooding cost and feeding (chickens)	September	60
Sale of milk	March—September	420	Money spent on input (beans)	April	200
Sale of chicken	January	130		May	50
	September	60		July	40
Planned sale of beans	July	450		October	180
	December	400		December	40
			Money to cover living expenses	January—December	120
			Money to cover school expenses	February	200
				May	140
				September	100
			Money to cover health expenses	January—December	120
	Total	**2 990**		**Total**	**2 407**

Cash flow (continued)

2. Prepare a cash flow table

From the inflow outflow table, we can work out the monthly balance. This can be done by entering all of the information in a cash flow chart, which is given at the end of this handout.

Money coming in (sales of products)

	J	F	M	A	M	J	J	A	S	O	N	D
Maize	270		300						300	100	100	
Cassava				340				120				
Milk			60	60	60	60	60	60	60			
Chicken	130								60			
French beans (planned)							450					400
Total cash inflow	**400**	**0**	**360**	**400**	**60**	**60**	**510**	**180**	**420**	**100**	**100**	**400**

Money going out

	J	F	M	A	M	J	J	A	S	O	N	D
Payments and purchase of inputs												
Maize inputs			300						300			
Cassava inputs				37								
Farm inputs livestock	30	50	50	50	50	50	50	50	50	30	30	30
Chicken feeding expenses									60			
Beans inputs				200	50		40			180		40
Household expenses												
Living expenses	10	10	10	10	10	10	10	10	10	10	10	10
School fees		200			140				100			
Hospital expenses	10	10	10	10	10	10	10	10	10	10	10	10
Total cash outflow	**50**	**270**	**370**	**307**	**260**	**70**	**110**	**70**	**530**	**230**	**50**	**90**

Cash flow (continued)

3. Calculate the monthly net cash flow

This is done by subtracting the expenses from the income for each month. It will be positive if income is greater than expenses, and negative if income is less than expenses. The results are added to the bottom of the cash flow table as shown in the example at the end of this handout.

	J	F	M	A	M	J	J	A	S	O	N	D
Total cash inflow	400	0	360	400	60	60	510	180	420	100	100	400
Total cash outflow	50	270	370	307	260	70	110	70	530	230	50	90
Monthly net cash flow	**350**	**-270**	**-10**	**93**	**-200**	**-10**	**400**	**110**	**-110**	**-130**	**50**	**310**

4. Calculate the cumulative net cash flow

In order to assess whether the family has enough cash over the year to cover the introduction of beans we have to construct a cumulative cash flow. The cumulative net cash flow is calculated by adding the monthly net cash flow with the cumulative net cash flow of the previous month.

For example, in January, the monthly net cash flow was $350. This is also the cumulative net cash flow because it is the first month in the season. In February, the monthly net cash flow is -$270. Adding these two together tell us that by the end of February, the cumulative net cash flow was $80.

	J	F	M	A	M	J	J	A	S	O	N	D
Monthly net cash flow	350	-270	-10	93	-200	-10	400	110	-110	-130	50	310
Cumulative balance	350	80	70	163	-37	-47	353	463	353	223	273	583

Cash flow (continued)

5. Analyze the net cash flow

This example shows that the family has a shortfall of cash in May and June. This means that even though beans is a profitable enterprise the family does not have the money available to cover the expenditures expected to occur in those months. What can the family do? There are a number of possibilities the farmer can choose to do:

- decide not to introduce beans;
- try to save some money in order to cover the financial shortfall;
- decide to cut back on some of the inputs used for growing beans;
- decide to reduce some of the area under maize and cassava in order to reduce costs;
- sell some livestock to cover the financial gap;
- decide to take a loan to cover the shortfall.

Example
Using a loan

Let us assume that farmer Bill decides to finance his shortfall with a loan. He would need to determine how much of a loan he needs and whether and when he could make payments to repay the loan.

The shortfall that cannot be covered amounts to $104. A loan of $200 would ensure the cash flow required. If he is to repay the loan over 4 months and is charged a rate of 18 percent interest, he will make 4 payments of $59 each. The total repayment would be $236.

The figures on the next page are an example of how a loan and repayment schedule could be planned to make this proposal feasible.

Cash flow (continued)

Example
Using a loan (continued)

		J	F	M	A	M	J	J	A	S	O	N	D
A	Monthly balance	350	-270	-10	93	-200	-10	400	110	-110	-130	50	310
+ B	Proposed loan				200								
- C	Proposed repayments							-59	-59	-59	-59		
	Cumulative balance	350	80	70	363	163	153	494	545	376	187	237	547

Assumptions:

- loan of $200 paid back over 4 months
- grace period of 2 months
- interest rate at 18%
- payable at four equal instalments

In this example, if Bill took out a loan of $200 he would cover the financial shortfall and would have the funds available to repay the loan. The cumulative balance would then be positive for the entire 12-month period showing that there is no more need for finances.

Where loan options are viable it is necessary to understand that taking out a loan is treated as an inflow, but the cost of repayment (principal and interest) also needs to be taken into account and is treated as an outflow.

In conclusion, Bill should be confident that introducing beans into the farming system is profitable and by taking a loan would also be financially feasible. The final decision rests with him.

Cash flow (continued)

Guidelines for extension workers

As more and more farmers move toward market-oriented farming, extension workers will need to help farmers understand and develop skills in managing their business finances. Farmers will need to understand that, as managers of their own businesses, they need to control cash inflows and cash outflows. Farmers can do this effectively by using the Time Plan Schedule at the end of Handout 4.8B to record income and expenditures.

Example of a complete cash flow budget

		J	F	M	A	M	J	J	A	S	O	N	D
	Sales of farm products												
Money coming in	Maize	270		300						300	100	100	
	Cassava				340				120				
	Milk			60	60	60	60	60	60	60			
	Chicken	130								60			
	Beans (planned)							450					400
	Total cash inflow	**400**	**0**	**360**	**400**	**60**	**60**	**510**	**180**	**420**	**100**	**100**	**400**
	Payments and purchase of inputs												
Money going out	Maize inputs			300						300			
	Cassava inputs				37								
	Farm inputs livestock	30	50	50	50	50	50	50	50	50	30	30	30
	Chicken feeding expenses									60			
	Beans inputs				200	50		40			180		40
	Household expenses												
	Living expenses	10	10	10	10	10	10	10	10	10	10	10	10
	School fees		200			140				100			
	Hospital expenses	10	10	10	10	10	10	10	10	10	10	10	10
	Total cash outflow	**50**	**270**	**370**	**307**	**260**	**70**	**110**	**70**	**530**	**230**	**50**	**90**
	Total cash inflow	**400**	**0**	**360**	**400**	**60**	**60**	**510**	**180**	**420**	**100**	**100**	**400**
	Total cash outflow	**50**	**270**	**370**	**307**	**260**	**70**	**110**	**70**	**530**	**230**	**50**	**90**
	Monthly net cash flow	**350**	**-270**	**-10**	**93**	**-200**	**-10**	**400**	**110**	**-110**	**-130**	**50**	**310**
	Cumulative balance	**350**	**80**	**70**	**163**	**-37**	**-47**	**353**	**463**	**353**	**223**	**273**	**583**

Space for notes and questions for the facilitator

Guidelines for cash flow analysis exercise

Basics steps to construct a cash flow

(i) Inflow and outflow: list the income and expenditure items when they occur in the year.
(ii) Prepare a cash flow table.
(iii) Calculate the monthly net cash flow.
(iv) Calculate the cumulative net cash flow.
(v) Analyse the net cash flow.

Cash inflow

1. On the time plan schedule sheet, start with the money coming in and enter all the sources of income a household has in the left column. They should be the same as those entered in the cash flow budget (business plan).

2. Month by month fill in the cash flow expected from each source. This is strictly cash and when it will be received.

3. Include remittances or gifts if relevant.

4. Do not write any loan or grant yet, even if it is expected.

Cash outflow

5. Write each income generating activity in the left column just below the sources of income rows and identify the inputs that have to be bought under each activity.

6. List any capital items, including machinery, buildings and equipment, that have to be bought during the budget period.

7. Month by month fill in the money to be spent on each item in the month when the transaction will occur.

8. Expenditure for home and personal expenses can be estimated realistically for each month.

Guidelines for cash flow analysis exercise (continued)

9. Ignore the loan repayments and loan fees row.

10. Work out the net cash flow for each time period in the budget as:

Net cash flow = **Cash inflow** - **Cash outflow**

In the event of a negative cash flow in any month, the extension worker should give the farmer a chance to explain how the cash shortfall will be solved.

11. Work out the closing balance for the first month as:

Closing balance of the 1st month = **Opening balance** - **Net cash**

12. Transfer the closing balance for the 1st month to the opening balance for the 2nd month and subtract the net cash flow from it to get the next closing balance.

In the event that there is a negative closing balance, in any month, the extension workers should give their farmers a chance to explain how the cash shortage will be solved.

Consider the following alternatives and add what the farmers would wish to do:

- one expense can be reduced or delayed;
- negotiate for a later payment to the supplier;
- some items to be paid for by instalments;
- go for a loan or grant;
- change the pattern of inputs;
- go for piecemeal work;
- other.

13. Money obtained as a grant or loan can now be entered in the right month and closing balance be recalculated.

Guidelines for cash flow analysis exercise (continued)

Worksheet — Time plan schedule

Cash inflow			Cash outflow		
Description	*Month*	*Income ($)*	*Description*	*Month*	*Expenditure ($)*
	Total			**Total**	

Space for notes and questions for the facilitator

Information for a dairy enterprise

Unit
2 dairy cows that produce an average of 3 litres per day per cow.

Cost of purchasing the cows
$200 each

Income
The price of milk is $0.50 per litre.
2 calves sell for $100 each, sold in February.

Expenses
Feeds and other requirements for livestock are $400 per cow per year.
Wages for livestock is $60 per month.

A loan is available at an interest rate of 15 percent.

Preparing for Session 4.9
Records

Learning outcomes
Understanding (i) the purpose and importance of keeping records on the farm,
(ii) the application of some basic farm records

Training aids
Exercise 4.9A (Review of farm records)
Exercise 4.9B (Records for gross margin and cash flows)
Handout 4.9A (Keeping farm records)
Handout 4.9B (Examples of forms for record keeping)

Notes

Records

The last session in this module is about records. Most of the farm management tools learned in this module depend on reliable and accurate data and information. Farmers who keep good, if simple, records of farm activities will be in a much better position to make the farm management tools work for them. This will lead ultimately to increased profitability.

Opening statement

In order to use any of the farm management tools discussed in this module, farmers will need information. And yet many smallholder farmers do not keep records. They try to rely on memory, but this is not reliable enough to be able to use these tools effectively. In this session we shall learn how essential record-keeping is to farm management.

Exercise introduction

Here we shall explore some of the ways in which extension workers can assist farmers to understand the importance of keeping records and the contribution they make to increasing farm profitability. The review of this handout will be done in three exercises. These are: Exercises 4.9A (Review of farm records) and B (Records for gross margin and cash flow)

Exercise 4.9A
Review of farm records

Purpose: To improve understanding of the role of records in market-oriented farm management. (Participants should have read Handout 4.9A prior to this exercise.)

Method: Mind mapping.

Material: (i) Heavy paper or light cardboard of three different colours, (ii) thick marking pens.

Allow about 45 minutes for this exercise

Procedure

1. Give each participant three cards of the different colours.

2. Ask each person to write on one card an answer to the following topics:
   - The value of records to farmers and extension workers
   - Why farmers do not keep records
   - Types of records

3. Each participant should then stick the cards on the board and explain it.

4. Discuss one topic at a time.

5. After presentation of each topic, cluster all similar cards and have a general discussion.

Ensure that the main points of the handout are discussed.

Exercise 4.9B
Records for gross margins and cash flows

Purpose: To design records for gross margins and cash flows.

Method: Group discussion and presentation.

Material: (i) Flip chart paper or newsprint, (ii) thick marking pens.

Allow about 45 minutes for this exercise

Procedure

1. Retain the teams from the previous exercise. The assignment is to design the types of records that a farmer and rural entrepreneur could use to record the information needed to manage the business.

2. Assign each team with the task of designing record-keeping formats for gross margin and cash flow information. Each team should have the following tasks:

   Team 1. Farm map
   Team 2. Input record, labour record, poultry/livestock record
   Team 3. Income record, expense record

3. Ask each team to make a brief presentation to explain their assigned record. Encourage discussion

Note the practical use of the records developed.

Space for notes and questions for the facilitator

Keeping farm records

As we learned in Module 3, information is an essential part of farm management. In order for farmers to be able to use any of the farm management tools, they will need information about their farm. Sometimes they will want to examine their farm's performance over a number of years. Without some means of recording data and information, farmers will find it difficult to analyse their farm and to plan for improvements.

What is record-keeping and what are farm records?

Record-keeping is a process by which data is systematically collected, organized and stored. The stored data can be retrieved, put together in different ways and then analysed — turning the data into information. This information is then used to make decisions. Thus farm records are the means of storing data and information so that it can be recalled and used at some later date. As will be discussed in greater detail later, farmers use memory, diaries, physical records and financial records. Each of these types of records helps the farmer remember what has happened on the farm and what the current stock levels are. Farm records may also include off-farm information about things such as market prices, input prices and market demands.

Why keep records? The value of keeping records

Keeping records is an important part of market-oriented farm management. The farmer can use the data and information from farm records to:

- measure the production performance of the farm;
- measure the financial performance of the farm;
- examine the farm business;
- plan the farm business.

Keeping farm records (continued)

More importantly, without good records farmers must rely on their memory for making decisions. Having a workable system for recording and retrieving data and information will make it much easier to improve the profitability of their farms. They will need to record, keep and be able to retrieve data about production, marketing, processing and household consumption, and expenses.

Likewise, farm records also provide useful information for extension workers to help farmers increase farm profits, adjust farm practices, select enterprises, determine the best use of available resources, obtain credit and formulate production plans. Many extension workers keep approximate figures for the area they are working but it is much better if each farmer has accurate farm records of what has happened.

The advantages are many. Many farmers find keeping records worthwhile once they understand how the information collected can be used.

Records are important management tools that enable the extension workers and farmers to:

- Provide the farmer with a history of what has happened on the farm between seasons and years. By comparing one year's records with the next year a farmer can see what progress is made and see whether yields and profits are improving. This also enables the farmer to trace weaknesses.

- Assess the physical and financial performance of an enterprise or the whole farm business. By measuring the outcome of farm management decisions, records should allow farmers to compare data and indicators of profitability for both the enterprise and farm with other neighbouring farms.

Keeping farm records (continued)

- Assess how a farm is progressing over a given period. This enables the farmer to seek advice and the extension worker to provide advice on corrective measures where problems arise and before things get out of control. Farmers will also be better able to check whether things are going according to plan. The farmers can monitor performance and see whether they are using too many purchased inputs or whether crop and livestock yields are increasing or decreasing. They enable the farmers to control the daily routine operations of the farm. They will know what has been done and spent at any given time during the year. It is important to detect where things are going wrong quickly so that they can be put right before big losses occur.

- Establish a basis for budgeting and planning changes in the farm business. Farmers need to make decisions each year when they plan what they are going to farm. The production and financial records from previous years help farmers to make these decisions. Farmers need to know what yields can be expected from crops and livestock and what costs and income they are likely to get. With properly kept records, farm management and advisory decisions can be made with confidence.

- Tell farmers how much they are earning so they can make sure that they are not spending too much on family expenditure. In this way they can avoid getting into money difficulties.

- Facilitate advisory services to farmers wishing to borrow money for investment, sales and marketing of agricultural products. Farmers have advantages in dealing with the banks, moneylenders and input suppliers offering credit if they are able to show earnings. Records will be useful for assessing the financial needs of the farm. It allows the farmer to adhere to legal responsibilities on the farm.

Keeping farm records (continued)

- Apart from its potential use in farm management decision-making, farm records are sometimes used to formulate national policies, programmes and action plans.

Why farmers do not keep records

In many cases in Africa, record keeping is not well developed among farmers. This is in part because of the low levels of education, literacy and numeracy. Very few farmers keep records and know how to use the information collected. Below are some of the reasons for lack of record-keeping among farmers, presented together with some suggested solutions:

Reasons	Suggested solutions
Cannot read and write	Use pictorial illustrations Get help from children/literate neighbours
Forgetting to record	Make frequent contacts to remind them to record
Discouraged by low yields	Encourage farmer to farmer learning
Procrastinating recordings	Encourage them by examples from like farms
Tiredness after the day's work	Advise to carry record book along and make use of children
No safe place to keep record books	Create a simple, secure place Explain importance of record books to children and other family members
Don't have record book to record in	Help develop simple records Ask government, NGO, coop, etc. to assist farmers with record books
Farmer's spouse or children market without recording	Demonstrate to them the importance of recording sales
Lack of reasons why records need to be kept	Take time to explain reasons to farmers
Laziness and lack of encouragement by neighbouring farmers	Encouragement and invitation to group discussions and meetings
Not recording home consumption, gifts, donations and ceremonial usage	Extend the importance of recording home consumption and gifts

Keeping farm records (continued)

Types of records

Record-keeping can be kept simple and need not take up much of the farmer's time. There are many simple methods that have been devised for farmers to keep records even though they may not be literate. It does require self-discipline and commitment to fill them in regularly. So farmers have to be motivated by a desire to improve their level of income.

Various types of farm records could be introduced for literate, semi-literate and illiterate farmers. Some of the most commonly used records are listed below.

Physical records. These serve the daily needs of farmers in managing their operations and are designed to control specific activities. The records cover the main farm enterprises: crop, livestock, fisheries and household based food processing. They are used to produce specific kinds of information. Production records could be divided according to the main input types, for example:

- *Crop inputs:* seed, fertilizer, labour, herbicides, pesticides, fuel, pumps and irrigation infrastructures.
- *Livestock inputs:* day old, feed, drugs, vaccines, housing, labour.
- *Fisheries inputs:* fingerlings, fertilizer, feeds, lime, net, hook & line, and labour.
- *Processing inputs:* raw materials, equipment and labour.

Physical records show the quantities of the inputs used and outputs obtained. In addition, physical records indicate timing and methods of operations. Some of the most common physical records are: (see Handout 4.9B for examples).

Keeping farm records (continued)

The farm map. This is a drawing of the main features of the farm. It shows land parcels or plots; properly identified and located and indicating their correct sizes. The map is useful for understanding the size of the farm and the location and allocation of land, building and infrastructure. A map helps the farmer to plan the farm from basic production decision to improvement investments, such as land levelling, irrigation, drainage systems or roads.

To develop an accurate and truly useful map, it may be necessary to survey the farm and calculate the area. Preferably a plan should be drawn to scale showing all the plots and their areas. Business-minded farmers should know the size of all the plots on the farm, even if they do not have a farm plan. Fallow land should also be measured as this is also a part of the farm and will be used to grow crops some time in the future.

Production records. These provide farmers with valuable information on yields, inputs and cropping practices used in the production process on specific parcels or plots. A crop record should include details of the crops grown on each plot, the dates of planting and harvesting, the amount of seed used and yields. Yields may be measured in the traditional way as so many bags or baskets or in kilograms or tonnes. The actual weight sold can also be recorded, particularly at point of sale. The yield per hectare of a crop is calculated by dividing the total yield of the plot by the number of hectares to that crop.

Keeping farm records (continued)

Labour records. These keep track of labour inputs. The labour inputs are expressed in hours or days of operation for each of the farm enterprises and the corresponding payment in cash or kind. It may also be useful if these records indicate the source of this labour (e.g. family, hired from community, migrant).

Machinery and equipment records. These keep track of the expenses involved in operating machinery. This includes regular running costs, the nature, and the type and cost of repairs. This kind of record is most commonly kept by larger, more commercial farmers. However, it can be applied even to animal draft and hand equipment, where the records will help the farmer know the cost of farming with this kind of technology.

Livestock/poultry records. The farmer should also keep records on livestock. Many farmers keep a few pigs, hens, goats, and sheep or cattle. Records should be kept for each. It is important to keep a record of the number that are on the farm. This not only gives a check on theft, deaths and losses, but knowing the numbers of animals helps the farmer calculate yield per animal or per bird. A separate record should be kept for each class of stock. These include information on items such as breeding, health, production and feed composition.

Marketing Records. These records refer to information on market transactions and procurement of purchased inputs.

Keeping farm records (continued)

Financial records. These are used to evaluate the financial performance of an individual enterprise or of the whole farm. They are also used for cash flow analysis. Financial records help the farmer to know how well individual enterprises perform and contribute to overall farm profit at the end of the season or production cycle. Financial records include the main cash transactions on the farm: sales, purchases and money borrowed as expressed in the cash flow and gross margin calculations.

Financial records are kept in the form of accounts of what the farmer spends and receives. Purchases and expenses can be recorded on one page. Sales and receipts can be recorded on another. An example of a simple account book is shown below:

Purchases and expenses

Date	Detail	$

Sales and receipts

Date	Detail	$

Keeping farm records (continued)

Home consumption, income and expenditure

Records can also be kept of home consumption, of other non-farm sources of income, and of expenditure. If a large part of production is used to feed the family it should also be recorded. This part of production does not appear as sales in the account book, but it has value. The value of the farmer's crop includes not only what is sold, but also what is consumed by the farmer's family. Keeping a record of farm products consumed acknowledges the value of that production. It also ensures the farmer has an accurate record of production from the farm. This will help determine the true profitability of the farm.

This information could be recorded as follows:

Date	Details	$	Comments
January 1	6 eggs	2.50	
January 15	2 kg of spinach	1.00	

At the end of the year the farmer adds up the total value of home consumption. The value is added to the farmer's total receipts to give the value of total production of the farm. The value of sales plus the value of home consumption, less total expenses provides an assessment of farm profit.

Keeping farm records (continued)

Another record could cover household non-farm income sources and expenditures. This will help the farmer to understand the role of the household cash flow on the farm.

An example of this kind of record is shown below

Income sources		
Date	Item of income	Amount ($)

Expenditure		
Date	Item of expenditure	Amount ($)

Records for non-literate farmers

It is possible to help farmers keep records without having to be literate or numerate. For example columns can be allocated to the local denominations of money and amounts taken or spent on certain items can be recorded by making a mark in the relevant column. An example of a cash flow layout structured with these types of records is given below*.

☼	⊕	$
1-9-06	100	800
1-9-06		100
1-9-06		60
1-9-06		40
		1000

☼	⊖	$
1-9-06	2 x 200	400
1-9-06	1 x 250	250
1-9-06	1 x 120	120
1-9-06		60
		830

100 1000 − 830 = 170

* Reference: FAO 1999. *Enhancing Farmer's Financial Management Skills* by Jennifer Heney

Keeping farm records (continued)

Principles of record keeping

There are some general principles that apply to all record keeping. Records should be:

- accurate and complete and filled in as soon as possible after the operation;
- neat and written clearly;
- complete by not leaving out any information;
- be simple in design, easy to keep and retrieve;
- easy to analyse;
- appropriate.

Care should be made that only the really vital information required by the farmer is collected through record-keeping. The whole purpose of record-keeping is to improve the standard of farm management. There is no value in spending time on records and calculations of profit and production in individual enterprise if no use is made of them. All of the results should be compared with some standards as discussed above.

Keeping farm records (continued)

Summary of farm record types

Background and farm information. This information needs to be collected only once per production cycle of the enterprise.

Farm inputs. Indicates the inputs applied to the enterprise. This form needs to be completed every time an input other than just labour is applied to the enterprise.

Labour. Indicates by date and day the operations undertaken on an enterprise and the cost of labour engaged to perform them. This needs to be completed every time labour is carried out on the enterprise.

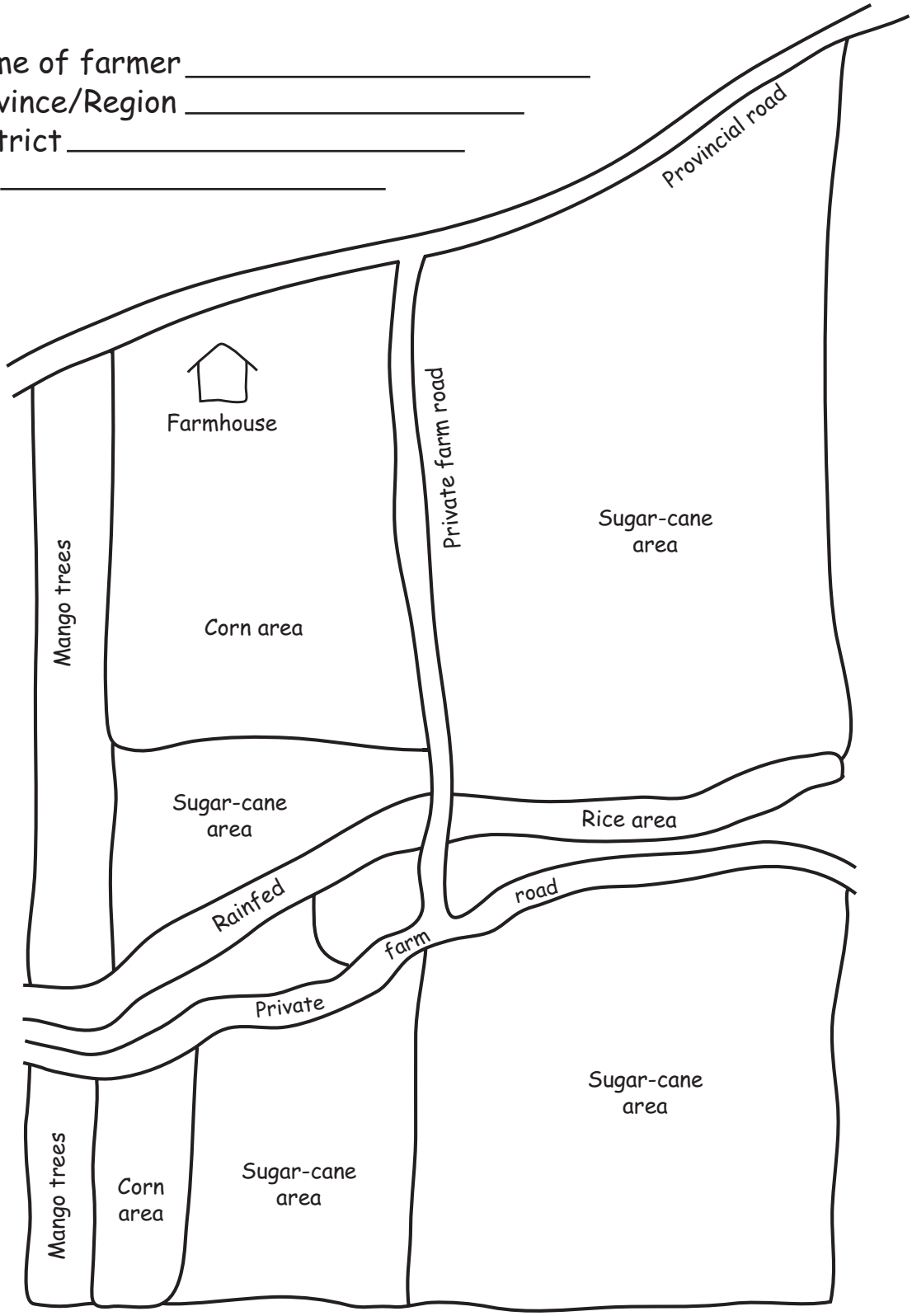
Production/output and sales. Used to estimate and calculate production/output and its value. This needs to be completed at the end of the production cycle of the enterprise.

Produce/inputs not sold or bought. Information on products, inputs and their estimated/imputed value/costs associated with the enterprise but were not sold or bought. This also needs to be completed at the end of the production cycle of the enterprise.

Gross margin estimation. Estimates gross margin (gross income minus variable costs) for the enterprise. This has to be completed at the end of the production cycle of the enterprise and will be based on all the above information.

Examples of forms for record keeping

Name of farmer _____
Province/Region _____
District _____
Lot _____



Note: a simple farm map, such as the one above, can be drawn by hand

Examples of forms of record keeping (continued)

Record form — **Field material input**

Enterprise _____ Area planted _____

Date	Input	Quantity	Price per unit ($)	Value ($)
	Total			

Record form — **Labour**

Enterprise _____ Area planted _____

Date	Operation	Family (person-days)	Hired			Total labour (days)
			per/days	$/day	value	
Total						

Record form — **Livestock/poultry**

Type _____ Number raised_____

Date	Operation	Feeds		Concentrate		Veterinary supplies		Others	
		qty	cost	qty	cost	qty	cost	qty	cost

Examples of forms of record keeping (continued)

Record form — **Income**

Enterprise _____ Area planted _____

Date	Description	Sold			Value of produce ($)		
		quantity (kg)	price per unit ($)	value ($)	consumed	stored	given away
Total							

Record form — **Expenditure**

Enterprise _____ Area planted _____

Date	Description	Number/ quantity	Price per unit ($)	Value ($)
Total				

Notes

Review of Module 4

At the end of this segment participants will have the basic understanding and skills to apply a selection of farm management tools to support market-oriented farming.

The following outline will guide the facilitator in a brief review of the activities of this module.

Session 4.1
Constraints and opportunities analysis

Purpose of this session:
To understand and apply a constraints and opportunities analysis to diagnose the performance of the farm business and its enterprises.

Learning outcomes

(i) Understanding the purpose of the instrument, (ii) knowing when to apply it and (iii) possessing the skills to use it.

Session 4.2
Gross margin budgets

Purpose of this session:
To understand and apply gross margin analysis to diagnose profitability of farm enterprises.

Learning outcomes

(i) Understanding of the purpose in diagnosis and planning, (ii) knowing when to use the method, (iii) developing skills in constructing gross margin budgets, (iv) understanding the use of the tool in choosing between alternatives.

Session 4.3
Marketing margins

Purpose of this session:
To construct a market budget for selected enterprises to enable farmers to take more informed decisions on the choice of market channels open to them.

Learning outcomes

(i) Understanding the purpose of the instrument for market selection, (ii) knowing when to use the method, (iii) developing skills in constructing marketing margins.

Session 4.4
Break-even budgets

Purpose of this session:
To provide extension workers with the means of taking better decisions under situations of risk and uncertainty.

Learning outcomes

(i) Understanding the purpose of the instrument, (ii) knowing when to use the method, (iii) developing skills in calculating break-even points.

Session 4.5
Sensitivity analysis

Purpose of this session:
To provide extension workers with a simple tool to enable them to take better decisions after accounting for changes in selected, key variables.

Learning outcomes

(i) Understanding the purpose of the instrument, (ii) knowing when to use the method, (iii) identifying key variables of change, (iv) developing skills in conducting sensitivity analyses.

Session 4.6
Food requirements

Purpose of this session:
To assess the food requirements for a family and the amount of land that needs to be allocated towards the production of food crops.

Learning outcomes

(i) Understanding the food requirements of the farm household, (ii) recognizing the usefulness of the tool in farm diagnosis and planning, (iii) developing the skills to carry out the calculations.

Session 4.7
Labour planning

Purpose of this session:
To identify and better plan the labour requirements of a farm household in order to make more efficient use of scarce human capital.

Learning outcomes

Understanding (i) the purpose of the Seasonal Labour Calendar, (ii) when and how to apply it, (iii) its use in identifying solutions.

Session 4.8
Cash flow

Purpose of this session:
To assess the availability of cash to the farm household to finance profitable activities.

Learning outcomes

Understanding (i) the purpose of the tool, (ii) when to apply it, (iii) how to apply it, (iv) estimate cash shortfalls, (v) identify strategies to address financial gaps.

Session 4.9
Records

Purpose of this session:
To recognize the need for farm record-keeping
as the basis for collection of data
to make more informed farm management decisions.

Learning outcomes

Understanding (i) the purpose and importance of keeping records on the farm, (ii) the sources of information, (iii) the information requirements of the farmer.

Closing questions

Ask participants if they feel that
the overall purpose of the module has been achieved
and if they have improved their understanding
of the concepts behind the tools and have developed
their skills and competency in selecting
the most appropriate tools for application and use.
Make reference to each of the tools
on the next page individually.

Tool	Understanding of the tool	Skill in applying the tool
Constraints and opportunities		
Gross margin budgeting		
Marketing margins		
Break-even budgets		
Sensitivity analysis		
Food requirements		
Labour analysis		
Cash flow		
Records		

Notes

Notes

Notes

The following is a list of the AGSF series TRAINING MATERIALS FOR AGRICULTURAL MANAGEMENT, MARKETING AND FINANCE

1. Farm planning and management for trainers of extension workers in the Caribbean, 2004 (CD-ROM, English).
2. Horticultural marketing extension techniques, 2004 (CD-ROM, English).
3. Farm planning and management for trainers of extension workers. Asia, 2006 (Hard copy and CD-ROM, English).
4. Integrating environmental and economic accounting at the farm level, 2005 (CD-ROM, English).
5. Curso de gestión de agronegocios en empresas asociativas rurales en América Latina y el Caribe, 2005 (CD-ROM, Español).
6. Market-oriented farm management for trainers of extension workers. Africa, 2007 (Hard copy and CD-ROM, English).

In preparation

- Farm planning and management for trainers of extension workers. Latin America (CD-ROM, in Spanish).
- Training manuals on farmer business schools. Asia and Africa.

Other work

- FAO Pacific Farm Management and Marketing Series 3, Helping small farmers think about better growing and marketing (Hard copy)*.

* Copies soon to be available from AGSF

For further copies of this publication
and the information on FAO's activities
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This publication is also available on the Internet at:
http://www.fao.org/ag/ags/subjects/en/farmMgmt/training.html

Now that we have explored the place of market-oriented farm management in agriculture, we are in a position to learn tools that farmers can use to make decisions on their farms and households. In Module 4 we shall explore some of the tools that will help farmers to make these decisions. Some of the tools are quick and easy to use, while others are specialized and more complex.

Market-oriented farm management for trainers of extension workers

AFRICA

Module 5
PARTICIPATORY APPROACHES

TRAINING MATERIALS FOR AGRICULTURAL MANAGEMENT, MARKETING AND FINANCE

6

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TRAINING MATERIALS FOR AGRICULTURAL MANAGEMENT, MARKETING AND FINANCE

6

Market-oriented farm management for trainers of extension workers

AFRICA

Module 5
PARTICIPATORY APPROACHES

Food and Agriculture Organization of the United Nations
Rome, 2007

ISBN 92-5

PARTICIPATORY APPROACHES

This module introduces the class to participatory methods and tools that can be applied to the teaching and application of farm management particularly among farmers with limited literacy and numeracy skills. Here the class will explore a number of participatory and symbol based methods that can be used by extension workers to assist farmers in making better farm management decisions. The materials covered complement the farm management tools covered in Module 4.

Preparing for Session 5.1
Overview of participatory
methods and tools

Learning outcomes
Understand (i) the different ways
to collect data using participatory methods,
(ii) acquire the ability to choose
between methods

Training aids
Exercise 5.1A (Participatory approaches)
Handout 5.1A (Overview of participatory
methods and tools)

Notes

Overview of participatory methods and tools

In this session the participants will learn about participatory methods for data collection and analysis and the role they have in farm management extension. Guidance is also given on how to choose appropriate methods. The session ends with a reflection on their advantages and disadvantages.

Opening statement

Now that you have learned the different tools that can be used in farm management, you are in a position to apply them as part of your extension work. As many of you will be working with farmers that may not have the strong writing and number skills, participatory approaches have been seen to be particularly relevant and useful.

Exercise 5.1A
Participatory approaches

Purpose: To clarify our understanding of participatory approaches.
(Participants should have read Handout 5.1A prior to this exercise.)

Method: Mind mapping and presenting.

Materials: (i) Flip chart paper or newsprint, (ii) thick marking pens.

Allow 60 minutes for this exercise

Procedure

1. Divide the participants into three groups.

2. Assign each group one of the following tasks.

   Team 1: Participatory data collection methods.

   Team 2: Participatory methods for collecting, analysing and sharing data.

   Team 3: Using participatory methods.

3. Work to be done:

Team 1
Participatory data collection methods

Review the handout and make a mind map
outlining all the participatory data collection methods.

Exercise 5.1A (continued)

Team 2
Participatory methods for collecting, analysing and sharing data

Review the handout and make a mind map
of all the additional participatory methods
for collecting, analysing and sharing data.

Team 3
Using participatory methods

Review the handout and make a mind map
that answers the following questions:

(i) What are participatory methods?

(ii) Why are participatory methods important to farm management?

(iii) How do you choose a method?

(iv) Who collects data?

(v) Who uses data?

(vi) What are the advantages of participatory methods?

(vii) What are the disadvantages of participatory methods?

4. Ask each team to present their mind maps. Keep track of the main points in the handout to make sure that all the material is covered.

Allow about 15 minutes for presentations
(15 minutes for each team)

Space for notes and questions for the facilitator

Overview of participatory methods and tools

Participatory approaches are essentially tools used to facilitate participation by a wide range of stakeholders. Participatory methods are used to help people work with data and information. They can be used to collect, analyse, and share data and information. Some participatory methods can also be conducted using symbols to represent numbers and words. This is especially helpful when participants are semi-literate or speak different languages. Developing and using symbols will be covered briefly in Session 5.3 (Symbol-based methods and calculations).

Importance of participatory methods

There are a number of participatory methods that are a set of principles and provide tools to be used to facilitate a community of farmers to become aware of and analyse their problems and potentials. These methods are used in farm management so that farmers are able to realize and analyse their problems in input procurement, production and marketing. An individual or group approach can be applied in using these methods. In this session we shall focus on the group approach. Some of the participatory data collection methods include the following:

Rapid rural appraisal (RRA). As the name implies, a small team is involved in conducting a rapid appraisal of the agricultural setting that might include identifying constraints and opportunities in farming. RRA consists of a series of techniques for "quick and dirty" research that generate results of less apparent precision, but of greater evidential value.

Overview of participatory methods and tools (continued)

Participatory rural appraisal (PRA). Similar to RRA, but with greater participation of local farmers. PRA is a way of learning from and with farmers to investigate, analyse and evaluate constraints and opportunities, and to make informed and timely decisions. PRA can be used for example to obtain information about the villages, assess production potential and conduct economic feasibility, and social acceptability studies of particular technologies. Monitoring and evaluation of specific project activities can also be done in timely and focused manner using PRA techniques.

Primary data collection techniques are:

- Group interview techniques
- Focus group interviews
- Key informant interviews
- Seasonal calendars*
- Transect walks*
- Venn diagrams*
- Observation*

**See session 5.2*

Group interview techniques. Group interviews are useful for tapping the collective knowledge or memory of groups of farmers or the community. Controversial issues or issues that are not very clear from the informal survey could be used as topics or themes for group interviews. The extension worker does not need formulated questions or statements but should have a clear idea of the issue that they would like to discuss. They should be able to guide and direct the discussion. This needs some special skills. Farmers should be encouraged to talk openly about the issue under discussion. It is best to orient the discussion about what most people in the group/community do instead of what

Overview of participatory methods and tools (continued)

individuals do. The aim is often to gain consensus of issues under discussion but the extension worker should be mindful of the social dynamics of the group. Very often one farmer may dominate; wives often do not like to contradict their husbands; young farmers may hesitate to contradict their elders. Extension workers should be aware of these realities beforehand so that they can handle them better.

Focus group interview/discussion. Focus group interview is another form of group interview addressing a specific topic/issue confronting the group. Typically some six to eight people discuss a particular topic in detail under the guidance of a facilitator. When the ideas and opinion is needed at field level about a specific problem or intervention, then a focus group interview is the most appropriate technique to use. This type of discussion may reveal the perspective, attitude, understanding and reactions of farmers. To get the maximum benefit, the group interview is cost effective, can be carried out quickly and can obtain a wide range of information.

Key informant interviews. This is a process of data collection from interviews with selected and knowledgeable persons. Key informants are not only people with a high status, they may be also farmers with specific knowledge about a particular type of farming. Visiting key informants and local organizations is not only useful to gather information, it also provides an excellent opportunity for awareness raising and for building relationships for cooperation. A list of possible key informants and their knowledge base is shown below.

Overview of participatory methods and tools (continued)

Data collection from interviews

Key informants	Knowledge base
Extension/development workers	General farming situation, macro- and micro-level constraints
Research workers	Potentials, opportunities
Village elders	Historic developments, tradition, customs, consensus
Priests/religious leaders	Beliefs, taboos, religious obligations
Women	Gender issues, decision-making, family member roles
Local businessmen, traders, merchants	Marketing channels, banking, loan conditions, prices, trade regulations, transport, storage facilities
Women farmers	Socio-religious-cultural and economic constraints on them as producers
Progressive farmers	Development opportunities, adoption of new technologies, prerequisites for adoption
Staff of development projects or agencies	Local experience
Mangers of processing factories, commodity delivery schedules	Demand projections, pricing, quality issues, quota systems, marketing boards

Overview of participatory methods and tools (continued)

Some additional participatory methods for collecting, analysing and sharing data

A number of methods can be used to engage farmers in the collection, analysis and sharing of input, production and marketing data, and information. Some methods are more specific and accurate, some are more general, and some focus on particular types of information while others include a wide range of information. The table on the following page illustrates some of these methods and they are then outlined in detail in Session 5.2.

In addition to these methods, it is possible to implement most of the farm management tools (e.g. gross margins, labour analysis) using a symbol-based method where numbers are replaced with symbols.

Choosing a method

Different participatory approaches can be used for collecting, analysing and sharing data and information. The method used should be determined by: (i) the purpose of the exercise; (ii) use, (iii) availability of resources: money, people, vehicles, etc. In many cases, combinations of these methods would be used to generate the information that farmers require.

Choosing a method that is appropriate and feasible depends on a number of factors:

What needs to be accomplished?
What do you need to do: assess, register, compile, analyse or disseminate information?

Participatory methods and tools

Method/tools	Type of data to be collected
Seasonal calendars	• Production/productivity of different crops • Labour/food availability • Amount and/or cost of inputs • Farm income changes over time and expenditures • Rainfall patterns • Use of certain products in the community over time • Crop/livestock/ human diseases • Prices, marketing • Migration
Transect walks	• Details about the environmental, economic and social resources in the locality • Location of pests, soil erosion, resource use • Problems of different zones
Maps and mapping	• Location, size and production problems • Social/physical structure of the farmers • Resource allocation within the farm/variations in resource access
Trend lines	• Farmer perception of change in the local environmental, economic, social and institutional patterns • Price/market or product (changes over time) • Migration, yields
Venn diagrams	• Perceptions on importance of local groups and institutions • Clarifying decision-making roles and identifying potential conflicts between different socio-economic groups • Identifying links between and among different groups
Semi-structured interviews/ group discussions	• Collect production data or production practices • Input supply (sources, prices) • Collect data on off-farm, on-farm demonstrations • Marketing systems
Observation	• Cross-checking data obtained through interviews • Resource use • Marketing packaging, marketing outlets
Flow diagrams	• Flow of commodities and cash in a marketing system • Production cycle for a major commodity • Effects of major changes or innovations
Participatory theatre or drama	• Main changes in relative values and use of natural resources • Changes in social relations (i.e. gender roles in decision-making) • Marketing systems or linkages

Overview of participatory methods and tools (continued)

Do you need quantitative or qualitative information?

Quantitative methods are useful when you require numeric information such as how much, how many, the frequency of…

Qualitative methods are more appropriate when you want to understand attitudes, opinions, experiences and priorities.

What context and medium would be most appropriate?

Choices include written, oral, visual and dramatic. The choice depends on how the people involved prefer to communicate, how they are able to communicate, and on their level of literacy and numeracy.

Suitability of the method

The method you choose must produce the information you want. There is no point selecting a method simply because it is fun or easy for the farmers to do. Whatever method you choose, it must be able to produce the kind of information being sought. And the information it produces must be reliable.

Who collects the data?

Data can be collected by any number of stakeholders. Farmers and other participants should be encouraged to record data and information generated by these methods. A detailed recording of the process is critical. Often, a great deal of information is lost because of failure to take good notes and relying too much on the products of the chosen methods (e.g. a diagram or a map).

Overview of participatory methods and tools (continued)

In the process of collecting the data, one must assess the quality of information. To do this one must carefully listen, observe, probe and judge. As data is developed, it is important to regularly review the process and assess information. It is important to leave the farmers to conduct the participatory methods without much interruption. The extension worker should guide them, but must be objective in guiding the process as well as in collecting, analysing, or sharing the data. Extension workers should encourage farmers to keep or take record of the process.

Who uses the data?

Data from participatory methods can be used by a number of people. Interested users include:

- *Farmers.* Individuals or groups of farmers who have participated directly in the exercise should have keen interest in the data and information produced.

- *Other community members.* Community members who have not directly participated or who may not directly benefit from the planned activities may be very interested in knowing how things are going.

- *Local institutions.* If the participatory results are relevant to their tasks and priorities, local institutions will have interest in the data and information.

- *Government services staff, research or donor organizations.* These may also be interested in knowing, (collectively or individually) results in order to focus their activities.

Overview of participatory methods and tools (continued)

Advantages and disadvantages of participatory methods

Advantages

- Data can be easily validated with the farmer groups.
- The methods enhance farmer-to-farmer dissemination of farm management technologies.
- Methods enhance understanding of local situations.
- The process encourages participation and learning among the participants, encourages a two-way process of exploration, questioning and learning.
- Information can be collected from literate and illiterate people.
- Methods are simple to use, relying mostly on oral and visual techniques.
- The methods facilitate making full use of local knowledge and experience, limiting the imposition of outsider's preconceptions on local conditions. Local people are given the opportunity to describe how they do things, what they know and what they want.

Disadvantages

- It is very easy to go off-track and collect unnecessary data.
- It is a time-consuming process.
- Quantification of data can be difficult with some of the methods.
- It is not always the case that participatory process leads to consensus; it may, in fact, expose deep differences and conflict among various groups.

Preparing for Session 5.2
Use of methods and tools

Learning outcomes
To understand and be able to apply
a selection of participatory tools

Training aids
Exercise 5.2A (Participatory methods)
Exercise 5.2B (What do you see?)
Handout 5.2A (Seasonal calendars)
Handout 5.2B (Transect walks)
Handout 5.2C (Venn diagrams)
Handout 5.2D (Trend lines)
Handout 5.2E (Flow diagrams)
Handout 5.2F (Participatory theatre)
Handout 5.2G (Maps and mapping)
Handout 5.2H (Semi-structured interviews)
Handout 5.2I (Observation)

Notes

Use of methods and tools

In this session, the participants explore a range of participatory methods that can assist them in more effectively applying the farm management tools discussed in the previous module. Because participatory methods are increasingly included in training of extension workers the participants may already be familiar with some or all of the methods included in this session. The facilitator will need to determine what the participants already know and cover only those methods that they are unfamiliar with or would like to review.

Opening statement

The only way to learn participatory methods is to practise them. The session features two exercises that permit participants to practise some of the methods presented. But the best way to gain confidence in learning how to apply these tools is through testing and trying them out with farmers in the field.

Exercise 5.2A
Participatory methods

Purpose: To understand use of participatory methods and tools.

Method: Discussion and practical drawings.

Materials: (i) Large sheets of paper, (ii) thick marking pens, (iii) heavy paper or light cardboard, (iv) scissors, (v) stones, beans, other objects for markers.

Allow 90 minutes for this exercise

Procedure

1. Ask the participants to get into their 'farm teams'

2. Allocate each team one method to practise. Exclude the following methods:
   - Maps (Handout 5.2G): they have done a lot of work on maps already.
   - Semi-structured interviews (Handout 5.2H): it is not feasible in the classroom setting.
   - Observation (Handout 5.2I): it will be done as a group exercise.

3. Each team should decide what it wants to learn from their particular participatory exercise. These should be written into a short list of intended outcomes.

4. Each team is to follow the guidelines provided for each of the methods. See handouts.

5. Each team shares their results.

Discussion questions:

- What were the main issues or problems in the enterprise you looked at?
- What problems did you encounter in using the method?
- What type of data can be collected by the method you used?

Exercise 5.2B
What do you see?

Purpose: To improve the ability of participants to observe small changes.

Method: Observation.

Materials: (i) Table, (ii) 30—35 small objects (e.g. pen, paper clip, coin, small jar, ring, stamp), (iii) pen and paper.

Allow 60 minutes for this exercise

Procedure

1. Place all but five of the objects randomly onto the table. Keep the remaining five out of sight.

2. Ask the participants to gather around the table and study its contents for one minute.

3. Ask them all to leave the room and to return when you call them.

4. While they are out of the room, remove between 5 and 10 of the objects. Add the five new objects.

5. Call the participants back into the room.

6. Ask each participant to write down which objects are missing and which objects are new, and to compare their findings.

7. Repeat the exercise to see if they can improve their skills.

If there is time and if it is appropriate the facilitator may wish to make use of the "game of observation" outlined on the next page.

A game of observation

1. Write the names of each participant on a small piece of paper. Fold them so the name cannot be seen. Ask each participant to take one name. Keep a record of who has whose name. No one except the facilitator should know who has whose name.

2. Ask participants to spend the day observing the person whose name they have drawn without letting that person know. If someone notices they are being observed, they should not let anyone know.

3. The object is to identify two characteristics of the observed person. One characteristic should be a physical habit, frequently scratching an ear. (They should not look for anything that would embarrass the other person.) The second should be a word or phrase or expression the observed person uses frequently.

4. Each participant should write down these two characteristics plus their own name on the paper with the name of the person they are observing and give this to the facilitator. (The paper will have the name of the person being observed, the two characteristics and the name of the person making the observation.)

5. On a separate piece of paper, each participant should write down their own name and the name of the person they think was observing them. This should also be handed to the facilitator.

6. At the next group meet (at least four hours after the names were assigned), ask each person whom they thought was observing them. Check this against the list and the papers handed in. If it is the same, ask how they knew. If it is different, ask why they thought the 'wrong' person was observing them? For those who were not 'caught', ask what they did to observe without being noticed.

7. Read out the characteristics and see if the group (including the observed one) can identify the person by these two features.

Discuss the results with a view to learning better skills in observation.

Space for notes and questions for the facilitator

Seasonal calendars

1. Find a large open space for each group.
2. Calendars can be drawn on a large paper or can be traced in the sand or on dirt floor using stones or leaves for quantification.
3. Draw a line all the way across the top of the cleared space (or paper). Explain that the line represents a year, and ask how farmers divide the year up (e.g. months, seasons). The scale to use is the one that makes sense to the participants. Ask the farmers to mark the seasonal divisions along the top of the line.
4. It is usually easiest to start the calendar by asking about rainfall patterns. Ask the participants to put stones under each month (or division) of the calendar to represent relative amounts of rainfall (where more stones equal more rain).
5. Once finished with rainfall another line can look at labour for the farm activities (indicating time periods of high labour intensity). Make sure the labour calendar and all subsequent calendars perfectly align with the rainfall calendar.
6. This process is repeated, one line under another until all the seasonal issues of interest are covered. Some of the issues to be covered could also include food or water availability, income sources and expenditures.
7. Calendars can be done with groups separate, men and women groups and then compare.
8. Discussion questions will be based on the variations on the calendars.

Examples on the following two pages show a calendar completed using words and numbers, and a version of the same calendar using symbols.

Seasonal calendars (continued)

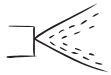
Seasonal calendar

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rainfall	Heavy		Light	Sllght			Slight		Ligth		Light	Good
Land preparation									2 Labourers			
Planting/ manuring/ fertilizing	2 Labourers								2 Labourers	1 Labourer		
Weeding	5 Labourers	2 Labourers	1 Labourer							1 Labourer	5 Labourers	5 Labourers
Irrigation		1 Labourer	1 Labourer							5 Labourers	1 Labourer	
Spraying		1 Labourer								2 Labourers		2 Labourers
Harvesting				5 Labourers	2 Labourers							
Bagging-selling				2 Labourers	5 Labourers							

Note: see also Session 5.3 (Symbol-based methods and calculations)

Seasonal calendars (continued)

Seasonal calendar

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
												
												
												
												
												
												
												
												

Note: see also Session 5.3 (Symbol-based methods and calculations)

Space for notes and questions for the facilitator

Transect walks

For the purposes of this exercise, you will be using the grounds around the training venue to practise the transect walk. The following guidelines are written in terms of a village or farm. You have simply to apply them to your situation.

1. Divide the farm team into groups of 2—3 each. Make the group as diverse as possible.

2. Assign each group a responsibility to carry out during the walk. For example, one group may focus on soils, land use and cultivation; a second on trees, vegetation and water resources; and a third on infrastructure, housing and services.

3. Use the village map (map of the training facility and grounds) to decide on the route to follow. The route must be planned and should take in many of the different physical zones types of vegetation, land use areas and sections of community as possible. It is often a good idea to start from the highest point in the area.

4. Depending on the size of the area to be covered and the nature of the terrain, transect resource assessments can be done by foot, animal, cart or motor vehicle. But the slower modes are preferable because they allow for greater observation.

5. Observations under the corresponding sections and discussions should be done as you walk across. Identify contrasts and changes as you move along.

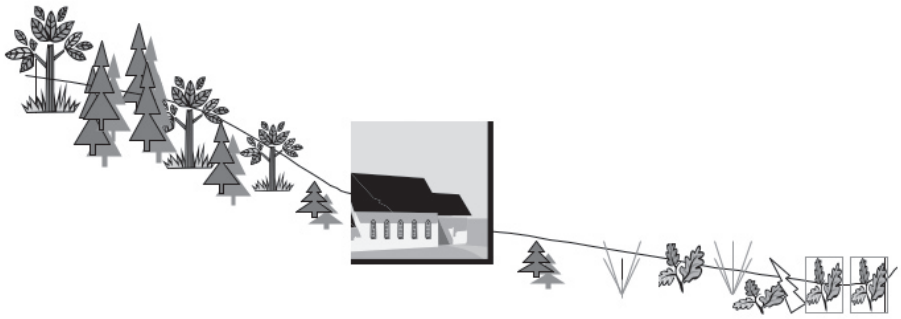
6. Afterwards the groups share the information from their resource assessments walks to construct the transect diagram(s) together on paper or on a blackboard to

Transect walks (continued)

promote further discussion. The team should identify possible opportunities and/or solutions to the problems discovered during the assessment of resources. An example diagram is given below.

7. Add the identified opportunities and problems and their possible solutions to the initial list of intended outcomes.

8. After conducting the walk and drawing up the transect diagrams for the larger area (e.g. the community), extension workers are encouraged to ask individual farmers to assess the availability and access to resources for their own farms. Transects per farm allow teams to observe more closely farm practices, achievements and indigenous technologies; it identifies specific problems and their possible solutions.



Soil	Rocky	Gravel	Gravel	Sand	Clay
Land use	Forest	Farmland Grazing	Village	Farmland Grazing	Farmland
Crops and vegetation	Trees Bamboo	Grass Shrubs Millet		Sesame Beans Hibiscus	Sorghum Groundnuts
Problems	Erosion	Drought Pests		Drought Low soil fertility	
Opportunities	Fuel wood Timber Bamboo	Pasture Rain-fed farming	Market Transport Water Credit Health care	Pasture Rainfed farming	Flood farming

Space for notes and questions for the facilitator

Venn diagrams

The following provides guidance for applying Venn diagrams in a village community. You will have to adapt it to your team farm.

1. Organize the team into 2—3 separate focus groups (e.g. women and men), including a mix of socio-economic groups. Be sure that the poorest and most disadvantaged are included or have their own groups as appropriate.

2. Find a clear level space or work on a large piece of paper. The Venn diagram can be traced on the ground or a large sheet of flip chart paper.

3. Each group lists:

- all the products/services that they consider important;
- all the local groups, organizations and outside institutions that are most important to them.

4. The participants consult and agree on the relative importance of each product, service, organization, etc. For each, cut out a paper circle: large, medium or small (large = most important, small = least important). The name or symbol of each organization should be indicated on the circle representing it. Cut out a circle for the community (farm); also give it a size to indicate its importance.

5. The participants consult and agree on relationship between/among these products, services, etc. both to each other and to the community/farm.

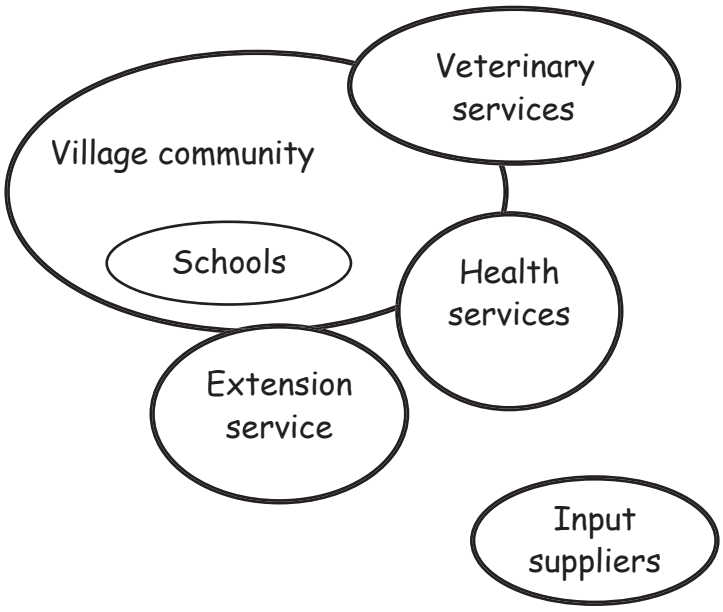
Venn diagrams (continued)

6. Discuss as many institutions as possible and ask the participants to position them in relation to each other. The circles are then arranged on the ground/paper to represent these relationships. Use the following as a guide for arranging the circles:

- Circles at the outer edge of the diagram = no contact or limited contact.
- Circles in the centre of the diagram = closer cooperation/contact.
- Circles close to, touching, or overlapping each other = degree these work together.
- Circles close to, touching or overlapping the community circle = work with community but has other functions outside.

7. Institutions can be viewed in terms of input supply, credit providers, market linkages or service providers in crop and livestock production. The data can also be viewed in terms of gender or wealth.

Picture of a Venn diagram



Space for notes and questions for the facilitator

Trend lines

The guideline is written for a community, but it can be applied to many other situations. For the purpose of the training exercise, apply the guidelines to your farm team. Because your farm team is imaginary, use your knowledge as an extension worker to create a history.

1. Organize the participants into groups. Each member will take a turn as facilitator. Divide the time by the number on the team/group. This will give everyone a chance to be a facilitator.

2. Decide on a time period you want to explore (make it at least 20 years).

3. Draw a large blank graph on paper for each trend to be explored. Explain how left of the horizontal axis represents the past and the far right represents the present. Ask what intervals (e.g. year, events in history) should be used along the bottom axis (e.g. 1995, 2000, 2005). Explain how the estimates of increase and decrease are to be shown on the vertical axis. (Remember to take turns facilitating.)

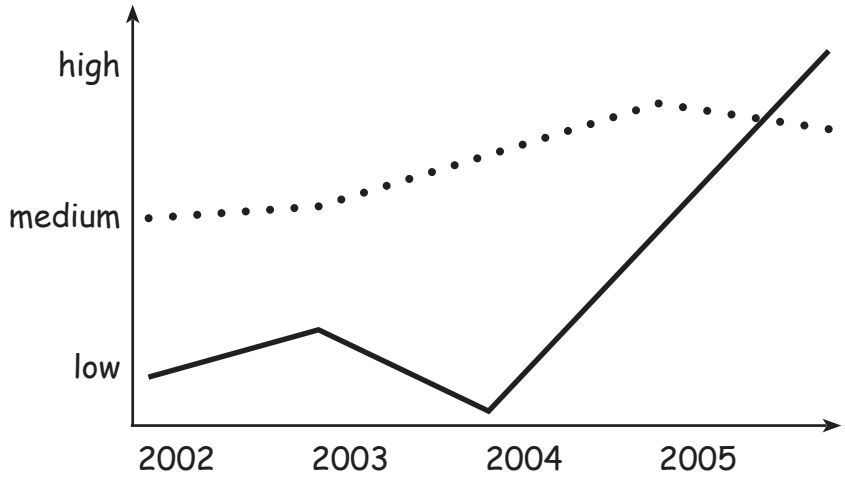
4. Ask the participants about important changes in the community. Questions to ask while facilitating include:

- What are the most important environmental trends (e.g. drought, erosion)?
- What are the most important economic trends (e.g. prices, costs of inputs, yields, livestock production)?
- What are the most important demographic trends (e.g. out-migration, increase of female-headed households)?
- What other trends are important?
- What are the linkages between the trends?
- What is getting better and what is getting worse?
- What trends impact on women and men differently?

Trend lines (continued)

5. As the questions are explored, get an indication of high, medium or low (or some other relevant distinction) that can be assigned to a given year or period. Put a mark on the appropriate place on the graph. When you have covered all the time periods for a single question, connect all the points with a line. The line for each question should be different. Give a key to indicate what issue the lines represent.

6. The trend lines show the increase to decrease of, say, demand of product or price of product over time. See the example below.



Key

Prices of cabbages (over the years)

Prices of tomatoes (over the years)

Space for notes and questions for the facilitator

Flow diagrams

These guidelines are presented for general use. You will need to adapt them for your farm team. Take turns being the facilitator. Divide the time available by the number of members in your farm team. This will give you the amount of time each member should serve as facilitator.

1. Create a space on the ground or on a large piece of paper.

2. Consult and agree on the processes or relationships to be analysed. This should be simply general problems being faced by the farm, a community or could be focused on a specific crop or enterprise that interests the farmers. The group should come to a consensus on the specific enterprise or area they want to examine. (For this example, choose from input, production or marketing issues affecting your farm team.)

3. Farmers discuss and list their problems using symbols or labels to illustrate each problem as it is identified. The facilitator explains that often problems are connected and the next step is to look at the connections between the problems identified. Which problem seems to be the biggest or most general? You may wish to use a scoring system to identify the 'end' problem. Identify that one at the bottom of the diagram. It is possible there will be more than one significant problem, but it is more likely that other problems are causes of the major problem.

Problems can be of many kinds and of different natures. The problem usually represents the failure or unsatisfactory progress toward a particular objective. A household may have an objective of being prosperous. A farmer might have the objective of high profits. Failure to achieve these objectives becomes the problem. Therefore, a general household or community problem might be: hunger and poverty. A more specific farming problem might be: low income (losses) from the farm.

Flow diagrams (continued)

Note

Generally, it is advisable to exclude the problem of a general lack of money from the diagram as it can dominate and be seen as the source of all the problems. This tends to hide the causes of lack of money.

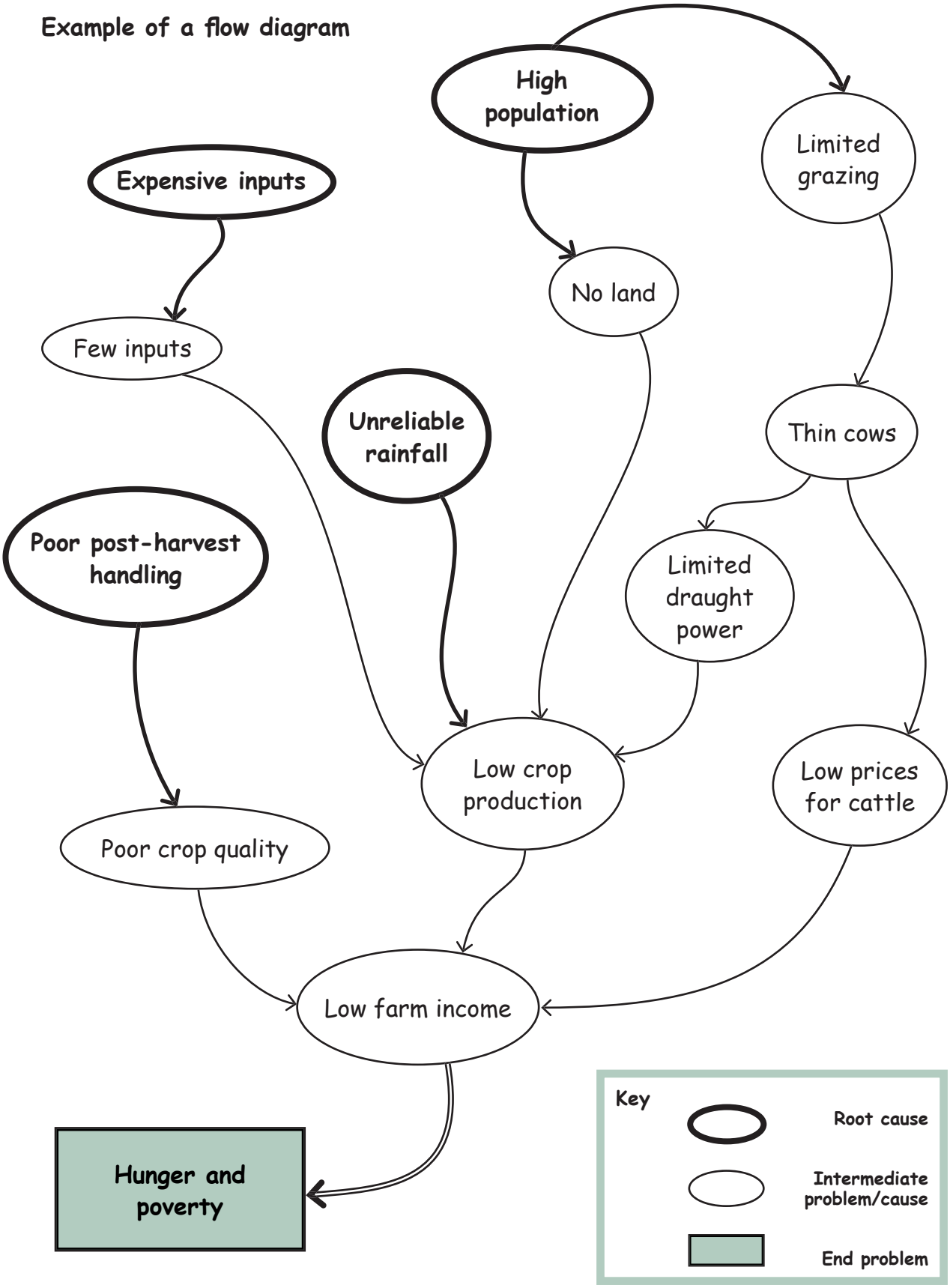
4. The group now looks for the direct causes of the end problem(s). As they are identified the symbols are placed on the diagram and arrows are drawn in to represent the causal relationships between the problems. Each problem is represented on the ground once only. The causes of those problems are identified and added to the diagram. These may be from the original list or may be newly identified. The process is continued until the participants are happy that all the problems have been included and all the connections identified.

5. The problems at the edge with no identified causes are the "root causes". If the logic of the diagram is correct and has been carefully done, solving the root causes will result in solving the other problems. It is useful to discuss the possible solutions to these root causes with farmers and identify which ones can be influenced by farmers themselves and which cannot.

6. The positive effects of the solution can be traced back on the diagram, turning problems into solutions, e.g. lack of draught power becomes adequate draught power.

This analysis can be used by the farmers to prioritize the possible solutions that they would like to explore. Their focus can now be trained on the real issues (root causes) to assist them to make better farm decisions. An example of a flow diagram is shown on the next page.

Example of a flow diagram



Space for notes and questions for the facilitator

Participatory theatre

Participatory techniques in the form of drama or theatre are used to create short problem posing scenes and to enable the audience to probe, reflect on and respond to issues of concern to them provoked by the drama. This approach poses questions and problems, rather than supply answers and solutions, in order to bring change in the community's and farmers' perceptions of the world and themselves as individuals within it, allowing the community and farmers to examine their attitudes towards the unresolved dilemmas in the drama that reflect their lives.

A question is chosen for which section that provokes discussion. A theme and a question relating to each other are discussed and farmers can relate to their own situations.

There are two ways to present dramas. One is straight performance followed perhaps by group discussion among those watching the performance. The other is with audience participation where the 'performers' engage the audience in developing the story. This is done by stopping the performance at a 'critical moment' where a decision has to be made and asking the audience for 'advice'. Then the performance resumes following the advice given.

1. For this exercise, the team consults on an important issue facing their farm.

2. They then work out what could be done to improve the situation.

3. They develop a dialogue among the performers that will help the audience hear the problem and the solution.

An example of a drama is given on the next page.

Participatory theatre (continued)

The following is a guide to developing a drama to share information about pest management. In this case the product is potatoes. In practice, the author would use a crop relevant to the message being shared.

SCENE ONE

FARMER 1 (Bill) visits Farmer 2 (Joan).

FARMER 2 complains about pests in her potatoes.

FARMER 1 tells Farmer 2 about his use of a pest management system, which he learned about from the extension worker (or farmer field school, radio).
Farmer 1 invites Farmer 2 to his field.

SCENE TWO

FARMER 1 and Farmer 2 are at Farmer 1's field.

FARMER 1 shows Farmer 2 his healthy pest-free potato crop.

FARMER 2 expresses amazement and asks for information about where to learn this pest management technique to improve her own crop.

FARMER 1 tells Farmer 2 about the extension worker (or farmer field school, radio programme).

FARMER 2 says she is going to follow up on that right away.

SCENE THREE

FARMER 1 and Farmer 2 meet again after Farmer 2 learned about and applied the pest management system. Farmer 2 tells Farmer 1 about the improvement of her crop. Now that her crop is healthy, she gets a better price.

She is very grateful to her friend and gives him a gift that she bought at the market with some of her profits.

Space for notes and questions for the facilitator

Maps and mapping

The community members are the best experts of their area. The community village map initiates dialogue among the community members. Similarly, farmers can be engaged in developing individual farm maps or maps showing the spatial arrangements of their farms. Because everyone has done mapping in Module 2, no one will do a mapping exercise.

1. A large open space should be found and the ground cleared. (Alternatively work on a large piece of paper. When using paper, where it says to place, participants can draw or cut out symbols to place on the map.)

2. Start by placing a rock or leaf to represent a central and important landmark.

3. Participants are then asked to place other things on the map that are important in the village. Each time something is placed on the map, a record should be made of what it is (e.g. large flat stone represents the community hall). Participants should not be interrupted unless they stop drawing in which case questions can be asked such as whether there is anything else of importance that should be added.

4. Discuss the map both as it is being developed and once it is finished. Discussion questions may include:

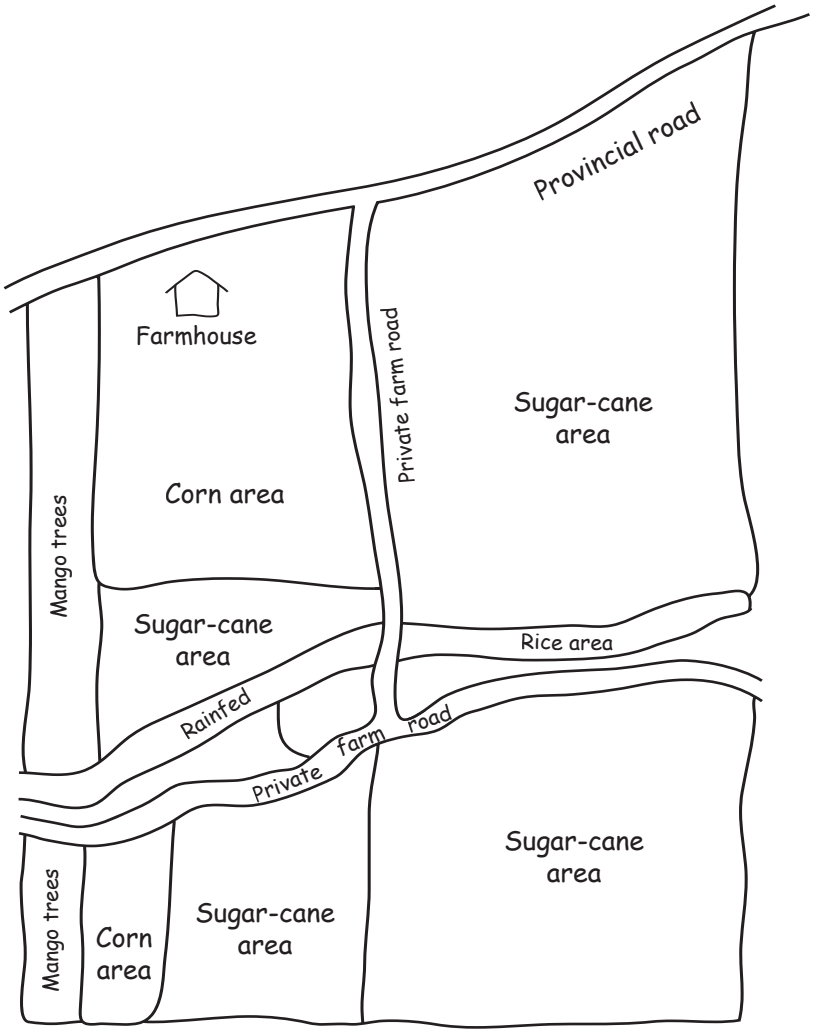
- Who makes decisions about who can use land or water?
- Does the village have land that is held in common? Who decides how common resources will be used?
- Where do people go for water, firewood and grazing?
- Are the rights of access different for women and men?
- Which of the indicated resources are the most problematic? Why?

Maps and mapping (continued)

If you are working on the ground, be sure to transfer the map (including the key to symbols) to paper.

The facilitator may ask participants to indicate some things they would like to see in their village that are not currently on the map. These can be added to the map. Discussion can be held to identify ways of fulfilling these visions

In the case of the farm map it should be properly identified and sizes of fields determined to assist in planning activities for possible investments such as land levelling, irrigation or drainage systems.



Note: a simple farm map, like the one above, can be drawn by hand

Space for notes and questions for the facilitator

Semi-structured interviews

The semi-structured interview is a form of guided interviewing where only some of the questions are predetermined.

The interviewers choose a topic (or facilitate the group to choose a topic) to explore.

The interviewers prepare a list of topics (checklist). From these, some basic starting questions are developed. These will be used to start the interview and to move on to the next main issue once the other area has been adequately covered. (Again, like a checklist.) As the predetermined questions are discussed, new questions come up during the interview.

The interviewing team consists of 2—4 people of different disciplines. They make it very clear that the objective of the interview is to learn from the farmers.

Begin the question by referring to someone or something visible. The interview is conducted informally and there is mixing of questions with discussion. The team should be open-minded and objective and avoid value judgements. Only one member should do the note taking. It is important to take note of non-verbal signals during the discussion.

During the interviews avoid making conclusions for the farmers, lecturing or advising, repeating questions, asking sensitive or leading questions. It is important to probe further on issues and listen carefully.

Be aware of the farmers' schedules. Time interviews so they do not interfere with important activities.

Space for notes and questions for the facilitator

Observation

The observation method is usually used together with other methods. It involves observing objects, events, process, relationships or people and recording these observations.

Direct observation is a good way to crosscheck respondents' answers.

Use of checklist to do observations systematically is recommended.

This works well when doing a livelihoods analysis or resource map.

Preparing for Session 5.3
Symbol-based methods and calculations

Learning outcomes
Understanding and applying
symbol-based calculation methods

Training aids
Exercise 5.3A (Symbol-based calculations of gross margins)
Handout 5.3A (Symbol-based methods and calculations)
Handout 5.3B (Example of a participatory budget for maize)

Notes

Symbol-based methods and calculations

In this session the participants will learn about symbol-based communication and the role it can play in agricultural extension, particularly among semi-literate and semi-numerate farmers. The methods will include gross margins, food requirements and labour analysis. With this basic practice, they should be able to apply the skill to other tools such as break-even and cash flow.

Opening statement

Review of Handout 5.3A. In Module 4, we explored seven different farm management tools requiring calculations. These can be divided into two groups.

Complex calculations

- *Gross margin budgets*
- *Marketing margins*
- *Break-even*
- *Sensitivity analysis*
- *Cash flow*

Simple calculations

- *Food requirement*
- *Labour analysis*

Each of these can be conducted using both numeric and symbol-based methods. The basic principle for symbol-based calculations applies to both groups: that is, numbers are replaced with symbols. We shall use an exercise to learn to apply this method.

Exercise 5.3A
Symbol-based calculations of gross margins

Purpose: To practice translating numeric gross margins into symbol-based gross margins. (Participants should have read and studied Handouts 5.3A and B prior to this exercise.)

Method: Symbol design, drawing, gross margin matrix.

Materials: (i) Sticks, stones, twigs, seeds, (ii) clear ground.

Allow 180 minutes for this exercise

Procedure

1. Ask the participants to form their farm teams.

2. Each team should select the gross margins for one crop and one livestock enterprise (if time permits). It is important that the size of the enterprise is set in terms of area planted or the number of livestock kept.

3. Each group should draw a matrix or grid on the ground similar to the seasonal calendar. Ask the participants to describe the different months in the top row of the grid, in the form of symbols. Time is represented on the matrix by columns. Each column could signify a month, week, day or any other period of time. If months are chosen, the first column becomes the first month, the second the second month, and so on.

4. The second row shows the activities carried out each month. Group members need to agree on the symbols used to describe each activity. Don't forget what the symbols symbolize. From the third row on, indicate the resources used. This could include labour, machinery and any other inputs. Other rows should include cash expenditure and value of output and income.

5. Quantities could be shown by numbers of beans, with a value attached to each one. For example, in September, nine stones could be placed in the first column to indicate the ninth month. The amount of fertilizer used can be denoted by the number of beans, each representing a bag. Labour can be represented by number of persons or labour days. The number of people

Exercise 5.3A (continued)

can be symbolized by sticks and another symbol used for labour days. Group members should indicate the quantity of the resource required in each month, by placing a specific number of counters in the relevant cell in the grid.

6. In the same way, the cash expenses and income generated by the enterprise can be denoted by the number of beans allocated. Income could be shown in terms of produce marketed and production retained for home consumption. The aggregated number of beans shows the total income.

7. The groups should now calculate the 'end balance' of resources. This can be worked out by comparing resources used (expended) and income received. It is important that all the outputs and inputs of the enterprise are included in this calculation and not just those given cash values. Subtract the beans used from those required to produce the income. If there are beans that remain in the output row, it means that the gross margin is positive. Conversely, if more beans remain in the expenditure row it means that the gross margin is negative. The end balance can be expressed in both physical and cash forms (e.g. as three bags of maize and $100 cash). Alternatively, if a cash loss is made it can be expressed as three bags of maize less $100 cash. More commercially orientated farmers may want to convert all resources into cash terms and calculate the profit.

8. After constructing the gross margins each group should then present their findings to the other members. All the groups should get a chance to present their gross margins.

Note

For farmers who find counting a problem, the following technique should be of help when determining balances:

- Gather the counters representing the amount of the resource used as an input.
- Gather the counters representing the amount of the resource produced as an output.
- Take one counter from each pile (i.e. to form a pair) and continue until no counters are left in one of the piles. The remaining counters indicate the size of the balance.

Space for notes and questions for the facilitator

Symbol-based methods and calculations

In Module 4, we explored nine different farm management tools, seven of which require calculations. These can be divided into two groups:

Complex calculations	Simple calculations
• Gross margin budgets • Marketing margins • Break-even • Sensitivity analysis • Cash flow	• Food requirement • Labour planning

Each of these can be conducted using both numeric and symbol-based methods. The basic principle for symbol-based calculations applies to both groups: that is, numbers are replaced with symbols.

When applying this method with farmers, the extension worker will have to decide how to create the symbols. If the calculations are done in a room where paper and pens are available, then it is possible to draw the symbols. If they are done in the field (e.g. on the ground), it may be necessary to create symbols with rocks, beans, sticks. In either case, the first step is to create a matrix or framework that represents the farm management tool (e.g. gross margin, cash flow).

In this session, we are going to look at creating a symbol-based food requirement, labour analysis and gross margin. Once you have mastered the symbol-based gross margin, you will be able to apply this to the other complex calculations.

Symbol-based methods and calculations (continued)

Simple calculations

Translating simple calculations (i.e. food requirement and labour analysis) from a numeric to a symbol-based method simply requires one to create symbols for concepts and numbers. An example of each is given on the following pages.

In addition, a typical enterprise budget for maize using concepts and numbers including a symbol-based version is given in Handout 5.3B.

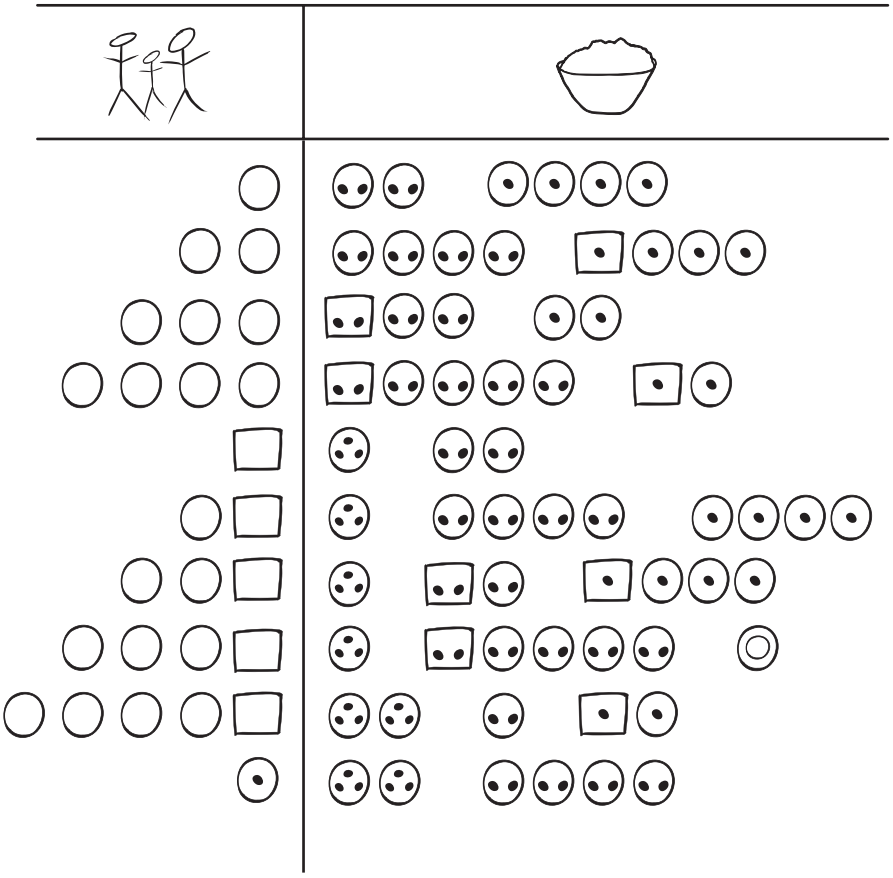
Food requirement. We shall recall from Session 4.6 that the basic food requirements in numeric form are:

Family size (people)	Food required each year (kg)
1	240
2	480
3	720
4	960
5	1 200
6	1 440
7	1 680
8	1 920
9	2 160
10	2 400

To translate this to a symbol-based method we need to create symbols for concepts and numbers:

Family size	Annual food requirement	
○ = 1	⊙ = 10	⊙ = 100
□ = 5	◎ = 20	□ = 500
⊙ = 10	▣ = 50	⊙ = 1 000

giving ...



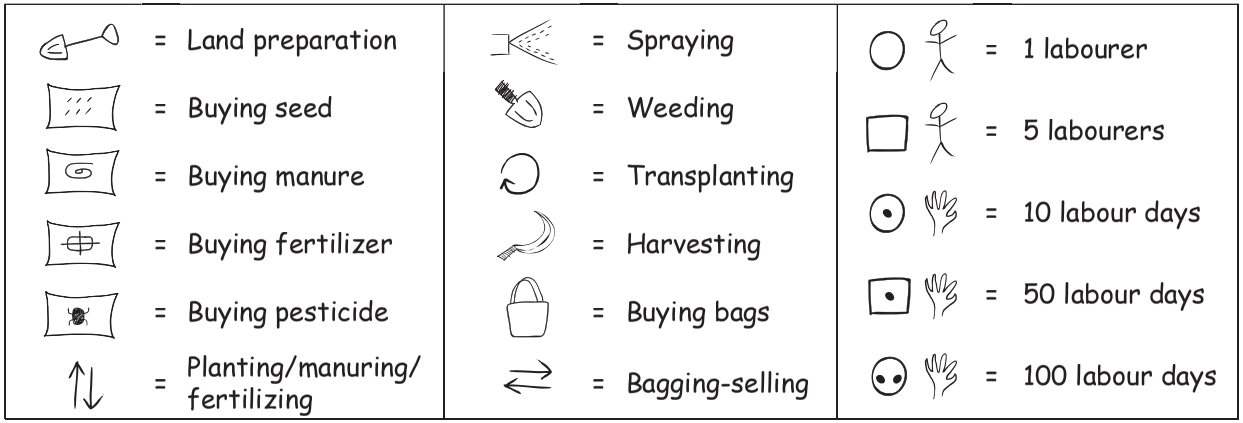
Symbol-based methods and calculations (continued)

Labour Analysis. Below is a basic labour plan for 2.5 acres of cabbage with a yield of 168 bags per acre and 420 bags in total.

	January	February	March	April	May	June	Total
Activities	—	Land preparation Buying seed Buying manure Buying fertilizer Buying pesticide	Planting/manuring Spraying Weeding Transplanting	Weeding	—	Harvesting Buying bags Bagging-selling	
Total labour required	—	2	9	3	—	3	17
Labour days	—	20	90	35	—	25	170

To translate this to a symbol-based method we need to create symbols for numbers and activities.

Activity symbols



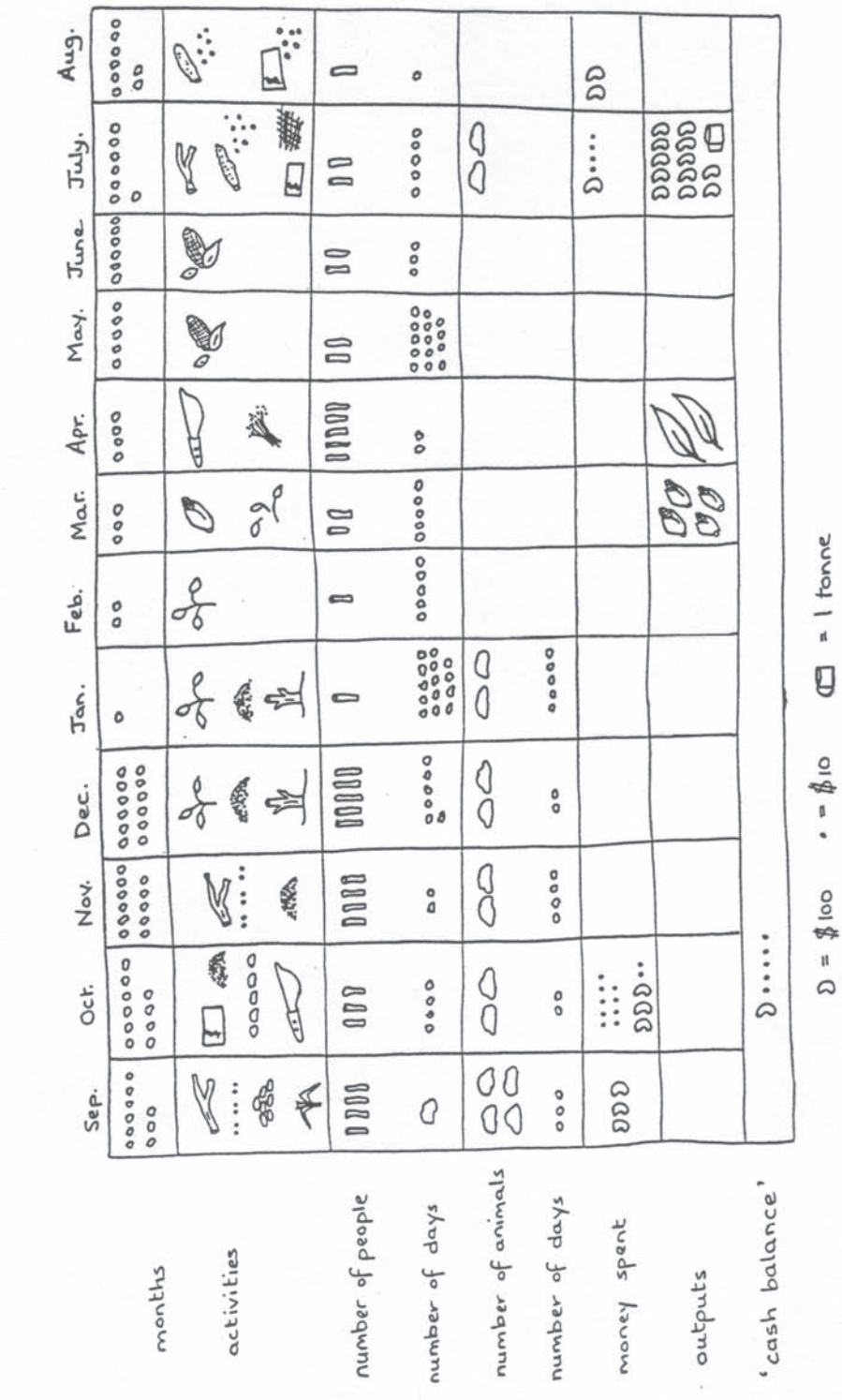
Symbol-based methods and calculations (continued)

This then translates as follows ...

Example of a participatory budget for maize
(represented using concepts and numbers)

Activities	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apri	May	Jun	Jul	Aug
	-Winter ploughing -Dry planting -Digging of manure -Removal of stover in the field	-Buying of seed and fertiliser -Spreading of manure in the field -Cutting of tree regrowths	-Ploughing and planting -Fertiliser application	-1st weeding -Fertiliser application AN -Cultivation	-2nd weeding -Fertiliser application AN -Cultivation -Planting late maize crop	Weeding	-Harvest green mealies -Pull weeds	-Cutting and stooking	Dehusking	Dehusking	-Winter ploughing -Shelling -Buying of empty bags	Shelling -Selling
Labourers required	4	3	4	6	1	1	2	5	2	2	2	1
Lab days	1 month	4	2	6	14	5	5	2	14	3	5	1
No. of draught animals	4	2	2	2	2						4	
Days required	3	2	4	2	5						2	
Expenditure	Digging manure = $300.00	Seed 10kg =$90.00 AN 2bags = $320.00									20 empty bags = $140.00	Transport $200.00
Output							Green mealies (4 buckets)	Fodder (2 bales)			1tonne $1200.00	
Cash balance	Outputs – Inputs = 1200 – 1050 = $ 150											

Example of a participatory budget for maize
(interpreted using symbols)



This participatory budget was constructed by a group of women farmers in Buhera District, Zimbabwe. The budget shows the resource outputs and inputs for 1 acre of maize. When constructing the budget, symbols and counters were used on the ground.

* Reference: FAO 2007, *Participatory farm management methods for analysis, decision making and communication* by P. Dorward, D. Shepherd and M. Galpin

Symbol-based methods and calculations (continued)

Additional use of symbol-based methods

Below is a simple example of another use of symbol-based methods.

Information sharing: analysing market options.

This is a simple method to visually demonstrate the effect of using different markets on net income.

Three farmers from Njoro grow and market bananas. One sells in Njoro. The second sells in Nakuru. The third sells in Nairobi. Using participatory methods, the extension worker can help the farmers compare their marketing choices and demonstrate the effect each choice has on price, transport costs for marketing and net income.

An example of a matrix to analyse the choices is set out below.

		Njoro	Nakuru	Nairobi
Farmer A	Price	ooooo		
	Transport	o		
	Net income	oooo		
Farmer B	Price		oooooo	
	Transport		oo	
	Net income		oooo	
Farmer C	Price			oooooooooo
	Transport			ooooo
	Net income			ooooo

Key o = $100

Review of Module 5

At the end of this segment participants will have the basic understanding and skills to apply participatory methods and symbol-based tools in support of market-oriented farming.

The following outline will guide the facilitator in a brief review of the activities of this module.

Session 5.1
Overview of participatory methods and tools

Purpose of this session:
To introduce the participants to participatory approaches that can be used for data collection, analysis and dissemination.

Learning outcomes

(i) Understanding the importance of participatory approaches for better communication with farmers and in particular will less literate and numerate farmers and the different methods that can be applied, (ii) selecting the most appropriate method to match a particular situation.

Session 5.2
Use of methods and tools

Purpose of this session:
To provide the participants with examples of participatory methods/tools that can assist them as extension workers to better communicate with farmers.
These methods/tools are intended to complement those covered in the previous module.

Learning outcomes

(i) Understanding the relevance and usefulness of participatory methods/tools in farm management and (ii) developing skills in their application.

Session 5.3
Symbol-based methods and calculations

Purpose of this session:
To introduce extension workers to symbol-based methods of application of the farm management tools previously discussed. These methods can assist farmers to quantify and analyse the use of their farm resources and improve their decision making processes.

Learning outcomes

Understanding (i) different ways of collecting data using 'symbol-based' methods, (ii) the ability and skills to select and use the methods chosen.

Closing questions

Ask participants if they feel that the overall purpose of the module has been achieved and if they have improved their understanding of the concepts behind the methods and tools, and the skills and competency in applying symbol-based approaches to farm management. Make reference to each of the methods and tools discussed previously.

Notes

Notes

Notes

Notes

The following is a list of the AGSF series TRAINING MATERIALS FOR AGRICULTURAL MANAGEMENT, MARKETING AND FINANCE

1. Farm planning and management for trainers of extension workers in the Caribbean, 2004 (CD-ROM, English).
2. Horticultural marketing extension techniques, 2004 (CD-ROM, English).
3. Farm planning and management for trainers of extension workers. Asia, 2006 (Hard copy and CD-ROM, English).
4. Integrating environmental and economic accounting at the farm level, 2005 (CD-ROM, English).
5. Curso de gestión de agronegocios en empresas asociativas rurales en América Latina y el Caribe, 2005 (CD-ROM, Español).
6. Market-oriented farm management for trainers of extension workers. Africa, 2007 (Hard copy and CD-ROM, English).

In preparation

- Farm planning and management for trainers of extension workers. Latin America (CD-ROM, in Spanish).
- Training manuals on farmer business schools. Asia and Africa.

Other work

- FAO Pacific Farm Management and Marketing Series 3, Helping small farmers think about better growing and marketing (Hard copy)*.

* Copies soon to be available from AGSF

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http://www.fao.org/ag/ags/subjects/en/farmMgmt/training.html

The purpose of Module 5 is to engage farmers in the pursuit of farm management goals. Here we will explore participatory and symbol-based methods of working with the various farm management tools.

Market-oriented farm management for trainers of extension workers

AFRICA

Module 6
PLANNING

TRAINING MATERIALS FOR AGRICULTURAL MANAGEMENT, MARKETING AND FINANCE

6

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TRAINING MATERIALS FOR AGRICULTURAL MANAGEMENT, MARKETING AND FINANCE

6

Market-oriented farm management for trainers of extension workers

AFRICA

Module 6
PLANNING

Food and Agriculture Organization of the United Nations
Rome, 2007

ISBN 92-5

PLANNING

Market-oriented farming begins by determining what buyers want, in what form and when they want it. The market dictates what to produce. Production and marketing are closely interrelated, and both aspects affect the performance of the farm business. This module outlines what farmers and extension workers need to know about the planning process, farm performance and the market in order to prepare farm plans and increase profitability and income.

Note

This module is designed to give the participants an opportunity to practise a selection of the tools and skills they have learned during the course of this programme. They will be expected to conduct an in-depth plan of a 5 hectare farm. The module is constructed to help the participants integrate a number of tools and skills in the planning of a single farm.

Preparing for Session 6.1
The planning process

Learning outcomes
Understanding (i) the planning process, (ii) the planning cycle

Training aids
Handout 6.1A (The planning process)

Notes

The planning process

This session looks at the process of farm planning. Farmers are concerned about the future. They usually determine by themselves what farm enterprises to engage in, but there is a role for the extension worker to assist the farmer in making planning decisions. For this to occur the extension worker must understand the process of planning. Here the participants are shown how to approach planning systematically, and in the final session of this module they will follow this process to prepare a farm plan. Because of the importance of the material to be covered, the facilitator may choose to distribute Handout 6.1A (The planning process) a day or two in advance and urge participants to list things that they do not understand.

Opening statement

There is no exercise connected with this session. We will begin by making a complete review of Handout 6.1A (The planning process) to ensure that we all understand the need for planning and the various steps involved. Participants should feel free to ask questions.

The outline on the following pages is provided to help the facilitator conduct the review.

Outline of Handout 6.1A (The planning process)

The need for planning

- Planning is one of the stages in the farmer's decision-making process. Some forward-looking planning decisions are immediate. Others are of a longer-term nature.
- Helping farmers gain skills for better planning is a role the extension worker can play. Of course, to do this the extension worker should understand the process of planning.
- Farmers who keep track of their past farm performance are in a better position to make good plans. This might require keeping farm records, or at least some reliable way of recalling the main performance figures. For example, farmers should know what yields they received in the past. They should know the kinds and quantities of inputs they use in production. Farmers usually do know this type of information.
- Before making a change in the farming system, farmers should estimate what the results of that change are likely to be.
- It would not be good management to change the farm system without having any idea of possible or likely outcomes.

The main planning questions

- What to produce and what variety or breed?
- Why produce it?
- How much to produce?
- When should it be produced?
- How much land and labour are needed?
- How much capital (money) does the farmer need to start the business?

Budgets

- Budgets are used to decide whether a proposed plan will effectively increase profits.
- A farmer can use budgets to decide between two or more alternative enterprises and even to make whole farm plans.
- Farmers should be encouraged to prepare more formal budgets.
- Budgets are used to decide whether a proposed plan will effectively increase profits.
- A farmer can use budgets to decide between two or more alternative enterprises and even to make whole farm plans.

The planning process

The steps in the planning process are listed here and outlined in the following pages.

1. Formulate goals and objectives

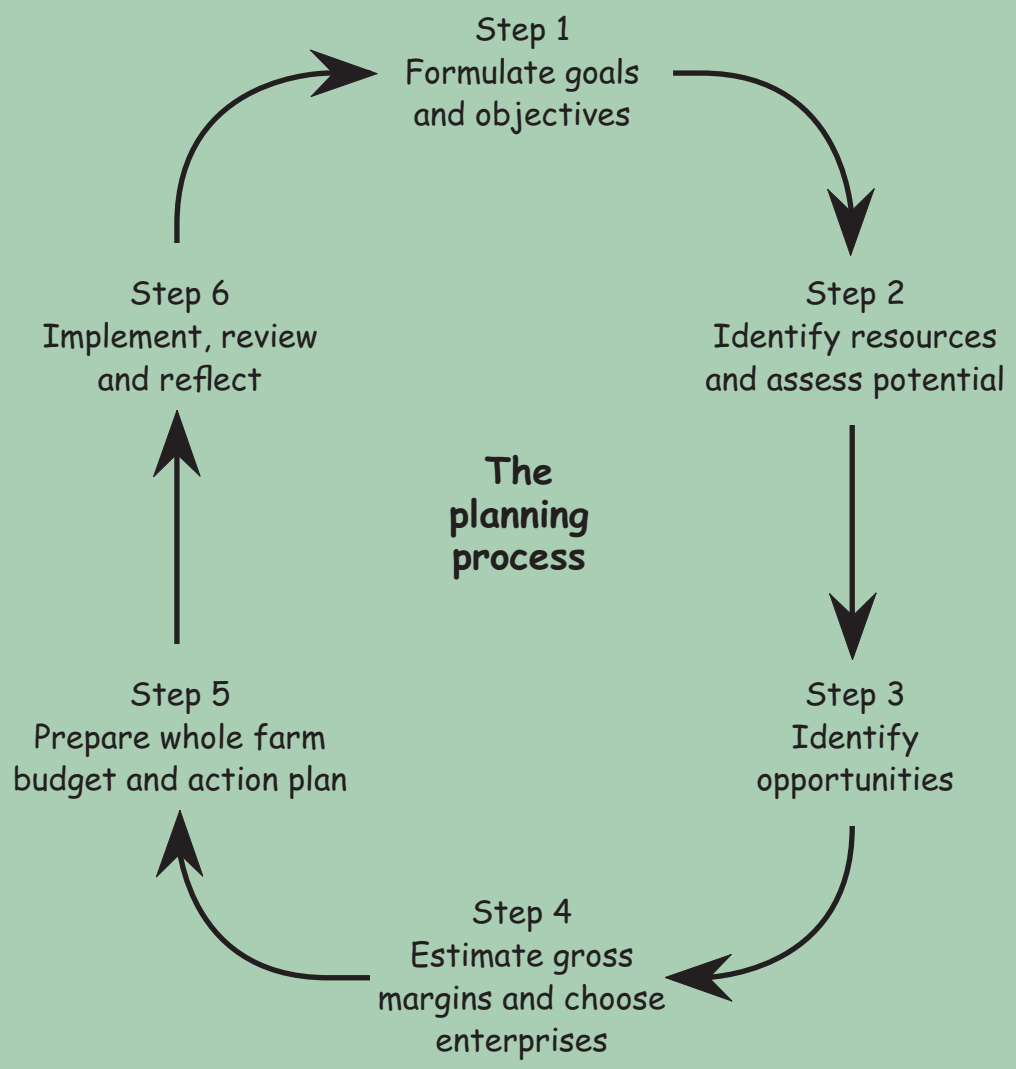
2. Identify resources and assess potential

3. Identify opportunities

4. Estimate gross margins and choose enterprises

5. Prepare whole farm budget and action plan

6. Implement, review and reflect



Step 1

Formulate goals and objectives

- What are my family's needs and what is the best way to provide for them?
- What are some of the things my family wants to achieve?

Step 2

Identify resources and assess potential

- List natural, human, physical and financial, and social capital; including problems related to natural capital such as land erosion.
- Proposed plan must fit the available resources and the farmer's ability to manage.
- Make a map of the farm with varying soil types, land use, and crop and livestock enterprises.
- Prepare a labour plan.
- Take stock of the farmers' skills and competences as a manager.

Step 3

Identify opportunities

Assessment of:

- demand for the product;
- marketing arrangements;
- probable prices that can be attained;
- availability, cost and quality of purchased inputs;
- transportation and storage of the final product.

Step 4

Estimate gross margins and choose enterprises

- Use budgets to calculate gross margins on a per unit basis (hectare, person-day) and on the basis of the most limiting resource.
- Make estimates of the income and variable costs for each of the possible alternative plans.
- Choose the most profitable enterprises.
- Prepare plans for one year.

Step 5

Prepare whole farm budget and action plan

- Check the effect of changes in the cropping pattern and the introduction of new enterprises on the economic viability of the farm.
- Make sure there is a match between the amount of physical resources available to the farmer and the decisions taken as to the most viable enterprise for each land parcel on the farm.
- Check that there is agreement among the following aspects:

    - the physical characteristics of the resource base;
    - market opportunities;
    - use of other resources (labour and capital) available to the farmer;
    - individual preferences of the farm family.

The plan could include:

1. an assessment of land suitability and enterprise selection;
2. enterprise budgets;
3. planned crop rotations;
4. a calendar of operations;
5. schedules of supplies required;
6. an assessment of farm investments;
7. labour profiles;
8. cash flow projections.

Step 6

Implement, review and reflect

Put the plan into action

- This is usually the most difficult part of the process and requires very careful management.

Reflection and evaluation

- Reflect on the outcomes of the plan and evaluate it in terms of the goals set at the beginning of the planning process.
- To what degree did the plan meet those objectives?
- What adjustments can be made to correct new-found weaknesses or to build on new-found strengths and opportunities?

Encourage the participants to discuss the steps in planning and to raise questions.

Space for notes and questions for the facilitator

The planning process

The need for planning

Farmers are always looking towards the future. What crop should I produce and what variety or breed? What area of land do I need? How much should I produce? When should it be produced? How much labour will I need? Do I have enough cash to buy inputs and materials or will I need to get more? These are some of the decisions that farmers make when planning the enterprise and the farm.

Planning is one of the stages in the farmer's decision-making process. Some forward-looking planning decisions are immediate. Others are of a longer-term nature. Farmers often plan just for their next season or in some cases they plan for a number of years. Planning means working things out before they happen. Farmers usually figure out by themselves what farm enterprises to produce. Often, however, they lack information and skills to help them make the best decisions. Helping farmers gain skills for better planning is a role the extension worker can play. Of course, to do this the extension worker should understand the process of planning.

Farmers who keep track of their past farm performance are in a better position to make good plans. This might require keeping farm records, or at least some reliable way of recalling the main performance figures. For example, farmers should know what yields they received in the past. They should know the kinds and quantities of inputs they use in production. Farmers usually know this type of information.

The planning process (continued)

It is important for planning that farmers are able to identify the strengths and weaknesses in their farming methods. Weaknesses may include, for example, a bad selection of farm enterprises, poor production practices or poor financial planning. Sometimes the weaknesses are also the result of poor day-to-day management.

In the following session we discuss methods of farm diagnosis that could be used to analyse the farm situation. Farmers who discover weaknesses in the farming system should try to introduce changes to overcome them.

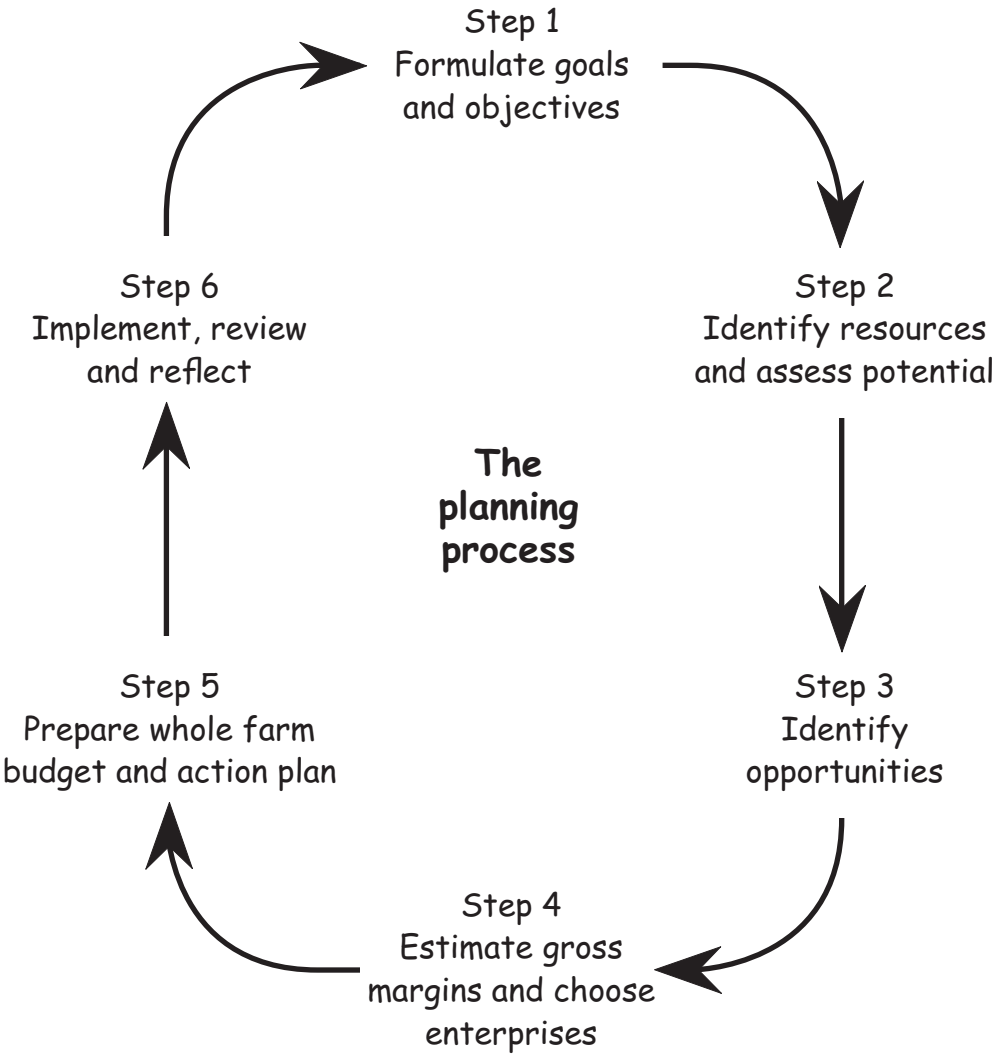
However, before making a change, farmers should estimate what the results of that change are likely to be. It can only be an estimate of the outcome, because we cannot see into the future. Nevertheless it is important that we try to imagine the expectation. It would not be good management to change the farm system without having any idea of the possible or likely outcome. The method of estimating the results of a farming plan is known as budgeting.

Budgets

Budgets are used to decide whether a proposed plan will effectively increase profits. Similarly, a farmer can use budgets to decide between two or more alternative enterprises and even to make whole farm plans.

Most farmers make some attempt at budgeting their farm plans, even though they may not work out their calculations on paper. But farmers should be encouraged to develop the practice of making more formal budgets. These can be written down, if the farmers are literate, or alternatively symbols and pictures can be used. By keeping some form of record it is less likely that some important information will be forgotten.

The planning process (continued)



The farm planning process follows a series of steps.

Step 1
Formulate goals and objectives

This step typically begins with identification of the farm household goals and a listing of the priorities to the farmer and the farm family. This may simply consist of a single goal,

The planning process (continued)

such as maximization of profit or competing goals, for example, increased profit and leisure. The goals reflect the farm-family preferences. Some basic questions to ask might include:

- What are my family's needs and what is the best way to provide for them?
- What are some of the things my family wants to achieve?

Step 2

Identify resources and assess potential

In the second step in planning, the farmer draws upon the resources available to the farm family.

The extension worker could provide guidance using the information studied in Module 2 of this programme; and it should cover natural, human, physical, financial and social capital. Specific attention should be paid to drawing up a labour plan.

In addition to a list of resources, the farmer should be encouraged to make a farm map. The map should mark out the current crops and record the soil types and conditions for each plot on the farm. The same should be done for common land for grazing and forestry. This record of the available land will serve as a guide as to what crops are suitable and what area may be grown. It will also suggest what yields to expect.

At this stage the farmer needs to identify problems, such as soil erosion, that relate to important resources such as land.

The planning process (continued)

Farmers should also take stock of themselves as managers and objectively evaluate their capacity and interest to manage certain crops or livestock. They should identify weaknesses in management of the business (e.g. because of excessive debt, high variable costs, depreciation and the use of labour).

The resources available set a limit on the plans that are possible. It is important that any proposed plan must fit in with the available land, labour and financial capital, and with the farmer's ability as a manager. It is no good trying to make a change that requires more of these resources than the farmer can acquire.

Step 3
Identify opportunities

This step starts with a careful assessment of market and consumer demand. Even if the resource inventory shows that certain crop and livestock enterprises are technically possible, choosing an enterprise must also take into account market opportunities. The market appraisal should include an assessment of the demand for the product, the marketing arrangements and probable prices that can be attained, availability, cost and quality of purchased inputs, and transportation and storage of the final product. (Market planning will be covered in greater detail in Session 6.3.

For many farmers the decision on what enterprises to include in a farm plan is based on personal experience and preference, together with considerations of comparative advantages of the different activities. Some ideas and suggestions for activities can come from discussions held with family members, other farmers or extension workers — all of which could provide important sources of new information.

The planning process (continued)

The range of potential opportunities identified and evaluated could be broad and would need to be reduced through a process of "short listing" or shortening the list to include the most likely opportunities. Many of the opportunities might be rejected immediately because farmers might not be interested in them or because they feel that they could not manage them properly. Other opportunities may be rejected because there is insufficient land or labour or capital available to carry them out.

Step 4

Estimate gross margins and choose enterprises

At this stage estimates are made of the income and variable costs for each of the possible alternative plans. These estimates are used to calculate gross margins. Based on the gross margins and other factors considered in the previous step, the farmer selects the most profitable and viable enterprises.

Note

The gross income calculation is made by multiplying the farmgate price with yield. It is important to mention again that the price used is the farmgate price. By looking at the market as the final destination of produce, it is important to take into account what we have called the marketing margin. By taking the market price and deducting the costs, such as transport or handling, the farmer can arrive at the farmgate price. In some cases produce is sold to traders, thus the cost of transportation might be minimal or non-existent.

The planning process (continued)

Note

The gross margin for each potential enterprise should be calculated on a per unit basis (hectare, person-day). The gross margins should be prepared on the basis of the most limiting resource. If land is limited, the enterprises giving the highest gross margin per hectare would be best. If labour is limited the enterprises giving the highest gross margin per person-day would be the best. If capital is identified as the limiting resource, the plan giving the highest gross margin per $100 of capital would be the best.

Usually a farm plan is for one year, and costs related to land, family labour and machinery are considered fixed. Therefore, in the short run, maximizing gross margin is similar to maximizing profit (or minimizing losses) because the fixed costs are constant.

Step 5

Prepare whole farm budget and action plan

After the enterprise gross margins are calculated, the farmer can draw up budgets for the farm. Some farmers may even prepare different farm plans to analyse the best options and combinations of enterprises. The whole farm budget checks the effect of changes in the cropping pattern and the introduction of new enterprises on the economic viability of the entire farm. The gross margin for each enterprise will help the farmer make sure there is a match between amount of physical resources available to the farmer and the decisions taken as to the most viable enterprise for each land parcel on the farm.

The planning process (continued)

The decision would require that there is agreement among the following aspects:

- the physical characteristics of the resource base;
- market opportunities;
- use of other resources (labour and capital) available to the farmer;
- individual preferences of the farm family.

This often involves a process of trial and error. Once the enterprise combination has been selected, the farmer then assesses the overall gross margin and whole farm net income. The latter would require the preparation of an inventory of the fixed asset costs. The difference between the overall gross margin and the fixed costs provides an estimate of whole farm net income.

An action plan is then prepared taking into account physical and financial aspects of the plan. The plan could include an assessment of land suitability and enterprise selection, planned crop rotations, a calendar of operations, schedules of supplies required, an assessment of farm investments, labour profiles and cash flow projections, and enterprise budgets. One of the simplest ways to do this is with a seasonal calendar. This will give the farmer a visual picture of the plan, showing when inputs, labour and finance are needed, and when various activities need to take place.

For a new farm, or a large-scale change in an existing farm system, a complete budget is necessary. For smaller changes in the farm system only variable costs are affected, and a partial budget may be a sufficient guide.

The planning process (continued)

Step 6
Implement, review and reflect

Putting the plan into action. Once the best plan for the farm has been selected, then it has to be put into operation. If tree crops and livestock are included in the plan, this may take a long time, because these enterprises do not reach full production for several years. If new enterprises are introduced, the farmer may have to learn new skills and working methods to manage the enterprise effectively. Once the new plan is fully established it should run smoothly without too many management problems. The period during which the plan is put into operation is usually the most difficult and requires very careful management.

Review and reflection. While the plan is being implemented and after it has been fully implemented, the farmer will need to reflect on the outcomes of the plan and evaluate it in terms of the goals set at the beginning of the planning process. To what degree did the plan meet those objectives? What adjustments need to be made to correct newly found weaknesses or to build on newly found strengths and opportunities?

This then is a good position from which to plan the farm year after year.

Preparing for Session 6.2
Farm performance analysis

Learning outcomes
Understanding (i) the purpose of performance analysis and its potential value in extension,
(ii) how to carry out a performance analysis

Training aids
Exercise 6.2A (Farm performance analysis)
Handout 6.2A (Farm performance analysis)
Handout 6.2B (Farm performance analysis using benchmarks)

Notes

Farm performance analysis

In this session, the participants will focus on the concept of benchmarking. First they will identify a benchmark farm in their area, and then they will practise analysing performance variations to highlight problems and possible solutions.

Opening statement

Farmers learn best from the experience of other farmers. Benchmarking is a methodology that enables farmers to analyse their business in comparison with those of other farmers considered to be successful. The exercises in this session require the participants to compare their gross margins with a benchmark.

The outline on the following pages is provided to help the facilitator conduct the review.

Outline of Handout 6.2A (Farm performance analysis)

Farm and enterprise performance can be assessed either (i) year to year or (ii) in comparison with other farms in the vicinity. Farm performance analysis helps to understand where the weaknesses occur and to identify ways of addressing them through better planning for profits. Farm performance can be carried out through three methods: (i) by comparing enterprise performance on a single farm over time; (ii) by comparing the performance of groups of farms; (iii) by comparing the performance of a single farm with the more successful farm.

Farm performance analysis based on benchmarking involves the following:

- identifying those farmers who are the best at doing something;
- understanding how they do it in order to learn from them;
- studying the actual performance of the selected farm and comparing other farms of similar size and farming system;
- identifying strengths and weaknesses and steps to improve the performance of the individual enterprise or the farm as a whole;
- high-profit benchmarks derived by selecting farms that are the most profitable and comparing the performance measures.

Steps for carrying out a performance analysis

1. Group farmers according to farm systems.
2. Select the farm enterprise that you want to study and identify key performance measures.
3. Identify successful farmers as benchmarks for comparative analysis.
4. Compare farm performance against the benchmark.
5. Identify the causes and effects of the performance difference.
6. Develop and implement changes.

For the facilitator

The exercises in this module require the participants to compare the gross margins they prepared in Session 4.2 to a benchmark and then to analyse the cause of variations. To do this, the facilitator will need to establish a benchmark for a crop selected by each farm team. Please follow the guidance below in preparing the benchmarks.

1. *Make a copy of one gross margin prepared by each team in Session 4.2. Be sure there is a different crop from each farm team.*

2. *Based on your knowledge of the crop, create a benchmark gross margin that reflects nearly ideal conditions in terms of factors such as:*

- *rainfall*
- *above average yields*
- *efficiency of use of inputs*
- *efficiency of labour*
- *access to markets and good prices*

3. *Follow the same gross margin format as used in the handouts for Session 4.2 (There will be as many different benchmarks as there are farm teams.)*

4. *The benchmark gross margin must be more profitable than the gross margin copied from the individual teams.*

5. *If it is possible, vary some but not necessarily all of the elements. This will require that the participants look carefully at the differences and discover ways to improve their own gross margins.*

The benchmark should not indicate anything about the factors above, that is, it should not mention that rainfall is higher, or the cost of fertilizer is lower. This must be left for the participants to discover. However, it is essential that you keep a record of the specific differences so that you can facilitate learning and discovery when the participants present their findings at the end of the exercise.

Exercise introduction

This is a double-exercise session and we shall use both the standard format of Exercise 6.2A (Farm performance analysis) together with the supporting exercises in Handout 6.2B (Farm performance analysis using benchmarks).

Exercise 6.2A
Farm performance analysis

Purpose: To practise using benchmarks by conducting a simple performance analysis of our farms. (Participants should have read Handout 6.2A and B prior to this exercise.)

Method: Calculations, group discussion, constraints analysis.

Materials*: (i) Pen and paper, (ii) calculator, (iii) flip chart paper or newsprint, (iv) thick marking pens.
**Benchmark farm information (prepared by the facilitator)*

Allow 90 minutes for this exercise

Procedure

1. Get the participants into their farm teams.

2. Ask each team to take out the gross margin they prepared (Module 4, Session 2) for the crop for which you have created the benchmark.

3. Ask each team to take out Handout 6.2B and follow the instructions for Part 1 of the exercise.

4. Ask each team to present its findings.

Note

As a facilitator, you will know where the significant variances are between your benchmark and their gross margin. Make a checklist to make sure they find all variances.

Exercise 6.2A (continued)

5. Ask the teams to work on Part 2 of the exercise.

6. Ask the teams to present their findings.

Note

Again, you will know what caused the significant variances between your benchmark and their gross margin. Make a checklist to make sure they find all root causes.

Encourage discussion around the use of the benchmarking method and how it might be applied in the field.

Space for notes and questions for the facilitator

Farm performance analysis

What is farm performance analysis?

Farm performance analysis is a way to assess how farms and their enterprises are performing in comparison with other farms in the vicinity. It is an analysis of past results, but it gives useful guidelines for the future. The analysis will help farmers understand where weaknesses occur in their farms and identify ways of addressing them through better planning for profits.

Many factors affect the performance of the farm and the individual enterprises. These include the level of production, productivity, input costs and product prices, as well as the management skills and ability of the farmer. In order to assess these factors it is often useful to divide the farm into its separate enterprises and to compare each one — both separately and in combination. Farm performance can be carried out through three methods:

1. comparing the performance of enterprises on a single farm over time;

2. comparing the performance of groups of farms;

3. comparing the performance of a farm with a more successful farm.

The tools of constraints analysis and gross margin analysis can be used for both forms of analysis. The tools were discussed in the previous module.

Farm performance analysis (continued)

Benchmarking

Farm performance analysis through making farm comparisons is based on the idea of benchmarking. Benchmarking is a practice of identifying those farmers who are the best at doing something and understanding how they do it in order to learn from them and improve farm performance. Their performance is set as a standard or benchmark for other farmers.

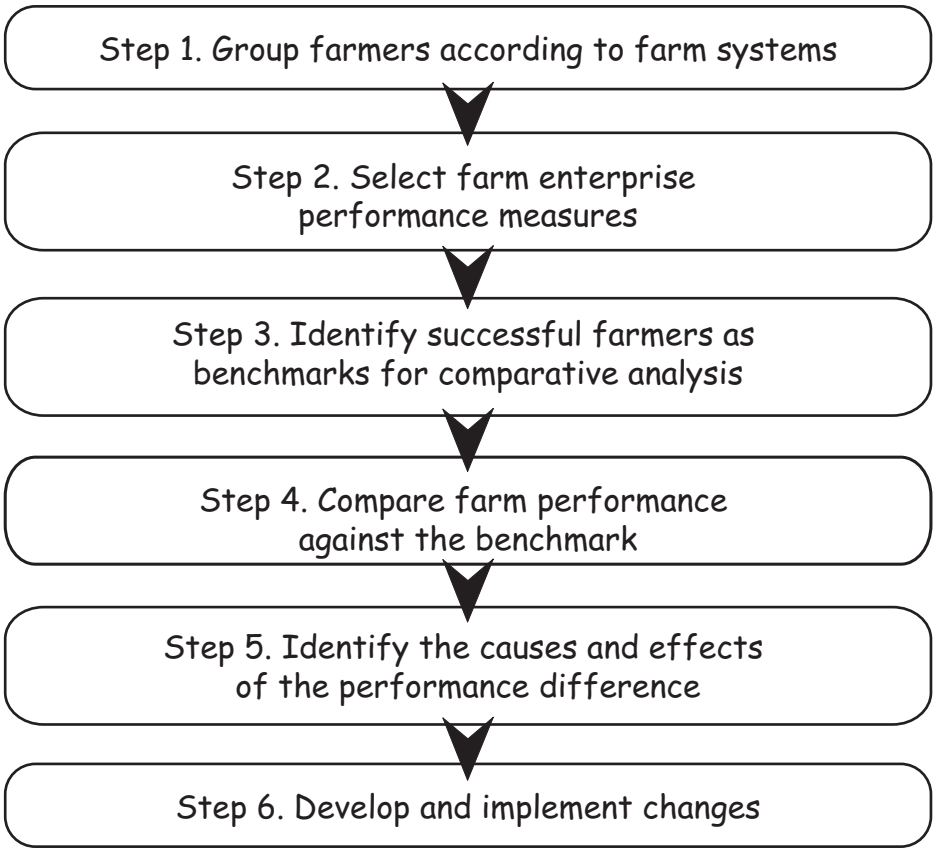
Benchmarking involves studying the actual performance of the selected farm and comparing other farms of similar size and farming system for detailed financial and technical analysis. The intention is to identify strengths and weaknesses and steps to improve the performance of the individual enterprise or the farm as a whole.

The extension worker should be able to *calculate benchmarks* for both typical and better-managed farms. There are several alternatives available for setting performance standards or benchmarks. Benchmarks for farms can be made up by averaging the actual performance data from a large group of farms. The high-profit benchmarks are sometimes derived by selecting the one-third of the farms in that large group that are the most profitable and averaging the performance measures from those farms. But benchmarking can also be conducted by comparing individual farms.

How is a performance analysis carried out?

The approach described below shows the basic steps of comparative farm performance analysis. This analysis is conducted by the extension worker in collaboration with farmers. The results of the analysis can be used as a useful extension tool for dissemination of feedback information to the farmers.

Farm performance analysis (continued)



Step 1

Group farmers according to farm systems

Look for a common factor upon which farmers can be grouped. This should be a factor that is relevant to the group of farmers with whom the extension worker works. This might be land size, agro-ecological zone or technological package.

Step 2

Select farm enterprise performance measures

Select the farm enterprise that you want to study and identify key performance indicators that reflect farm performance. Some examples are listed on the next page.

Farm performance analysis (continued)

Market related measures	Output–input related measures
Final market price achieved	Yield per hectare
Quality of harvested produce	Cost per tonne of packaging
Marketing costs	Milk produced per kilogram of feed
Prices attained after taking into account marketing costs	Cost of hired labour

A decision should be taken whether to use the overall indicator of gross margin per hectare, per person-day or per $100 of capital. The indicator should be the most limiting factor. This is to make sure the farms are compared on the same basis.

Step 3

Identify successful farmers as benchmarks for comparative analysis

Identify which of the farmers are performing well, who can be used to set the benchmark for performance.

Step 4

Compare farm performance against the benchmark

Once the performance measures are established, data about the farm(s) to be compared needs to be collected. Such data could come from farm records. If these are not available, then the farmer's memory will have to suffice.

Farm performance analysis (continued)

When the data is available, use appropriate analysis tools to analyse the farm in terms of the key performance measures. This stage requires making comparisons of the performance of the farm with the benchmark, including such factors as:

- overall profitability of the farm;
- gross margin performance of the enterprises;
- yields and selling prices;
- quantities of variable inputs used;
- total fixed costs;
- various physical and financial performance measures identified as relevant to the farm or group of farms.

Step 5
Identify the causes and effects of the performance difference

Using tools such as a constraints analysis, the extension officer can assist the farmers to identify what is causing the difference between their farms' performance and the benchmark.

Step 6
Develop and implement changes

Work should now be done to develop changes in the farm that can be implemented. This would include looking at all aspects of the farm in terms of the decision-making boundary. Farmers should look at changes in input, production and marketing that are relevant to the root cause of the performance difference.

Farm performance analysis (continued)

Example

Performance analysis

The following example shows how gross margin analysis can be applied to diagnose the farm. The example shows three farm situations reflecting low productivity, low intensity and high fixed costs.

Three farmers have 5 ha each on which they produce rice, coffee, beans and maize. They have recently learned that the benchmark whole farm gross income for a similar farm is $613. When they discussed this situation with their extension officer, the extension officer used the gross margin tool to analyse the performance of their farms and also created a benchmark based on knowledge of the best performing farmers in similar situations. Then the three farms were compared to the benchmark.

From this analysis, the farmers learned that they each had different causes for falling below the benchmark. The results were as follows:

	Benchmark	Farmer 1	Farmer 2	Farmer 3
Profit	613	224	526	513
Cause		Low productivity	Low intensity	High fixed costs

Farm performance analysis (continued)

The details of the gross margin analysis are shown below

Item	Normal	Low productivity (1)	Low intensity (2)	High fixed costs (3)
Rice	2.5 ha x $220 per ha = $550	2.5 ha x $110 per ha = $275	3.0 ha x $180 per ha = $540	2.5 ha x $220 per ha = $550
Coffee	0.8 ha x $350 per ha = $280	0.8 ha x $300 per ha = $240	0.8 ha x $300 per ha = $240	0.8 ha x $350 per ha = $280
Bean	0.5 ha x $170 per ha = $85	0.5 ha x $70 per ha = $35	0.5 ha x $150 per ha = $75	0.5 ha x $170 per ha = $85
Maize	1.2 ha x $40 per ha = $48	1.2 ha x $20 per ha = $24	0.7 ha x $30 per ha = $21	1.2 ha x $40 per ha = $48
Gross margin	**5.0 ha = $963**	**5.0 ha = $574**	**5.0 ha = $876**	**5.0 ha = $963**
Fixed costs	5.0 ha x $70 per ha = $350	5.0 ha x $70 per ha = $350	5.0 ha x $70 per ha = $350	5.0 ha x $90 per ha = $450
Profit	**$613**	**$224**	**$526**	**$513**

The extension officer then did a constraints analysis, which examined the root cause of low profits compared to the benchmark. The results were as follows:

Farmer 1 *Here it was found that the yields of rice, beans and maize (and to a lesser extent coffee) were lower than the benchmark. The cause of low yields was the result of things such as poor soil fertility, pests. This resulted in a low gross margin, which resulted in low profits.*

Farm performance analysis (continued)

Farmer 2 *Here it was also found that the yields of rice, beans and maize (and to a lesser extent coffee) were lower than the benchmark. The cause was more the farming system, including technology choices and production systems. This resulted in a low gross margin, which resulted in low profits.*

Farmer 3 *Here it was found that yields were comparable to the benchmark, but that fixed costs were much higher than the benchmark. This resulted in the eroding of a sound gross margin, which resulted in low profits.*

When analysing the three farms above, a number of strategies could be formulated for improvement. Some suggestions are given below:

Problem	Possible action
Low productivity (1)	• Increase crop yields by improving soil fertility, addressing problems of drainage, reducing the incidence of crop diseases; • Try to get better market prices by using better harvest and post-harvest handling
Low intensity (2)	• Introduce new technologies and improved farm practices aimed at intensifying the farming system; • Introduce new farm enterprises as part of a diversification process aimed at increasing on-farm income
High fixed costs (3)	• Reduce fixed costs through better management

Farm performance analysis (continued)

Very often the problems of a farm may have more than a single cause in which case a combination of solutions may be needed. There should be a realistic relationship between the gross margin and fixed costs. High fixed costs associated with labour, machinery or rent of land should be matched by intensive farming (a high gross margin). Farming with low intensity systems (i.e. a low gross margin) can only increase their profits if they lower their fixed costs. The results of the gross margin calculations of enterprises from different farms need to be compared very carefully because the gross margin only covers the variable costs from total costs.

It should be noted that valid comparisons can only be made in terms of a production unit common to all of the farms or activities being compared. This unit can be land area, as given in the example above, if the land used by each enterprise is equally suitable. It could also be per unit of labour per $100 of capital invested or per head of livestock.

Space for notes and questions for the facilitator

Farm performance analysis using benchmarks

In this exercise, you will be comparing the gross margin of one of your crops to a benchmark gross margin prepared specially for this exercise. At some point before this exercise, the course facilitator will have copied one of the gross margins that you prepared in Session 4.2. Based on this gross margin, a benchmark gross margin for the same crop has been created. The benchmark performance analysis exercise will be done in two parts.

Part 1

1. Get into your farm teams.

2. The facilitator will give you a benchmark gross margin for a crop. Take out a copy of the gross margin for the same crop (this will be among the gross margins you prepared in Session 4.2).

3. Your task is to compare the two gross margins and discover all the differences between them. Check crop prices, input use, labour, or yield. Record all your findings.

4. Stick your gross margin (not the benchmark) in the centre of the flip chart paper. With this as your centre, create a mind map that highlights the variances you discovered in your comparison. See example shown on the opposite page.

5. Present your findings to the rest of the participants. If the discussion identifies additional variances, add these to the mind map.

Farm performance analysis using benchmarks (continued)

Part 2

1. Return to your farm teams.

2. Using your mind map as your checklist, conduct a constraints analysis to try to determine the root cause of the variances you discovered in your analysis and in the group discussion.

When you have completed your analysis, reproduce it neatly on another flip chart paper and present your findings to the rest of the participants.

Example of the mind map of variances

Gross margin for: MY CROP Enterprise Actual ha: 5 (A)

Income

Quantity sold (B)	Price (C)	Value (D) [B × C]
1 000	50	50 000
	Total income from sales (E)	**50 000**

Price lower than benchmark

Variable costs

Used more labour

Item	Quantity (F)	Unit cost (G)	Total cost of item (H) [F × G]
Seed	10	100	1 000
Fertilizer	10	100	1 000
Labour	50	55	2 750
Pesticide	20	150	3 000
Harvesting	40	100	4 000
Ploughing	5	1 000	5 000
Weeding	5	1 000	5 000
	Total variable costs (I) [sum of H]		21 750
	Enterprise gross margin (J) [E - I]		**28 250**
	Gross margin per hectare [J/A]		**5 650**

Higher cost of labour

Preparing for Session 6.3
Planning for the market

Learning outcomes
Understanding (i) that the farmer can plan for the market, (ii) how to develop a market strategy/plan, (iii) how to identify opportunities for enterprise diversification

Training aids
Exercise 6.3A (Constraints and opportunities)
Exercise 6.3B (Preparing a market plan — a market visit)
Handout 6.3A (Planning for the market)
Handout 6.3B (Preparing a market plan)
Handout 6.3C (Worksheet — Marketing plans format)

Notes

Planning for the market

In this session the participants will work on developing a realistic market plan. This will entail a visit to a market where participants will be given an assignment to identify market conditions for a specific commodity. From there they will develop a market plan.

Opening statement

You have previously been exposed to various aspects of marketing. In Module 2 you have learned how markets function and in Module 4 how to calculate marketing margins. This session takes the learning further and tries to reinforce it through a practical exercise and visit to a market.

The outline on the following pages is provided to help the facilitator conduct the review.

Outline of Handout 6.3A (Planning for the market)

Marketing is the key to successful farm profit-making.

- Marketing can be quite complex for the individual farmer.
- It is often more useful if farmers market their produce as a group.
- The extension worker can assist in:

    - helping farmers to formulate a market strategy;
    - prepare a marketing plan and facilitate group and individual marketing actions.

The essential principles of marketing

People Plan Product
Place Price
Promotion

What do most customers really want?

Quality	No pest damage
Low price	Good packaging
Uniformity of produce	A wide selection
Sufficient quantity	Clean produce
Consistency	Accessible produce
Freshness	Good labelling
Nutritious food	Knowledge of who produced it
Health promoting food	Receiving the produce on time
Attractive products	A list of ingredients
Good taste	Instructions on how to prepare it

The marketing plan

Main questions:

- Who is the customer?
- What does the customer want?
- Is this product in demand?
- How many competitors are providing the same product?
- How can demand for the product be created?
- Can the farmer effectively compete in price, quality and delivery?

A marketing plan should cover the following topics:

- The current market situation
- Constraints and opportunities analysis
- The marketing strategy

Constraints and opportunities

- Solutions to marketing problems should be simple.
- The farmer should look for the right combination of factors that will satisfy the needs of the consumers and increase farm profits.

Usefulness of the marketing plan

The market plan should help the farmer:

- know how much produce can be sold;
- plan production and have enough to sell;
- do what is needed to make a profit;
- identify competitors and what they are good at by comparison to other farmers;
- identify new crops to grow;
- identify new and/or potential customers;
- identify weaknesses in the farmer's management skills;
- identify weaknesses in the overall business plan.

Marketing plan checklist

- Product information
- Input supply and financing
- Local marketing system
- Product requirement by market
- Under-utilized local resources
- The farming community

Exercise introduction

This is a short exercise to reinforce some of the learning in Module 4, applying the constraints and opportunities analysis to the market. The exercise also gets the participants to formulate practical strategies and actions to address the constraints.

Exercise 6.3A
Constraints and opportunities

Purpose: To practise developing responses to market constraints and opportunities. (Participants should have read Handout 6.3A prior to this exercise.)

Method: Brainstorming.

Materials: (i) Pen and paper.

Allow 45 minutes for this exercise

Procedure

1. Write out a range of possible marketing constraints and opportunities on individual slips of paper. Fold the papers and place them into separate piles — one for constraints and one for opportunities.

> **Note**
> There should be enough constraints and opportunities to make sure all of the teams have the same number of each.

2. Ask the participants to get into their farm teams.

3. Each team in turn takes one folded paper from the pile. This is repeated until all the papers are taken.

4. Using the basic constraints and opportunities matrix shown in Handout 6.3A, each team consults and works out possible solutions for the constraints and actions for opportunities.

5. Teams share their decisions with the rest of the participants.

Exercise introduction

This exercise aims at providing the participants with the skills to prepare a marketing plan. It is designed as a field exercise where the participants visit a local market to gain practical experience in preparing a marketing plan. The facilitators will need to spend time upfront to organize the field trip and prepare the background for the visit.

Exercise 6.3B
Preparing a market plan — a market visit

Purpose: To prepare a market plan after a visit to a local market. (Have participants refer to Handout 6.3B.)

Method: Observation, checklist and planning.

Materials: (i) Handout 6.3B (Preparing a market plan), (ii) pen and paper.

Allow 3 to 4 hours for this exercise

Note

The facilitator will need to make advance arrangements for a field trip to a local or municipal market where a variety of products are offered for sale. Participants must be able to speak to sellers, buyers and officials in the market. It would be wise to interview these market personnel prior to the visit to ensure their willingness to contribute the time. Depending on what is available in the market, the facilitator may need to adjust the commodities in this exercise.

Procedure

1. Divide the participants into their farm teams.

2. Ask each team to create a checklist of market related questions for each enterprise and to prepare a blank checklist for a crop they do not currently produce (facilitator to assign from the list in Handout 6.3B).

Exercise 6.3B (continued)

3. Explain that each team will go to the market to learn about the conditions of the market for the products on their team farms. They will also be looking for information about the market for the product that they have been assigned.

4. Take the team to the marketplace.

5. Each team conducts its market survey.

6. Return to the training venue.

7. Each team works on their market plan for their current products plus one product that they do not currently produce.

8. Each team shares their reports with the rest of the participants.

Encourage discussion about the market plans.

Space for notes and questions for the facilitator

Planning for the market

Marketing is the key to successful farm profit-making. Farmers can improve their skills in marketing by understanding how the market functions, collecting market information, formulating a marketing strategy and preparing a market plan. Understanding the market was covered in Session 2.4. The importance of market information was referred to in Module 3. This section will cover the market plan and strategy.

Marketing can be quite complex for the individual farmer, and it is often more useful if farmers market their produce as a group. Likewise, it is often more useful for farmers to prepare a market plan as a group. The extension worker can be useful in assisting farmers in formulating strategies and preparing a marketing plan and in facilitating group and individual farmer marketing.

The essential principles of marketing

Farmers producing for the market should be in the position to answer six questions that marketing specialists pose that all begin with the letter "P". These are:

People Plan Product
Place Price
Promotion

These principles are all important for successful marketing.

People. Who are the people we market to? Who buys the product? What are their wants and needs? Who are the people marketing the product? People need the farmer to be friendly, efficient and knowledgeable about the product.

Planning for the market (continued)

Plan. What is the plan for marketing? What are the steps that need to be taken to market the product? In what way will the farmer market the product to the customers?

Product. What is the nature of the product that will be sold in the market? This includes the taste of the product and other characteristics that consumers prefer. Is the product what the customer wants? Are the quantity, packaging and size what the consumer wants? Is the appearance of the product appealing? Are the products labelled? Are the labels clear? Can they be seen? Are they attractive? Does the product have a brand name?

Place. Where is the marketplace? How far is it from the farm? How should the produce be sold? What form of transport is proposed? What are the benefits of working with different types of distributors? How can distributors be supplied? What are the requirements of the different distributors in terms of quantity, delivery and price? What are the costs involved in the different distribution options?

Price. What price or how much is the farmer going to charge for the products? Is the farmer a price taker or a price maker? Who are the main competitors? What are the prices that they sell for? How are competitors likely to respond with respect to price if a new product is placed on the market? What are the price variations that exist between consumers in different locations? How can I take advantage of these differences?

Planning for the market (continued)

Promotion. How can I promote my product? How can I inform people about my product? Do I need to advertise? Can I afford to do so by myself? What other ways can I promote the product? How much will it cost me if I promote it? How should I set my price?

What do most customers really want?

Quality	No pest damage
Low price	Good packaging
Uniformity of produce	A wide selection
Sufficient quantity	Clean produce
Consistency	Accessible produce
Freshness	Good labelling
Nutritious food	Knowledge of who produced it
Health promoting food	Receiving the produce on time
Attractive products	A list of ingredients
Good taste	Instructions on how to prepare it

The marketing plan

The purpose of the marketing plan is to identify customers and competitors and outline a strategy for attracting and keeping customers. This takes careful planning and a good understanding of the market in order to develop a strategy that ensures success.

Planning for the market (continued)

A marketing plan for a product or group of similar type products should answer the following questions:

- Who is the customer?
- What does the customer want?
- Is this product in demand?
- How many competitors are providing the same product?
- How can demand for the product be created?
- Can the farmer effectively compete in price, quality and delivery?

The marketing plan should address these questions. A good marketing plan begins with thorough knowledge of the products to be produced and of potential customers. Knowing who buys and why are the first steps in understanding how best to sell. A marketing plan should cover the following topics:

The current market situation. The general background on the market in which the product will be sold. It begins with a general idea of who the buyers are and what they want, followed by anything else that describes the market in which the products would be sold (e.g. existing supplies, packaging preferences).

Constraints and opportunities analysis. Based on an assessment of the market opportunities, the farmer identifies the opportunities and constraints that the farm faces and realistically evaluates the farm's internal strengths and weaknesses in dealing with its market situation.

The marketing strategy. Based on the analysis carried out above, the farmer draws up a plan to address the marketing objectives of the farm. The strategy should include a clear definition of consumers, customer needs and the prices attained for produce sold.

Planning for the market (continued)

Below is a matrix showing constraints, solutions, opportunities and actions. It is one way of assisting the farmer in analysing what possible strategies to formulate. The matrix enables the farmer, with the help of an extension worker, to appraise rapidly whether it is worthwhile producing a farm enterprise, provide possible solutions to problems, and identify opportunities to enter a market and make profits.

Matrix of constraints and opportunities

Constraints	**Opportunities**
• No local market • Poor transport services	• Potential exists for early crop production when supplies are short
Solutions	**Actions**
• Organize a local farmers' market • Encourage buyers to use their own transport	• Encourage growing early crops and develop appropriate production techniques

Analysis of constraints and opportunities

Solutions to marketing problems are often relatively simple and should not require major changes to be made in production or new technologies to be introduced. When the marketing plans become complex they are more likely to fail. In the marketing plan, the farmer looks for the right combination of factors that will satisfy the needs of the consumers and increase farm profits. The plan, once prepared, should be assessed to see whether it is realistic and likely to improve the overall competitiveness of the farm.

Planning for the market (continued)

Usefulness of the marketing plan

The marketing plan directs the farmer towards trying to understand what the customer wants. Why are customers so important? The answer is simple. They are, ultimately the source of income for the farm to cover the cost of daily operations, to repay debts and to make a profit. A marketing plan is necessary for any successful farming activity. Marketing offers farmers the information that, if applied correctly, will allow them to better generate profit. A good marketing plan may boost sales and increase profit margins. Farmers must be able to convince customers that they have the best product for them at the lowest possible price. If farmers cannot convince potential customers of this, then they will be wasting time and money. This is where the marketing plan comes into play and why it is useful. The market plan should help the farmer:

- know how much produce can be sold;
- plan production and have enough to sell;
- do what is needed to make a profit;
- identify competitors and what they are good at by comparison to other farmers;
- identify new crops to grow;
- identify new and/or potential customers;
- identify weaknesses in the farmer's management skills;
- identify weaknesses in the overall business plan.

What does a marketing plan contain?

The marketing plan could be prepared with information gathered by asking the questions set out in the next pages.

Planning for the market (continued)

Product information

The product and its benefits should be described from the consumers' perspective. Farmers should know, or at least have an idea of, what the consumers want and what is available.

___ What are the main crops grown and livestock reared including varieties/breeds?
___ When are the crops harvested? What are the yields per unit, prices attained and volume produced?
___ What are the advantages of these crops and/or livestock over others in terms of yield, quality, price and seasonality?
___ Is the produce graded? If so, into what grades?
___ Has the produce been packed? If so, what type, size and cost of packing material?
___ What is the break-even price for each enterprise?
___ What are the costs of growing, harvesting and transporting the crop/livestock?
___ Are any new technologies or practices being tried on this crop/livestock? Have they been successful?
___ What are the main production problems?
___ What quantities can farmers in the area produce and do these allow for scale economies in transport and marketing?

Input supply and financing

___ Are the inputs required readily available for all farmers?
___ Are they of the right quality?
___ Do input suppliers provide advice to farmers? If so, how good is the advice?

Planning for the market (continued)

___ Do farmers have money to pay for these inputs?
___ Do farmers have access to credit for working capital and long-term loans?
___ What are the sources of credit available? What type of collateral is required and how available is the finance?
___ Can farmers readily obtain equipment either to buy or hire?

Local marketing system

___ How is the crop/livestock produce marketed at present?
___ Who buys the produce and when?
___ Who are the most important intermediaries or buyers?
___ Which buyers have the best reputation?
___ What prices are paid?
___ Is there competition between buyers?
___ Is there a wide variation between the prices received by farmers for similar produce in the same area? If so, why?
___ Do buyers provide credit to farmers and on what conditions?
___ Do buyers expect credit from farmers in the form of deferred payment?
___ How is produce transported to the market?
___ What are the main markets and where is produce sold?
___ Who provides transportation?
___ What is the unit price of transport to the different markets?
___ How long do the journeys take? How frequently does the transport leave the area?

Planning for the market (continued)

___ How efficient are the transport links?
___ What form of transport should be used to get the produce to the market?
___ Should the transport of produce be pooled or sent individually?
___ What is the frequency of shipment and the best day for arrival in the market?
___ How much contact do farmers have with the market? What is their source of information and how quickly do they obtain market information on prices, volumes and quality requirements?
___ What complaints do farmers have about intermediaries?
___ What complaints do intermediaries have about farmers?

Product requirement by market

External factors

___ What external factors are likely to affect sales of the produce (country growth, inflation, rising input prices, family income)? What are most critical?
___ What legal factors are likely to affect the market?

Buyers/consumers

___ What are the characteristics of buyers/consumers?
___ How is the product to be used?

Market potential

___ How large is the market? How much can the market absorb?
___ What percentage of produce should farmers be interested in producing?

Planning for the market (continued)

Storage

___ Is the crop/livestock produce stored? If so, where and by whom? How much of the product should be stored? What storage arrangements are required?

Quality standards, packaging, prices

___ What are the grades and quality standards of the produce?

___ What market prices are obtained? (Average, maximum, minimum, effect of different quality standards on price)

___ What type of packaging is required? What is the cost of packaging?

Marketing costs and margin

___ What are the overall costs of marketing and what is the marketing margin?

Sales

___ What factors are likely to affect sales (weather, special festivals, day of arrival in market)?

___ What are the potential and techniques for developing sales?

Pricing

___ Is the product a price taker or a price maker?

___ What way can premium prices be attained?

___ If a price maker, what price strategy should be followed? And what is the percentage mark up? Does the set price leave a margin for profit?

Planning for the market (continued)

Promotion

___ What is the current trend in popularity?
___ How can the product be more effectively promoted?

Problems and opportunities

___ What are the main problems facing producers?
___ What are the main problems regarding consumption?

Under-utilized local resources

___ What local resources/facilities (if any) (e.g. food processing, empty returning transport, cool rooms facilities, box manufacture, local radio, central telephone links to the market) are not being fully utilized?

The farming community

___ Who are the leaders of the farming community?
___ Who is being especially successful and why?
___ Do farmers think they need help in marketing and if so what type of help?

The next step for the market-oriented farmer is to ensure that farm production matches what consumers want to buy. The first question the farmers must ask themselves is *not* what I can grow, but what do my potential customers want? This is a shift in emphasis, and extension workers need to guide farmers to understand the importance of this change.

Space for notes and questions for the facilitator

Preparing a market plan

Procedure

1. Participants get into their farm teams.

2. Your team is to create a marketing checklist for each enterprise and to prepare a blank checklist for a crop you do not currently produce (facilitator to assign from the list below). Use the market plan form below.

3. Each team will go to the market to learn about the conditions of the market for the products on your team farm. You will also be looking for information about the market for the product that they have been assigned.

4. Go to the marketplace as arranged by the facilitator.

5. Conduct your market survey.

6. Return to the training venue.

7. Work on your market plan for your current products plus for the product assigned to your team. Justify how you arrived at your marketing plan.

8. Share your reports with the rest of the participants.

Crop assignments

- pork meat
- citrus
- vegetables
- bananas
- pineapple
- other*

* crop suitable to the area in which the course is being held

Worksheet — Marketing plans format

Enterprise	Marketing strategies					
	When?	How much?	Where?	To whom?	Farmgate price	Likely problems

Preparing for Session 6.4
The farm plan

Learning outcomes
Understanding (i) how to prepare a farm plan,
(ii) the changes in the farm (before and after)
and implications on resource allocation,
(iii) the enterprise combination
and implications that lead to higher farm income,
(iv) the iterative process of planning
and the need to satisfy more than a single objective

Training aids
Exercise 6.4A (The farm plan)
Handout 6.4A (The farm plan)
Handout 6.4B (Worksheet — Gross margin data
for farm plan)

Notes

The farm plan

This session is the melting pot of the entire programme. It is a day-long exercise. It asks the participants to develop a farm plan through a step-by-step process that integrates key skills and tools learned in this programme. It will also contextualize the farm plan in a wider community to reinforce the idea that farmers do not farm in isolation, but operate within a larger economic system, which they impact and which impacts upon them.

Opening statement

Now that we have an understanding of the concepts of farm management and have covered the farm management tools in some detail, we are in a position to bring the learning together and prepare a farm plan. The participants will refer back to the virtual farms they produced earlier with the intention of following a similar procedure to prepare a complete farm plan. Selection of farm enterprises should build on the market planning exercise but it also will be necessary to plan for their household food needs and make sure that sufficient cash and labour is available. We shall review the main parts of Handout 6.4A. Feel free to ask questions.

Exercise 6.4A
The farm plan

Purpose: To develop a total farm plan for food and cash. (Participants should have read Handout 6.4A prior to this exercise.)

Method: _____

Materials: (i) Handout 6.4B (Gross margin data for farm plan), (ii) flip chart paper or newsprint, (iii) thick marking pens, (iv) heavy paper or light cardboard

Allow a full day for this exercise

Note

Steps 1—10 are conducted in farm teams; Step 11 is to be carried out by each individual participant. Ask the participants to refer to their copies of Handout 6.4A for the specific instructions for this exercise. The 11 steps in the handout are summarized below as a brief guide for the facilitator when conducting this segment.

Procedure

Work by farm teams

1. *Analysing resource capital.* Analyse the natural, human, financial, physical and social resources of your farm.

2. *Planning food production.* Determine the food needs for your family, choose the food crops you will grow and determine the hectares required to produce sufficient food for your family.

3. *Choosing your cash crops.* Use gross margins to identify the most profitable cash crops.

4. *Choosing your livestock enterprise.* Select a livestock enterprise and calculate its gross margin.

Exercise 6.4A (continued)

5. *Testing labour availability.* Determine how much labour you require and how much can be supplied by your family and how much needs to be hired.

6. *Checking for sustainability.* Reassess the stresses and potential shocks that affect the sustainability of your family farm.

7. *Preparing a farm map.* Draw a map of your farm including all the enterprises and the flow of resources onto and off from the farm. You will need two versions: A4 to attach to your report; flip chart size to use for your presentation.

8. *Estimating whole farm gross margin.* Calculate the gross margin for your entire farm.

9. *Estimating whole farm net income.* Calculate the net income or profit of your entire farm.

10. *Assessing household cash flow.* Test the effect of your crop choices on your household cash flow.

Work by individual participants

11. *Preparing a written report of your farm.* Present a brief written account of your farm. The report is to include neat copies of all of the products (symbol and number-based) from each of the 10 steps in the exercise. The report should also include a brief (one page) reflection on what insights you gained by participating in this exercise. (Do not write about the content such as gross margins.)

It may take a number of hours to produce the final report

For the facilitator

If you need/want to include crops other than those listed in the handout for use in this exercise, you will need to prepare the relevant tables of input costs, yields and prices, etc.

In addition to the details in the two handouts, you will need to do the following:

1. *Allocate a family to each team. To do this, put the names of each team into a pile. One by one draw each name and write it into the table below. When all the names have been drawn you can copy the list or put it up where all the participants can see it.*

Team	Female child	Female adult	Male child	Male adult	Total
1	3	0	1	2	6
2	0	1	2	3	6
3	1	2	3	0	6
4	2	3	0	1	6
5	3	0	1	2	6
6	3	1	2	3	9
7	0	2	3	0	5
8	1	3	0	1	5
9	2	0	1	2	5

2. *Allocate crop and livestock yields to each team. Each crop in Handout 6.4B has a yield range. See below. You need to allocate a yield to each team. Try not to give all high or low yields to a single team.*

Vegetables: $1 000/tonne *Yield range* *10* *12* *14* *16*

Seed	Fertilizer	Pesticide	Labour	Ploughing	Planting	Harvesting	Transport
400	350	250	1 500	150	150	300	50

For the facilitator (continued)

1 head of cattle (dairy, meat or both)

Meat: $10/kg; Milk: $2/litre			
Feed	**Labour**	**Equipment**	**Medicine**
200	50	150	100

Yield range: 4 6 8 10 litres per day

Yield range: 600 700 800 900 kg at time of sale

3. *Advise the teams of the following household expenses.*

School fees	$10 per year per child
Clothing	$5 per year per person
Medical expenses	$5 per year per person
Food and miscellaneous household purchases	$20 per year per person
Other	$2 per year per person

4. *Special instructions for financial capital assessment in Step 1. To calculate the total income from the community woodlot for the exercise use $120 per household/farm. This amount is used to make sure there is enough to distribute with meaning, but not so easy to detect that it has been calculated on the number of farms. You do not want to influence the community negotiations with a convenient answer.*

This exercise can be done on an individual basis with participants assigned a unique family size or yields and then carrying out all of the steps on their own.

5. *When the assignments are done, ask each team to make a presentation in which they describe their farm (using the large version of the map) and explain their enterprise choices, gross margins and net incomes.*

Encourage discussion about the various plans and decisions made. Encourage the teams to 'critique' the presentations and farm plans.

Space for notes and questions for the facilitator

The farm plan

Objectives

To develop a farm plan that generates the greatest profits within the constraints of factors such as labour, land, access to credit, mechanization (and within the constraints of Exercise 6.4A).

Exercise constraints

During this course you have been learning a number of tools that can be used for analysing and planning a farm. In this session you will now use these tools to plan your own farm as if you were a semi-literate smallholder farmer. You will be provided with enough information to calculate gross margins and food balances, etc.

Factors you will need to take into consideration when planning your farm:

Farm size. Your total farm size is 5 ha

Food. Households must produce food based on a food balance calculation. The family must meet all its calorie requirements from the farm. What is planted should reflect what is common in the area you work as an extension worker (e.g. grain crops or root crops).

Market plan. You have already made a market plan that was based on the crops that can be grown on your farm. When planning your farm, you must take into consideration at least two of these.

The farm plan (continued)

Symbols for mapping. As part of the exercise, you will create a farm map, which will be a combination of a map that represents the physical farm and a map that shows the flow of resources and products onto and off from the farm. You will need to have symbols for each resource, output, process, etc. You may use existing symbols (that you made earlier) and make new ones as needed.

The final farm plan must consist of:

- 1 livestock enterprise
  (very small-scale around the homestead)
- 2 food crops
- 1 cash crop

Please avoid the temptation to do more than this, as it will complicate your calculations.

Steps in the development of a total farm plan

Step 1
Resource capital analysis
The first step in planning your farm
is to assess the resources available on the farm

Human capital (family). Establish the size of your family. This will be assigned to you by the facilitator. This information is needed to calculate your food balance and labour availability. Create symbols to represent family members.

The farm plan (continued)

Natural capital. Your farm is 5 ha in size and is rainfed (there is no irrigation set up on the land). (We realize this may be larger than average in the area you work in, but it is necessary for this exercise.)

The shape, slope, setting, soil type and other physical features of the farm are left for you to decide. When you have decided these details, create a map of your farm as you did in your earlier sessions. You could determine and express this in the form of a transect resource assessment.

Based on your physical description of your farm, establish what crops can be grown on your farm. This should be drawn from your experience in the field.

Note for your farm maps, the community of which you are a part has community woodlot that generates an income. See financial capital below.

Physical capital. In Session 3.2 you did an inventory of the physical capital on your farm. You should look at this information again and make any changes you think are necessary.

Financial capital. In Session 2.2 you did an assessment of the financial capital on your farm. You should look at this information again and make any changes you think are necessary.

The farm plan (continued)

Important note

In addition to the financial capital you calculated above, you have income from the sale of wood from the community woodlot. Your income is not fixed and needs to be negotiated each year with the community. In this exercise, all the farm teams combined represent the community. When you calculate your household cash flow (see Step 10) you will need to know how much income you can expect from the community woodlot. Therefore, at some point in the planning of your farm, someone will need to call a community meeting of all the farm teams. The meeting will not be called or facilitated by the course facilitator. When a meeting is called, the course facilitator will inform the community of the total income from the woodlot for the year. It will be up to the community to determine: (i) In which months the income would be expected. (It is not a steady income), (ii) The basis on which the shared income will be distributed to the community members and when each family will be paid.

Step 2

Food production

Based on your family size, calculate a food requirement to determine how many kilograms of coarse food you will need to produce on farm. Decide which food crop to grow and select the most suitable land. Plant only one food crop. You may plant more area to your food crop than your family requires. Surpluses may be sold.

The farm plan (continued)

For the purposes of this exercise, you will need to choose the food crop from one of the following, depending on your country's experience:

Maize Wheat Rice Millet
Yams Cassava Sorghum

Calculate the amount of land needed to grow your food crop. Subtract this from the 5 ha and this will give you the balance of land available to plant your other crops. Use existing symbols or make new ones as needed.

Note

Most families would plant more than one food crop, but it is not practical for the purposes of this exercise. It makes the calculations too long.

Step 3

Choosing your cash crops

Now you need to decide which crop to plant for cash. You will choose only two crops from among the various crops that can be grown on your farm. To make this decision each member of your farm team must calculate the gross margins for at least one different crop. At least two of these crops must come from your market plan where you discovered new opportunities for cash crops.

Gross margins are to be calculated on a per unit basis, such as per hectare or per acre. Use whichever unit is common in your area. (Note: You may not use the gross margin from Module 4 because that crop won't grow in your area.)

The farm plan (continued)

To make crop choices, you need only annual gross margins. Later in the exercise you will need to extend them to monthly gross margins. Remember, you must do the calculations using symbol-based tools.

The course facilitator should have gross margin information sheets for a variety of crops. Keep careful track of labour requirements for each of the crops.

When you have completed the gross margins, choose the two crops with the highest gross margin to plant on your farm.

Now you need to decide how much of these two crops to plant on the remaining land on your farm. You will want to consider things such as labour requirements, market access. Perhaps the crop with the higher gross margin is also more risky to grow. Do you want to specialize or spread your risk?

Step 4

Choosing your livestock enterprise

Your household supplements its income through a livestock enterprise around the homestead. The livestock do not utilize any of the arable land. Your choices are limited to:

- 1 head of cattle (milk or meat or both)
- 10 chickens (eggs or meat or both)
- 2 goats (milk or meat or both)
- 2 pigs (meat)

Each of these constitutes 1 unit.

For the purpose of this exercise, you can simply decide what you would like to raise. You do not have to use the gross margins to choose the livestock enterprise. Once you have decided, calculate the gross margin for your livestock enterprise. In this case it should be an annual gross margin.

The farm plan (continued)

After finishing the gross margin, make a note of how the livestock is being fed. If it is being fed from crops from your farm, you will have to account for that later in your cash flow.

Do you need to finance special feeds (e.g. for laying hens)? Do you need to finance the purchase of the livestock itself? Do you have the cash to pay for this? Will you have to borrow money? Use your handouts on financing options to help you think about this. Make a note of these decisions so you can map them later.

The course facilitator should have gross margin information sheets for a few livestock options.

Step 5

Testing labour availability

Now that you have decided on the number of hectares for your one food crop and two cash crops and you have chosen your livestock enterprise, you need to do a labour analysis. To do this you will need to use:

- the labour analysis tool;
- the labour requirement information from the gross margin information sheets for your chosen crops and livestock enterprise (including the food crop).

Set up a table to analyse the labour for all your enterprises. Compare this to the labour available in your household. Do you have enough labour to do all the work? If not, how will you solve this? Will you plant different crops? Change livestock enterprises? Hire labour? Migrant? Local? Casual? Permanent? Contract? Organize a work party?

The farm plan (continued)

Do the calculations and make the analysis. Does this affect your choice of crops? Remember to calculate the labour required for the *actual* hectares planted.

Step 6
Sustainability check

As you did in Session 3.4, discuss the sustainability of other factors influencing productivity and profitability. How reliable are your input suppliers and markets? Are there any actions you must take to strengthen linkages against vulnerabilities? Does anything indicate you should change your choice of crops?

Decide finally on your enterprises.

Step 7
Farm map

Now that you have decided on your enterprises, it is time to make a physical plan for your farm. Create symbols for the crops and livestock.

First use just the symbols to build up your map. Be sure to include specific information about markets, sources of inputs, credit, labour, water to the livestock. Be sure to include the community woodlot. In this case your map should reflect 'reality' for your farm. Your markets, input sources, etc. should all be specific.

When you have placed the symbols in all the correct places, link inputs and resources to the farm with appropriate arrows. Remember to use different size/marked arrows to indicate sustainability issues identified in the previous step. Arrows indicate actual links. If you are not using credit from a bank, do not put an arrow from the bank to your farm.

The farm plan (continued)

Step 8

Estimate the whole farm gross margin

You have now finished your physical plan. The next step is to calculate the estimated gross margin for the whole farm. You have gross margins for your two cash crops and for your livestock enterprise. Now you must calculate a gross margin for the food crop. Handout 6.4B has been prepared to help you figure out the gross margins.

You now have gross margins for each of the enterprises. Remember, however, the crop gross margins are all in a unit base such as 1 ha or 1 acre. You need to convert these to match the actual size of land you are going to plant to each crop. This will estimate the gross margin for the real area to be planted.

When you have completed the conversions from unit based gross margins to actual acreage, you should have four matrices that look something like the template in Handout 4.2C. The total estimated gross margin for the whole farm will be the sum of the gross margins for each enterprise. This can be calculated by putting all the gross margin rows together and adding them up as shown in the example format on the next page.

Step 9

Estimate the whole farm net income or profit

The total estimated net income (profit) for the farm is the sum of the whole farm gross margin less the fixed costs for the farm. As a reminder, fixed costs do not apply to a specific enterprise and they do not vary with changes in production. You should draw up a list of the physical assets of the farm and asses their value. Refer to the Handout 4.2A and the section on additional reading to guide you in computing depreciation.

The farm plan (continued)

Estimated whole farm net income

Enterprise	Ha or unit	Gross margin/unit ($)	Gross margin ($)
Sorghum			
Maize			
Groundnuts			
Eggs			
Totals (A)			
		Fixed Costs (B)	
		Net farm income (A-B)	

The farm plan (continued)

Step 10

Household cash flow

Now that you have chosen all of your enterprises, you need to work a cash flow to make sure you can finance your chosen enterprises and to determine if there are any periods of negative cash flow. Based on the results of your cash flow, you may need to reconsider enterprise choices. The cash flow should be calculated using symbol-based tools.

Note

In order to calculate the cash flow, you will have to convert the annual gross margins of your four enterprises to monthly gross margins. Use the examples given in Module 4 to guide you.

Step 11

Written report of your farm

Each team member will write and present a brief written account of their farm. The report is to include neat copies of all of the products (symbol and number-based) from each of the 10 steps in the exercise. The report should also include a brief (one page) reflection on what insights you gained by participating in this exercise. (Do not write about the content, such as gross margins.)

Worksheet — Gross margin data for farm plan

Dollars per ha per season

Crop enterprises

Cassava: $250/tonne			*Yield range:*	*10*	*12*	*14*	*16*
Seed	**Fertilizer**	**Pesticide**	**Labour**	**Ploughing**	**Planting**	**Harvesting**	**Transport**
200	150	150	350	150	150	300	50

Cotton: $500/tonne			*Yield range:*	*10*	*12*	*14*	*16*
Seed	**Fertilizer**	**Pesticide**	**Labour**	**Ploughing**	**Planting**	**Harvesting**	**Transport**
300	350	300	600	150	150	200	50

Maize: $500/tonne			*Yield range:*	*4*	*5*	*6*	*7*
Seed	**Fertilizer**	**Pesticide**	**Labour**	**Ploughing**	**Planting**	**Harvesting**	**Transport**
200	150	100	300	150	150	300	50

Millet: $350/tonne			*Yield range:*	*5*	*7*	*9*	*11*
Seed	**Fertilizer**	**Pesticide**	**Labour**	**Ploughing**	**Planting**	**Harvesting**	**Transport**
200	150	100	300	150	150	150	50

Sorghum: $300/tonne			*Yield range:*	*5*	*7*	*9*	*11*
Seed	**Fertilizer**	**Pesticide**	**Labour**	**Ploughing**	**Planting**	**Harvesting**	**Transport**
100	150	100	200	150	150	100	50

Vegetables: $1000/tonne			*Yield range:*	*10*	*12*	*14*	*16*
Seed	**Fertilizer**	**Pesticide**	**Labour**	**Ploughing**	**Planting**	**Harvesting**	**Transport**
400	350	250	1 500	150	150	300	50

Wheat: $600/tonne			*Yield range:*	*7*	*9*	*11*	*13*
Seed	**Fertilizer**	**Pesticide**	**Labour**	**Ploughing**	**Planting**	**Harvesting**	**Transport**
300	250	100	300	150	150	300	50

Yams: $200/tonne			*Yield range:*	*10*	*12*	*14*	*16*
Seed	**Fertilizer**	**Pesticide**	**Labour**	**Ploughing**	**Planting**	**Harvesting**	**Transport**
150	150	150	250	100	150	100	150

Worksheet — Gross margin data for farm plan (continued)

Livestock enterprises

1 head of cattle (dairy, meat or both)

Meat: $10/kg; Milk: $2/litre

Feed	Labour	Equipment	Medicine
200	50	150	100

Yield range: 4 6 8 10 litres per day

Yield range: 600 700 800 900 kg at time of sale

10 chickens (eggs, meat or both)

Eggs: $0.20/egg; Meat: $2/kg

Feed	Labour	Equipment	Medicine
400	50	150	0

Yield range: 5 6 7 8 eggs per week

Yield range: 2 3 4 5 kg at time of sale

2 goats (milk, meat or both)

Meat: $5/kg; Milk: $1.5/litre

Feed	Labour	Equipment	Medicine
200	50	100	50

Yield range: 5 7 9 11 litres per day

Yield range: 20 25 30 35 kg at time of sale

2 pigs (meat)

Meat: $10/kg

Feed	Labour	Equipment	Medicine
400	50	50	100

Yield range: 150 170 190 200 kg at time of sale

Note: the rate of pay for labour is $100 per person (per hectare) per season

Review of Module 6

At the end of this module participants should have a comprehensive understanding of market planning and the skills necessary to assist farmers as individuals and groups to prepare farm business plans.
It should be understood that planning skills are critical as farming is becoming more market-oriented.

The following outline will guide the facilitator
in a brief review of the activities of this module.

Session 6.1
The planning process

Purpose of this session:
For the participants to understand the need
to follow a systematic approach to farm planning
and that planning is part of an iterative cycle.

Learning outcomes
Understanding (i) the different steps
in the planning process,
(ii) how to apply farm management tools
at different stages of the planning cycle.

Session 6.2
Farm performance analysis

Purpose of this session:
To provide the participants with a methodology
that they can use as extension workers
that allows comparisons to be made
in farm performance and identifies weaknesses
and ways of addressing them through better planning.

Learning outcomes
(i) Understanding the purpose of performance analysis
and its potential value in extension,
(ii) developing the skills
to carry out performance analyses.

Session 6.3
Planning for the market

Purpose of this session:
To get the participants to understand
that farm planning starts with the market
and assessing what the customer wants.

Learning outcomes

Understand that farmers need (i) to plan for the market,
(ii) to have the ability to develop a market strategy/plan,
(iii) to identify opportunities for enterprise diversification.

Session 6.4
The farm plan

Purpose of this session:
To complete the learning cycle by getting
the participants to prepare a farm plan
that draws on the some of the concepts, tools and techniques
taught through the training programme.

Learning outcomes

Understanding (i) how to prepare a farm plan,
(ii) the changes in the farm (before and after)
and implications on resource allocation,
(iii) the enterprise combination and implications
that lead to higher farm income, (iv) the iterative process
of planning and the need to satisfy more than a single objective.

Closing questions

Ask participants if they feel that the
overall purpose of the module has been achieved
and if they have understood the planning process
and improved their skills and competency in
diagnosing the farm performance, planning for the
market and, finally, preparing a farm plan.

Notes

Notes

Notes

Notes

Notes

Notes

Notes

Notes

The following is a list of the AGSF series TRAINING MATERIALS FOR AGRICULTURAL MANAGEMENT, MARKETING AND FINANCE

1. Farm planning and management for trainers of extension workers in the Caribbean, 2004 (CD-ROM, English).
2. Horticultural marketing extension techniques, 2004 (CD-ROM, English).
3. Farm planning and management for trainers of extension workers. Asia, 2006 (Hard copy and CD-ROM, English).
4. Integrating environmental and economic accounting at the farm level, 2005 (CD-ROM, English).
5. Curso de gestión de agronegocios en empresas asociativas rurales en América Latina y el Caribe, 2005 (CD-ROM, Español).
6. Market-oriented farm management for trainers of extension workers. Africa, 2007 (Hard copy and CD-ROM, English).

In preparation

- Farm planning and management for trainers of extension workers. Latin America (CD-ROM, in Spanish).
- Training manuals on farmer business schools. Asia and Africa.

Other work

- FAO Pacific Farm Management and Marketing Series 3, Helping small farmers think about better growing and marketing (Hard copy)*.

* Copies soon to be available from AGSF

For further copies of this publication
and the information on FAO's activities
related to farm management
please contact:

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This publication is also available on the Internet at:
http://www.fao.org/ag/ags/subjects/en/farmMgmt/training.html

Market-oriented farming begins by determining what buyers want, in what form and when they want it. The market dictates what to produce. Production and marketing are closely interrelated and both aspects affect the performance of the farm business. Module 6 outlines what farmers and extension workers need to know about the planning process, farm performance and the market in order to increase profitability.

Market-oriented farm management for trainers of extension workers

AFRICA

Module 7
REVIEW, EVALUATION, EXAMINATION

TRAINING MATERIALS FOR AGRICULTURAL MANAGEMENT, MARKETING AND FINANCE

6

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TRAINING MATERIALS FOR AGRICULTURAL MANAGEMENT, MARKETING AND FINANCE

6

Market-oriented farm management for trainers of extension workers

AFRICA

Module 7
REVIEW, EVALUATION, EXAMINATION

Food and Agriculture Organization of the United Nations
Rome, 2007

ISBN 92-5

REVIEW, EVALUATION, EXAMINATION

In this final module of the training programme it is time to evaluate what has been achieved and to consider ways to implement in practice what has been learned. A number of specially designed test sequences are provided here. Each includes a pre-test review dealing with certain aspects of the programme followed by a test form to be completed by participants or others who may have been involved in the training. These are meant to be flexible in application and can be used in several ways:

- **as a formal in-class review and testing exercise administrated by the facilitator(s), subsequently graded, returned to the participant and followed by a possible class discussion;**
- **as a standard classroom exercise typical of others in this training programme entered into by both the facilitator(s) and the participants. Test forms are then completed by the class as a joint effort with help by the facilitator(s) if required;**
- **as a completely independent exercise by participants alone even after the course is over.**

Changes in perception

A test to see if class perceptions regarding farming, farm management and market-oriented farm management have changed from those first percieved and recorded in Module 1, Session 1.3A.

Changes in perception

To reasses initial views of class members about farming, farm management and market-oriented farm management and to identify what has changed since the beginning of this course

Allow up to 60 minutes to complete both review and test

Procedure

1. Have the participants refer to the impressions they listed at the beginning of this course in Handout 1.3A.

2. Divide the participants into teams of 3—4 and have each team as a group discuss the answers that they listed in that first survey and the changes in their perceptions between then and now.

3. Then, using the worksheet provided in Handout 7A, each participant should (i) identify individually perceptions that have changed, (ii) record how they have changed, (ii) after discussion again with the group, appraise and record the significance of the changes.

4. Ask each team in turn to share its findings (one numbered perception for each group) until all nine perceptions have been covered. Distribute the test form provided in Handout 7A for each person to complete. All notes and reference materials are permitted.

Note

It is difficult to anticipate what participants will say. There will undoubtedly be some change in perceptions. The main issue is to encourage reflection, critical thinking and seeing the dynamic nature of market-oriented farm management.

Changes in perception

In Session 1.3 the following statements related to farming, farm management and market-oriented farm management were asked. Now that this programme has come to a close, read each statement again; think briefly about it and decide whether you "agree" or "disagree" with the statement, or if you "don't know". Circle the appropriate word under each statement. When finished, compare these to your answers from Handout 1.3. Has there been a change? If so, what changed and why? If not, why not? Record your answers in the space provided.

Statement	Agree	Disagree	Don't know
1. The main purpose of having a farm is to produce food for the family			
Change/no change: why?			
2. The purpose of farm management is to optimize production on the farm			
Change/no change: why?			
3. The main purpose of farming is to generate income			
Change/no change: why?			
4. Farming should result in personal satisfaction			
Change/no change: why?			

(continued on next page)

Changes in perception (continued)

Statement	Agree	Disagree	Don't know
5. The purpose of farm management is to maximize profits from the farm			
Change/no change: why?			
6. It should be the goal of every farmer to produce agricultural goods only for the market			
Change/no change: why?			
7. To be profitable, farmers need to keep detailed records of income and expenses			
Change/no change: why?			
8. Market-oriented farm management requires formal training			
Change/no change: why?			
9. Semi-literate farmers can learn about market-oriented farm management			
Change/no change: why?			

Other comments

Reflection, consultation, action

A self-guided reflection by class members on the impact of what they have learned, how this has led to a better understanding of the role of an extension officer, and the formulation of an initial plan to train fellow extension workers and farmers in market-oriented farm management.

Reflection, consultation, action

To reflect on the most important thing
each participant has learned,
how this has influenced the participant,
and plan how to carry the concepts learned
to farmers and fellow extension workers

Allow 60 to 90 minutes
to complete both test and review

Procedure

1. Distribute the test form provided in Handout 7B for each person to complete. Participants are free to work in groups of 3—4, but are are not required to do so.

2. Ask each participant in turn to share the results of their reflections reviewing one section at a time (there are five sections). Encourage discussion among the participants.

3. At the end of the session the facilitator should collect all test forms. These should be copied for ideas to be used in future programme formulation. Then return the tests to the respective participants so they can add them to their records.

Note

- It is difficult to anticipate what participants will say. What is important is that participants articulate their learning. All learning should be encouraged and celebrated.
- Participants will find value in translating what they have learned into action.
- Detailed planning will help them commit to the next step in the training programme — that of sharing what they have learned with farmers and fellow extension workers.

Reflection, consultation, action

1. What is the most important thing you have learned in this course?

Content

Process

Other

Reflection, consultation, action (continued)

2. How has this influenced your understanding of your work as a/an _____?
(your job title)

Content

Process

Other

Reflection, consultation, action (continued)

3. Which part of this course do you want to implement when you return to work? Why?

4. Implementation plan

To develop an implementation plan
you will need to think about the following:
• Goal • Action • Measuring • Steps •

• Goal •
What will you achieve by implementing your plan?
What is the result you are after?

Reflection, consultation, action (continued)

• Action •
What are you going to do?
What is it you are going to implement?

• Measuring •
How will you know you have achieved your goal?

• Steps •
What steps do you have to take to implement your plan?
What resources do you need? Who might be your partners in this plan? When can you complete each step?

(for additional space for steps see table opposite)

Reflection, consultation, action (continued)

Steps/activities	Target date	Resources/partners	Support I will need*	Budget
1				
2				
3				

*e.g. authorization from superior, additional training, support from technical office

Reflection, consultation, action (continued)

Steps/activities	Target date	Resources/partners	Support I will need*	Budget
4				
5				
6				

*e.g. authorization from superior, additional training, support from technical office

Reflection, consultation, action (continued)

Steps/activities	Target date	Resources/partners	Support I will need*	Budget
7				
8				
9				

*e.g. authorization from superior, additional training, support from technical office

Reflection, consultation, action (continued)

5. Reflection

I will review and reflect on the outcome of my plan on the following dates:

_____ (date)	Notes
_____ (date)	Notes
_____ (date)	Notes

If I were facilitator

Participants are asked to put themselves in the position of the facilitator and to comment on what *they* might have done. This exercise will also help them when later they are planning their own programmes.

If I were facilitator

To encourage participants to begin to plan how they would present this training programme to others

Allow 40 to 60 minutes to complete both test and review

Procedure

1. Distribute the test form provided in Handout 7C to each person. Divide the participants into groups of 3—4. Ask each group to discuss the points listed one by one.

2. During this exchange, participants can begin to record their answers on the test form. Participants do not have to agree. The purpose of the group discussion is to encourage consultation and the sharing of ideas to assist them in formulating their own answers.

3. Now invite individuals to share several of their thoughts with the entire class. This should not be a requirement. Some members may be reluctant to share their thoughts openly.

Note

It is important that the facilitators refrain from defending themselves if criticized. Be very open to learning from the participants about trainer performance.

4. At the end of the session the facilitator should collect all test forms. These can be used to improve the next presentation of the materials. Copy them and return them to the participants.

If I were facilitator

A number of days have been spent in this course. You have a unique perspective to give on the training. What would you have done differently? Take sufficient time to provide complete answers to the questions below.

What I would do if I were the facilitator

Style of presentation

Relationship with participants

Use of visuals

If I were facilitator (continued)

Use of games and demonstrations

Providing feedback

Management of venue, accommodation, meals

Other

Not all evaluations need to be based on serious aspects of the course. One of the richest forms of reflection is storytelling. It is suggested that stories by the class be introduced at this point as a break between sessions of review, evaluation and testing.

An interval
Farm team humour

Here farm teams are given a chance to tell a story about this training course. These sessions are meant to be humorous but the focus should be on the learning experience with an effort to clarify what has been learned and put it into perspective.

The developers of this course and the facilitators are committed to the continual improvement of this training programme. To do this, they need honest and constructive feedback from all those who have participated.

Training evaluation

Individual participants are given a chance to evaluate and to comment freely regarding all aspects of the course and then record the results for future use.

(Arrange for someone who is not directly connected to the facilitator to manage the training evaluation exercise.)

Training evaluation

To review the entire course
and record in detail the
feedback of the participants

Allow 60 minutes
to complete both test and review

Procedure

1. Distribute the test form provided in Handout 7D. Ask each person to complete the questionnaire.

2. At the end of the session the facilitator should collect all test forms. These should be copied for ideas to be used in future programme formulation. Then return the tests to the respective participants so they can add them to their records.

Note

Evaluations are meant to be kept confidential and will not be discussed. This is to ensure that participants will be more apt to answer completely and honestly all questions.

Training evaluation

In this questionnaire you will be asked your opinion on various aspects of the training course for purposes of evaluation (you do not need to sign your name). In each question you are presented with a statement to which you should respond on the answer sheet. Your possible answers are:

A	B	C	D	E
Strongly disagree	Disagree	Neutral response	Agree	Strongly agree

General

☐ 1. I understood from the course outlines what was expected of me.

☐ 2. I think that this course was well organized.

☐ 3. I found that I could use things that I learned here in my other work.

☐ 4. I felt enthusiastic about studying market-oriented farm management.

☐ 5. I have been given sufficient guidance in order to help me cope with this course.

☐ 6. I would recommend this course to other extension officers.

Other comments

Training evaluation (continued)

The facilitator(s)

- ☐ 7. Facilitator(s) presentations were clear.
- ☐ 8. Facilitator(s) presentations were well delivered.
- ☐ 9. I felt comfortable enough to participate in the class discussions.
- ☐ 10. I would be able to apply concepts I learned in these presentations to other aspects of my work.
- ☐ 11. We covered relevant areas in these sessions.
- ☐ 12. The facilitator(s) made good use of handouts and other course materials.
- ☐ 13. Facilitator/class relationships promoted a productive learning environment.
- ☐ 14. The facilitator(s) inspired enthusiasm for this course.

Other comments

Training evaluation (continued)

Practicals/exercises

☐ 15. I found that we covered relevant areas in practicals/exercises.

☐ 16. I found it beneficial to work in a small group in the practicals/exercises.

☐ 17. I found that the feedback on the practical work was useful.

Other comments

Training evaluation (continued)

Course materials and skills

☐ 18. I think that I have gained a clear understanding of the concepts and principles of this subject.

☐ 19. I found that working on a 'paper farm', creating symbols, etc. was a useful way to learn the content of the course.

Other comments

Training evaluation (continued)

Intended learning outcomes

- ☐ 20. I now have a meaningful understanding of the framework of market-oriented farm management in Africa and farm economic systems.
- ☐ 21. I now have some meaningful skills in communicating basic economic concepts, such as income, cost, profit and margins, in number-based formats.
- ☐ 22. I now have some meaningful skills in communicating basic economic concepts, such as income, cost, profit and margins, in non-number-based (bean-based) formats.
- ☐ 23. I now have the understandings and skills I need to be a more effective extension worker.

Other comments

Training evaluation (continued)

Learning modes

☐ 24. I feel that being given more personal responsibility for learning on my own or with a study group (farm team) will help me with my extension work.

☐ 25. I found the participatory exercises a useful way to learn.

☐ 26. I found the participatory exercises a useful tool for carrying out my extension work.

What do you perceive are the strengths of this training?

If you could make changes to this course, what would they be?

For the last session we have developed
an examination to be taken by the entire class.
When completed it will be marked
so that particpants will have a clear idea
of how much and how well they have learned.

Training examination

This course has been based on the study
of the concepts and tools required,
and the practice of skills relevant
for market-oriented farm management.
Now participants will test their ability
to apply the principles that they have covered.

Training examination

To test the understanding of theory
and to test the skills learned

Allow 90 minutes
to complete the final examination

Procedure

1. Arrange seating for writing the examination.

2. Distribute the examination form provided in Handout 7E to each person. This is an open-book test (notes and classroom materials are permitted).

3. Each person taking part completes the examination. Some monitoring by the facilitator to clarify participant queries may be required.

4. Upon completion the facilitator makes an arrangement for marking each examination paper, possibly photocopying some for the record and then returning them to individual participants.

Training examination

NAME OF PARTICIPANT

_____

DATE OF COURSE

_____

Question	1	2	3	4	Total
Possible points	15	25	30	30	**100**
Score					

This exercise tests your ability to apply some of the concepts learned in this programme. It should take about 90 minutes to complete. Answer all the questions.

Training examination (continued)

Question 1

(15 points)

Mrs Shiluli owns a 3 ha farm. She grows 1 ha of wheat, 1 ha of maize and 1 ha of millet. She lives with her four children plus her brother and his two children. Each year she tries to grow all the coarse grains needed by her household (i.e. 240 kg per person). She has worked out the gross margins for her three crops for last season. These are given on pp. 37, 38 and 39. Based on all this information, complete the following.

Participant work space

Training examination (continued)

Give answers to question 1

(1 point each)

a. How much food must Mrs Shiluli grow each year for her household?

b. How much food is Mrs Shiluli's household consuming each year?

c. How much surplus food could Mrs Shiluli add to the crops that she sells each season?

d. Which is Mrs Shiluli's most profitable crop?

e. What was the whole farm gross income for Mrs Shiluli's farm?

f. What was the whole farm gross margin for Mrs Shiluli's farm?

g. What price did Mrs Shiluli get for her millet last year ($/tonne)?

h. What price did Mrs Shiluli get for her maize last year ($/tonne)?

i. What price did Mrs Shiluli pay for planting her millet last year ($/ha)?

j. How much millet did Mrs Shiluli harvest last year?

k. How much maize did Mrs Shiluli sell last year?

l. How much wheat did Mrs Shiluli's household consume last year?

m. What was Mrs Shiluli's total cash income from crop sales last year?

n. What was Mrs Shiluli's net cash income from crop sales last year?

o. Why does Mrs Shiluli's net cash income not cover her variable costs?

Training examination (continued)

Question 2

(25 points)

Let us say that Mrs Shiluli's household agreed to eat only 2 000 kg from two crops (in equal amounts) and sell all of the third. She gets the same yields/ha as given in the gross margins. Refer to the gross margins for maize, millet and wheat on the next three pages.

Give answers to question 2

(5 points each)

a. Which crop would bring the greatest profit; which crop would she sell and not eat?

b. How many hectares of millet would she grow?

c. How many hectares of maize would she grow?

d. How many hectares of wheat would she grow?

Participants that answer all four questions correctly, receive an additional 5 points bounus.

Participant work space

Training examination (continued)

Mrs Shiluli's
gross margin for maize

Income	Unit value	Quantity	Value ($)
Sales	400	4	1 600
Consumed	400	1	400
		Total	2 000
Variable costs			
Seed			200
Fertilizer			100
Pesticide			150
Hired labour			200
Family labour			250
Transport			100
Ploughing			200
Planting			250
Harvesting			200
		Total variable costs	1 650
		Gross margin	**350**

Training examination (continued)

Mrs Shiluli's
gross margin for millet

Income	Unit value	Quantity	Value ($)
Sales	300	1	300
Consumed	300	2	600
		Total	900

Variable costs

Seed			100
Fertilizer			100
Pesticide			50
Hired labour			100
Family labour			150
Transport			50
Ploughing			50
Planting			50
Harvesting			100
		Total variable costs	750
		Gross margin	150

Training examination (continued)

Mrs Shiluli's
gross margin for wheat

Income	Unit value	Quantity	Value ($)
Sales	750	2	1 500
Consumed	750	2	1 500
		Total	3 000

Variable costs

Seed			300
Fertilizer			250
Pesticide			150
Hired labour			200
Family labour			250
Transport			100
Ploughing			200
Planting			250
Harvesting			200
		Total variable costs	1 900
		Gross margin	1 100

Training examination (continued)

Question 3

(points 30)

Define the following and give two examples of each from a small-scale farm.

Give answers to question 3

(2 points each)

a. Natural capital

Definition
Example
Example

b. Financial capital

Definition
Example
Example

Training examination (continued)

c. Physical capital

Definition
Example
Example

d. Human capital

Definition
Example
Example

e. Social capital

Definition
Example
Example

Training examination (continued)

Case study — read and then complete Question 4.

In western Uganda there is a village about 15 km outside Kasese — a regional centre. Twenty families live in the village, which is about 5 km from the tar road to Kasese. Each family has a piece of land around their homestead. Each has about 1 ha of land. Ten families grow maize. All of the families grow plantain (starch banana). Five of the families grow vegetables because they are the only ones with direct access to the stream that runs near the village. For the last two years maize yields have been lower than normal — no one seems to know why. All efforts to get the extension officer to help have failed. One youth who studied at the agricultural college thinks it may have to do with maize seed the farmers keep for planting.

An association was formed to process the plantain leaves into a paper-like product, which are then painted or embroidered and sold to a craft marketeer in Kasese.

The community shares a large grazing area for livestock. It has never been measured, but is about half the size as the village itself. It is located along the stream. All of the families eat maize and vegetables. All of the maize crop is consumed within the village. About half the plantain and vegetables are sold in Kasese. They also eat fish from the stream, but in the dry season there are few fish because the water is low.

Most families own a donkey and cart, and so they take turns carrying the vegetables and plantain to market in Kasese. Other foods, such as chicken, eggs, milk, are generally produced by various families and traded in kind at the local village market. Other goods, such as clothing, soap, dry goods, beans and small household items, are sold at the local shop, which also serves as the post office. The shop also has the only telephone in the village. A mobile clinic comes to the village once a week. There is a two-class school for the children. Older scholars travel to Kasese. Either they ride a bicycle or stop the bus along the tar road.

The roads inside the village are dirt roads and are maintained by a work party organized among the youth in the village by the local authority. The road from the village to the tar road is in good condition, except in the rainy season when is gets many potholes.

About half the households have one person who travels daily to work in Kasese.

Training examination (continued)

Question 4

(points 30)

Identify and assess the various kinds of capital in the village.

Give answers to question 4

(2 points each)

Capital	Link to social capital	Sustainability (e.g. limiting factors)
Natural		
Physical		

Training examination (continued)

Capital	Link to social capital	Sustainability (e.g. limiting factors)
Financial		
Human		
Social		

Answer guide* — Training examination

Question	1	2	3	4	Total
Possible points	15	25	30	30	**100**
Score					

* Distribute to participants only after completion of the classroom examination or if participants are to administer the examination by themselves.

Answer guide (continued)

Question 1

(15 points)

a. How much food must Mrs Shiluli grow each year for her household?	8 x 240 = **1 920 kg**
b. How much food is Mrs Shiluli's household consuming each year?	2 + 1 + 2 = 5 t = **5 000 kg**
c. How much surplus food could Mrs Shiluli add to the crops that she sells each season?	5 000 - 1 920 = **3 080 kg**
d. Which is Mrs Shiluli's most profitable crop?	**Wheat**
e. What was the whole farm gross income for Mrs Shiluli's farm?	900 + 2 000 + 3 000 = **$5 900**
f. What was the whole farm gross margin for Mrs Shiluli's farm?	150 + 350 + 1 100 = **$1 600**
g. What price did Mrs Shiluli get for her millet last year ($/tonne)?	**$300/tonne**
h. What price did Mrs Shiluli get for her maize last year ($/tonne)?	**$400/tonne**
i. What price did Mrs Shiluli pay for planting her millet last year ($/ha)?	**$50/ha**
j. How much millet did Mrs Shiluli harvest last year?	**3 tonnes** (3 000 kg)
k. How much maize did Mrs Shiluli sell last year?	**4 tonnes** (4 000 kg)

Answer guide (continued)

l. How much wheat did Mrs Shiluli's household consume last year?	**2 tonnes** (2 000 kg)
m. What was Mrs Shiluli's total cash income from crop sales last year?	300 + 1 600 + 1 500 = **$3 400**
n. What was Mrs Shiluli's net cash income from crop sales last year?	3 400 - 1 900 - 750 - 1 650 = **-$900**
o. Why does Mrs Shiluli's net cash income not cover her variable costs?	**The family consumes too much of the crops; Mrs Shiluli does not sell enough of her crops**

Question 2

(25 points)

a. Which crop would bring the greatest profit; which crop would she sell (and not eat)?	**Wheat**
b. How many hectares of millet would she grow?	1 ha = 3 000 kg so 3 000/l = 1 000 X **X = 1/3 or 0.33 or 0.35 ha**
c. How many hectares of maize would she grow?	1 ha = 5 000 kg so 5 000/l = 1 000 X **X = 1/5 or 0.2 ha**
d. How many hectares of wheat would she grow?	3 ha - 0.33 ha (millet) - 0.2 ha (maize) = **2.2 ha or 2.47 or 2.5 ha**

Answer guide (continued)

Question 3

(points 30)

a. Natural capital

Definition	Natural capital are the resources that occur naturally or that are not created by man.
Example	Land, plants (trees, flowers, herbs, shrubs, etc.).
Example	Water, wildlife, soil.

b. Financial capital

Definition	Financial capital includes cash, credit, loans or income that farmers and their households use to achieve their farm management and livelihoods objectives.
Example	Cash, credit, loans.
Example	Income, equity.

c. Physical capital

Definition	Physical capital consists of the producer goods and the basic infrastructure goods needed to support the farm and livelihoods.
Example	Seed, fertilizer, equipment, livestock, farm fences, wells, pumps and irrigation equipment.
Example	Roads, telecommunications, electricity, access to a clean water supply and sanitation, secure shelter. Infrastructure goods perhaps unique to farming include irrigation canals and water to farm edge, government storage facilities, railway sidings.

Answer guide (continued)

d. Human capital

Definition	Human capital represents the skills, knowledge, ability to labour and good health that, together, enable persons to pursue a livelihood to fulfil their personal objectives.
Example	Knowledge and/or skills in: farming, production, marketing, management and planning.
Example	Labour on the farm.

e. Social capital

Definition	Social capital is the available social resources upon which people draw in pursuit of their livelihood objectives. It consists of informal social networks and formal organizations used by individuals, households and communities to get things done — whether it be farming, business or provision of basic needs.
Example	Shared labour (human assets): labour contracts, work parties, or shared labour. Shared equipment (physical assets), financial assets (loan/savings schemes).
Example	Common access to natural assets: rivers, lakes, wildlife, indigenous crops and common grazing land. Collective structures of group organization, cooperatives, societies or farmers associations.

Answer guide (continued)

Question 4

(points 30)

Capital	Link to social capital	Sustainability (e.g. limiting factors)
Natural 1. 10 ha of farmlands 2. Common grazing land 3. Fish in stream 4. Access to stream	 1. Common property 2. Common property 3. Common property	 1. Few in dry season 2. Low in dry season
Physical 1. Road access to regional centre (Kasese) 2. Village roads 3. Maize 4. Plantain 5. Chicken, eggs, milk 6. Two-class school 7. Bicycle(s) 8. Donkey carts	 1. Maintained by work party organized among the youth in the village by the local authority 2. Share for marketing	1. Dirt section potholed in rainy season 2. Maize yields down 3. No high school; children must ride/walk long distance to bus to Kasese school
Financial 1. Income from jobs in Kasese 2. Income from vegetables and plantain sold in Kasese 3. Local village market 4. Local shop 5. Supply of clothing, soap, dry goods, beans and small household 6. Telephone	 1. Trading in kind	

Answer guide (continued)

Capital	Link to social capital	Sustainability (e.g. limiting factors)
Human 1. Farming skills 2. Youth with agric training 3. Organized local authority 4. Marketing organizing skills	 1. Group management	 1. Limited knowledge (don't know why maize yields are down)
Social 1. Common grazing land 2. Post office 3. Mobile clinic 4. Work party organized among the youth in the village by the local authority to maintain roads 5. Access to bus transport along tar road 6. Organized marketing	 1. Common property 2. Mutual assistance 3. Informal groups	 1. Only once a week

Course summation and closing ceremony

Notes

Notes

Notes

Notes

Notes

Notes

The following is a list of the AGSF series TRAINING MATERIALS FOR AGRICULTURAL MANAGEMENT, MARKETING AND FINANCE

1. Farm planning and management for trainers of extension workers in the Caribbean, 2004 (CD-ROM, English).
2. Horticultural marketing extension techniques, 2004 (CD-ROM, English).
3. Farm planning and management for trainers of extension workers. Asia, 2006 (Hard copy and CD-ROM, English).
4. Integrating environmental and economic accounting at the farm level, 2005 (CD-ROM, English).
5. Curso de gestión de agronegocios en empresas asociativas rurales en América Latina y el Caribe, 2005 (CD-ROM, Español).
6. Market-oriented farm management for trainers of extension workers. Africa, 2007 (Hard copy and CD-ROM, English).

In preparation

- Farm planning and management for trainers of extension workers. Latin America (CD-ROM, in Spanish).
- Training manuals on farmer business schools. Asia and Africa.

Other work

- FAO Pacific Farm Management and Marketing Series 3, Helping small farmers think about better growing and marketing (Hard copy)*.

* Copies soon to be available from AGSF

For further copies of this publication
and the information on FAO's activities
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This publication is also available on the Internet at:
http://www.fao.org/ag/ags/subjects/en/farmMgmt/training.html

Market–oriented farm management training covers many aspects that have to be integrated into extension. As such a review and examination of what market-oriented farm management is all about is required. Module 7 reviews what has been learned during the training programme and how extension workers intend to apply the concepts and tools of farm management to their day-to-day work.

Market-oriented farm management for trainers of extension workers in Africa

Overview

Context

Africa has many smallholder farmers who for years have farmed primarily for household food consumption with some surplus sold to the market.

Farming forms an important part of livelihoods strategy, but has not been approached as a business.

Farming has not been approached as a profit-making undertaking.

Context

Globalizing markets present challenges and opportunities for small-scale farmers.

Africa is moving more and more to a cash economy; increased demand for food, fibre and fuel in cities.

Smallholder farmers need to consider ways and means of exploiting opportunities in markets.

Context

Important to gain understanding, skills and competence in farm management practices that aim at increasing incomes for farmers by selling in the market.

Farm management has often remained neglected in agricultural extension, in both the training of practitioners and in the job descriptions of extension workers.

Extension in the past has focused largely on issues of production and productivity, limiting itself to the transfer of technologies.

Context

The singular focus on production and technologies is not sufficient to meet the changes occurring at all levels of farming locally, nationally, regionally, internationally.

As smallholder and family farms become more and more integrated in the market economy, they have moved to more intensified ways of production, using 'modern' inputs and machinery, thereby increasing their productivity and total production.

Context

Farmers are increasingly diversifying their activities in relation to market opportunities.

Diversification means introducing new crops (like livestock) or new activities (like post-harvest processing and storage).

There are changes and advances occurring everywhere and on every front.

Inputs, equipment, technologies, social and labour structures and market opportunities are all changing and these are impacting on the livelihoods of smallholder farmers.

Context

For many farmers this situation is relatively new.

Farmers now have to manage combinations of land, labour and other resources in a significantly different manner than in the past.

Farmers are confronted with problems they did not know before, such as variations in costs of fertilizers and other inputs.

Context

Farmers face difficulties in selling their produce at a good price.

They experience strong fluctuations in market prices and demands too extreme to meet the specific quality requirements needed for their products.

In short, they are confronted with farm management problems for which their past experience is of little support.

Context

Cannot speak about farmers, their farms and farm management without understanding the broader setting of the systems in which they find themselves.

Each farm operates in a unique system. While most farm systems have a number of aspects in common, each farm is unique.

Context

While the diversity of farming systems is enormous, according to different climates, ecological zones, socio-economic and socio-political situations, what is of central importance is the understanding that principles of market-oriented farming can be applied to most farming systems.

What is market–oriented farm management?

Market-oriented farm management is a term used to capture a body of concepts and skills aimed at supporting farmers who have begun to adjust (orient) their farming activities to the opportunities and demands of the market.

Farm management is all about making decisions on the farm.

What is market-oriented farm management?

Market-oriented farm management is all about making decisions on the farm that enable farmers to farm for profit, expanding their potential. Focuses attention on efficient production of farm products for profitable sale.

Effective market-oriented farm management should help farmers and their families sustainability and continuously increase their wealth over time and allow them to have more choices in life.

Aim of the training programme

Farmers need to learn new skills.

But what are these skills and to what kind of situations can they be applied?

This is what this training programme is all about: understanding some of the management challenges facing market-oriented farmers and mastering the tools which can be used to tackle them.

The first step is for you to understand farm management and learn how to use tools which can be applied by the farmers with whom you work.

Aim of the training programme

In this training programme you will learn about and practice the application of basic concepts and tools of market-oriented farm management to situations relevant to your own experience.

The principles and tools presented in this training may at first seem somewhat involved and complex; as the course progresses you will see that it is not about numbers and accuracy, but about understanding and awareness.

Aim of the training programme

The primary outcome will be knowledge, understanding and skills which will better equip you to assist farmers particularly as they become more market-oriented.

The aim is to contribute to building capacity by improving your skills as extension personnel and through you, the farmers with whom you work.

Note 1

It is not the intention of this training course to get you to change farmers into market-oriented farmers.

The aim is more to help farmers understand why they make the choices they make and how to improve their decision-making skills.

Note 2

It is up to you to apply the concepts and tools learned in this training to the unique settings of each of the farmers and groups of farmers to whom you give management advice.

You will also want to acquire a general understanding of how farmers and farming systems are linked to the global environment in which these are functioning.

Note 3

The degree to which farmers themselves are an integral part of the governance and delivery of extension services will largely determine how successful and effective extension services can be.

Success rests in partnerships with farmers; incorporating farmer-to-farmer approaches, working informal groups of farmers and working with formal farmers' organizations , at village, district and national level.

The learning principle

Experiental learning.

The general format is a combination of individual readings, group review and in class exercises.

Exercises will be highly interactive.

Creative learning, training and presentations kills

The learning principle

The programme is guided by a facilitator, but all need to actively participate; interaction, critique, evaluation.

You are responsible for your own learning.

It is essentially a process of discovery through reading, discussion, practice and reflection

Training programme overview

Module 1: Getting started
Module 2: Understanding the farm setting
Module 3: Farm management decision-making
Module 4: Farm management tools
Module 5: Participatory approaches
Module 6: Planning
Module 7: Review, evaluation, examination

Training programme duration

The training programme runs for about 14 days.

It can be lengthened or shorted, but 10 days is the minimum.

Module 1
GETTING STARTED

Session 1.1 Getting to know one another
Session 1.2 Building a shared vision
Session 1.3 Farming and market-oriented farm management
Session 1.4 Possible roles of extension workers

Introduction

The purpose of the programme is to train you, via interactive learning, to help and support smallholder farmers who are beginning to sell or are already selling produce.

The aim is to increase the capability of farmers to manage their farm more effectively.

This module is intended to set the learning foundation for the duration of this programme.

Session 1.1

Getting to know one another

Welcome !

Getting to know one another

The purpose of this session is to prepare you to work and learn together, (group creation, unity and trust) and put you at ease with one another.

It will also help build participatory skills in preparation for shared learning experiences.

Session 1.2
Building a shared vision

Learning outcomes:

Establishing ground rules for the training

Identify expectations and concerns about the programme

Develop a common understanding about the process and outcome of the programme

Develop skills: interviewing, presentation, question formulation

Building a shared vision

The purpose of this session is to set ground rules, identify expectations and concerns, and develop a common understanding about the process and outcomes of the programme.

The ' programme guidelines ' and exercise will help create unity of vision among you and outline the basic conceptual framework to be used throughout.

Programme guideline

1. You are 'collaborators' in this training programme; you all work together helping one another learn. The facilitator guides the learning process, but all of us, including the facilitator, will share the learning experience.

   You are responsible for your own learning and are expected to share your experiences to enhance the learning opportunities.

Programme guideline

2. To participate in this programme no formal training and / or background in farm management is required.

Programme guideline

3. The programme is designed to better equip you in your efforts to help farmers improve the profitability of their farms. The focus is market-orientated farm management.

   Farmers need to understand how to improve farm management, take informed decisions on producing food and generating income, become less vulnerable and more sustainable.

The conceptual framework

1. Farm management can be defined as planning and implementing activities on a farm for the purpose of sustainably supporting a farmer.

   Market-oriented farm management focuses attention on efficient production of farm goods for profitable sale off farm.

The conceptual framework

2. The framework that will run throughout the programme is a simplified model of the basic elements to be explored in generating income and profits on a farm.

INPUTS ⟶ THE FARM & PRODUCTS ⟶ MARKET

The conceptual framework

3. Inputs are defined as those things, like seeds, fertilizers, knowledge, skills, etc, which are necessary for production on the farm.

4. The farm is defined as the place where crops and animals are raised for the purpose of producing certain goods including food and fiber products.

5. The market is the place where farm products are sold and / or consumed.

The learning approach

Learning means gaining understanding and insight about concepts, principles and building practical skills.

1. This programme uses experiential and participatory learning; you will learn by experiencing and doing things together.

2. The learning will take place mostly in interactive groups.These methods are used to ensure you acquire understanding, insight and skills needed to assist farmers.

The learning approach

3. Each session of the programme has specific learning outcomes for knowledge, understanding and/or skill. This enables you to track progress in learning throughout the programme.

   Insight will come through personal and group reflection on both content and practice.

The learning approach

4. Each day you will receive some instruction, will participate in practical classroom exercises, group discussions and individual work.

   Above all you will be given the opportunity to practise the tools you learn.

The learning approach

5. Tools are basically instruments to enable you to analyse the various aspects of farm management. The programme will help you understand tools and how and when to use them.

6. Some of the concepts will be new to you, hence one of the first things you need to do is to build your own glossary of terms and concepts.

The learning approach

7. Further throughout the programme make notes about how you can apply what you are learning. At the end of the programme you will be asked to develop a plan for applying what you have learned and practiced.

8. As you go through the programme, you are encouraged to participate as much as possible.

The learning approach

9. Tools can be number–based or symbol based. Using these visual expressions, you can help farmers learn.

10. With symbol-based tools you can also work with farmers who have difficulty with literacy and numeracy.

Learning outcomes

1. Understand the value and place of market-oriented farm management in an agricultural extension programme.

2. Understand the fundamentals of (i) how profits are made on the farm, (ii) the input-production-marketing relationships, (iii) the importance of these relationships to farm profitability.

3. Acquire specific skills to (i) analyse farming operations and propose plans, (ii) develop a basic whole-farm plan, (iii) develop and use a whole-farm cash flow.

Learning outcomes

4. Understand the value of using symbol-based tools and working with groups of farmers.

5. Acquire skills to apply a range of participatory tools to help farmers implement market-oriented farm management on their own farms.

6. Understand the importance of sustaining natural and other resources which are linked to the farm.

Session 1.3

Farming and market-oriented farm management

Learning outcomes:

A shared understating of the issues.

Understand one another's perceptions about farming and market-oriented farm management.

An appreciation of the diversities and similarities of thought in the group.

Farming and market-oriented farm management

The objective of this session is to help you develop an understanding of one another's perceptions and beliefs about farm management.

We shall examine our shared views to discover diversities and similarities of thought in the group.

If we learn to appreciate the diversities and similarities in ourselves we will be more effective in our work in support of farmers.

Session 1.4
Possible roles of extension workers

Learning outcomes:

A shared understanding of the roles of extension workers, their relationships with farmers and various role players.

Understand the generation and dissemination of information.

Understand extension methodologies.

Self-awareness of one's knowledge and preferences relevant to extension in market–oriented farm management.

Possible roles of extension workers

The objective of this session is to broaden understanding of the possible roles you can have and methods of agricultural extension to use when engaging with farmers, particularly in reference to market-oriented farm management.

A range of methodologies will be explored and how they can be used. This will provide some insight into the organizational environment in which you operate.

Module 1 : Review

- Do you believe that the overall purpose of the module has been achieved ?
- Group creation, cohesion and trust
- Building a shared vision about the programme.
- A shared understanding of some of the issues and of one another's perceptions about farming and market-orientated farm management
- Possible roles of the extension worker

Module 2:
UNDERSTANDING THE FARM SETTING

Session 2.1 The farm and its enterprises
Session 2.2 The farm and its resources-
natural, human, physical, financial
Session 2.3 Understanding social capital
Session 2.4 Input and markets; where profits are made

Introduction

Farm management can be seen from two perspectives;

(i) the farm, the farmer and the input–output relationships of farming,
(ii) the resources used by the farmer; natural, human, physical, financial and social.

Resources affect the decisions made and by studying them we will begin to define the complex decision-making boundaries of the farm.

Introduction

Most of you are trained in technical (production) decision-making, here the overall system will be covered.

This includes many complex elements both within and outside the farm boundaries and we will also learn that even small farms are highly complex.

You will develop virtual farms to visually plot enterprises, the decision-making boundaries and the factors that impact them.

Session 2.1

The farm and its enterprises

Learning outcomes:

Understand the farm and its physical boundaries

Understand farm enterprises

Understand the connection between cash and food, farm and household

Understand the whole system in which the farm operates

The farm and its enterprises

In this session you will learn the basic concepts needed for the study of market-oriented farm management ;the farm as a production unit with various enterprises.

The farm will also be seen in terms of its function as the source of household food and income.

The farm and its enterprises

The essential features of a farm are;

(i) the productive resource base (usually land),
(ii) farm inputs and outputs,
(iii) the farmer as decision-maker and manager.

To apply farm management principles and tools the farmer must establish the boundaries of the farm.

The first type of boundary is the physical boundary.

The farm and its enterprises

A farm can be defined as essentially a portion of land on which a particular household undertakes agricultural activities as part of its livelihood.

The land or any part of the land may be privately owned, hired from another owner, or used as part of a common property arrangement.

The farm and its enterprises

The agricultural activities on land may include cultivating crops, tending livestock, managing fruit trees, exploiting forestry resources or a combination of these.

In terms of farm management each activity is called an enterprise.

A farm often consists of more than one enterprise, although there may be one main enterprise.

The farm and its enterprises

Farms vary in size from smallholdings of less than a hectare involved in subsistence production to large plantations covering thousands of hectares.

In this training programme the focus is on small- to medium-size family farms that are partially or fully integrated into the market.

The farm and its enterprises

In Africa, farms are generally interwoven within the (extended) family structures of which the farms are a part.

Within the same household different farms can be found, constituting more or less independent production units.

The common feature of the farm is its 'unity of management'.

The farm and its enterprises

Farming may also involve social/community factors.

A farm, apart from land, may also include structures erected on the land.

The farm and its enterprises

Generally a farm is made up of several enterprises.

Each enterprise requires inputs and produces a specific output. This is called an input-output relationship.

Inputs are things put into the production process such as land, labour, implements, seed, mechanization (tractors) fertilizer, pesticides.

Outputs are the things that are produced like harvested crops, milk, meat, eggs.

The farm and its enterprises

In many cases, the enterprises on a farm are interlinked; some of the output of one enterprise is used as an input on another.

Farm management is the effective and efficient organization of the input-output relationship and process, with an objective of earning profits from farming.

Cash and food crops

Many farmers use their farms to provide food for their households.

Some farmers use their farms to generate cash income for their household.

In some cases, farmers will use their farms to provide food for their homes and for cash.

Cash and food crops

Over the last 30-40 years, there have been many changes in the way local, regional, national and international economies work.

More and more farming families find they need cash; growing farm products specially for markets (maybe in addition to growing food crops).

Cash and food crops

The changes in these economies have created new opportunities to market current and new enterprises.

Consequently, a larger number of farmers have entered markets offering more food products for sale.

Cash and food crops

A notable outcome of increased demand for food is the increasing numbers of farms that specialize in market gardening around towns.

In such cases, farmers produce bulk food crops, like maize or cassava in specific areas and livestock products such as milk, eggs, beef, chicken, pork and mutton.

Cash and food crops

Deciding whether to farm for food or cash or for both is a difficult decision to make.

The principles and tools of farm management help farmers decide how to use their farms to meet their food and cash needs.

Market-oriented production and the need for improved management

Life is very difficult for many farmers. There are often shortages of cash and food in the household.

Decisions about the household and about the farm often conflict with each other.

Market-oriented production and the need for improved management

There is more and more need for cash to buy the things the household needs, so many farmers need to farm for cash.

Most food farmers do not have the knowledge and skills of farm management and so they find it difficult to farm profitably.

Market-oriented production and the need for improved management

Farmers must make decisions about running their farms. Essentially they must decide:

What to produce?
How to produce?
How much to produce?

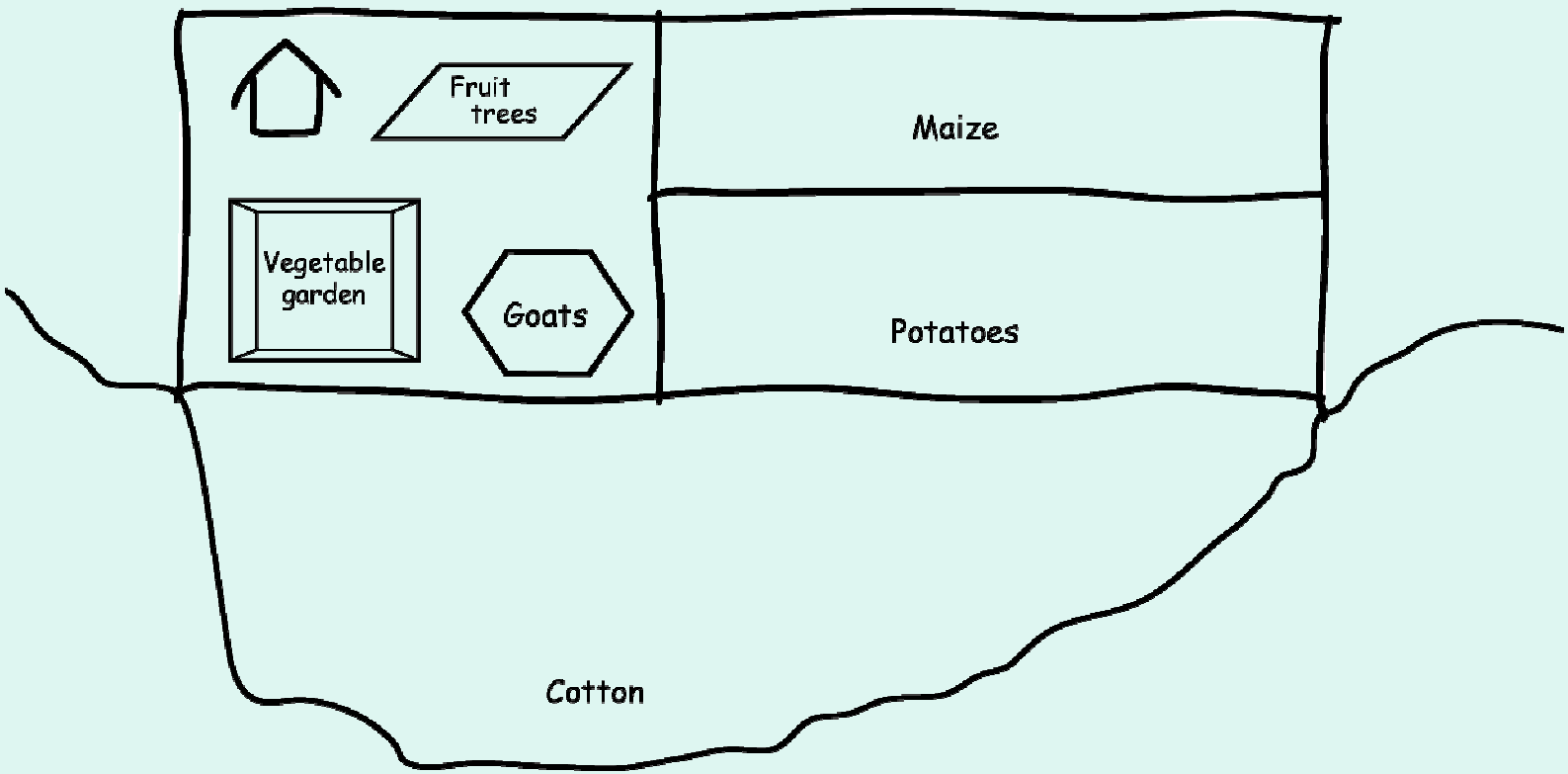
Each of these three decision areas involves decisions about inputs, decisions about production and decisions about marketing.

Market-oriented production and the need for improved management

Deciding what to produce, how to produce and how much to produce is influenced by many factors including food requirements, income requirements and a range of technical factors.

Basic training in the principles and tools of farm management can help farmers organize their farms and to make the necessary decisions to make them more profitable and to meet the objectives of their families.

Diagram — Physical boundaries of farm and household



Session 2.2
The farm and its resources- natural, human, physical, financial

Learning outcomes :

Understand the different kinds of capital used on farm.

The relationship of farm management and its resources.

The farm and its resources

In this session you will explore and understand the range of resources used by farmers on their farms. The resources, also referred to as capitals, will be covered in a livelihoods framework of natural, human, physical and financial capital. (Social capital will be discussed in the next session).

The importance of maintaining and enhancing resources to ensure sustainable profits from the farm enterprise will be emphasized.

The farm and its resources

The working base of the farm is composed of a number of resources. Resources can be divided into five categories called 'capital': natural, human, physical, financial and social capital.

In general these resources are either owned and/or controlled by the farmer, owned by someone else and hired by the farmer, or are common property to which the farmer has access.

Natural capital

Natural capital (natural resources) is classified into three broad categories;

(i) 'biological, renewable resources' which includes such natural resources as rangeland (grazing-land), forests, fish and wildlife,
(ii) 'non-renewable resources' which is land and its productive powers,
(iii) water.

Sustaining the productive capability of natural capital is a very important part of farm management because natural capital is the primary resource used for both food production and profits.

Natural capital

Biological, renewable resources are often common property such as grazing land and forestland (except legally protected forest or game reserves and national parks).

In many societies access to cultivated land for grazing is free after harvest. In many regions of Africa registered land ownership is still uncommon. In such cases, land tenure rights are exercised through unwritten customary law.

Land and water area are often also regarded as common property; where resources are accessed through customary practice or through more modern laws.

Human capital

Human capital refers to people; the skills, knowledge, ability, good health and human power available to farmers to carry out their farming activities.

An important human resource to the farmer is labour. Labour may be provided from the farm family, it may be hired, or it may be obtained through a customary social contract or practice.

Human capital

In many parts of Africa, customary social contracts exist. Such contracts generally make mutual aid possible under an unwritten reciprocal agreement.

Human capital is among the most complex resource used by a farmer. Many of the most difficult decisions made by a farmer involve human capital.

Physical and financial capital

Physical and financial capital are the things and funds available to farmers to carry out farming activities.

Physical capital includes producer goods like seed, fertilizer, equipment, planted trees and livestock.

Financial capital includes cash, savings and access to credit.

Farm capital and financial management

Each of these types of capital represent decisions a farmer must make:

What is the condition of the crop lands? Grazing land?
What crops can be grown?
How much land should be allocated to which enterprises?
How much labour is needed? What source of labour is best? Family? Hired?
What equipment, seed, tools and infrastructure is needed for each enterprise?
How should the farm be financed? With cash? With loans? A combination?

Farm capital and financial management

A farmer faces these and many other decisions about resources every year and sometimes every day.

The more farmers understand the role of farm capital and how it relates to farm management, the better their positions will be to make decisions to increase the sustainability and profitability of their farms over the years.

Natural capital

Natural resources form part of the 'assets' of a farmer. As such it is capital employed to create profits. So we refer to natural resources as natural capital.

A farm management issue for natural capital is;

How can farmers use natural resources both sustainably and profitably?

Because market-oriented farm management works largely in economic terms, it is useful to think of natural resources as part of the capital base of a farm.

Natural capital

Land

Vegetation

Water

Fish

Wildlife

Human capital

Farming uses several forms of human capital including labour and management, which it draws from various sources.

Human power is a critical element of farm productivity.

Five types of labour are commonly called upon in small-scale farming.

Types of labour

Family labour

Communal labour

Social work contract

Sharecropping

Hired labour

Functions within the household in relation to labour availability

Labour is not a single homogenous input. It consists of variations in terms of age and gender groups.

Division of labour is important to improve efficiency and productivity.

Division of labour by gender is being increasingly questioned as societies adopt new social standards based on the principle of equality of women and men.

Different roles and responsibilities of men and women have implications on labour availability and productivity.

Impact of social factors on labour availability and productivity

Various factors affect labour productivity and availability including:

Cultural practices

Religious rites

Climate

Ill health

Death

Migration in search of employment

Nutritional status of family members

Physical and financial capital

Physical capital consists of the producer goods and the basic infrastructure needed to support the farm and livelihoods.

Producer goods are those things which farmers need to produce their products, like seed, fertilizer, etc.

Infrastructure consists of changes to the physical environment that help farmers to meet their basic needs and to be more productive, like roads, access to a clean water supply etc..

Physical and financial capital

Financial capital includes cash, credit, loans or income that farmers and their households use to achieve their farm management and livelihoods objectives.

Sources of financing and credit

Self-financing

Credit Financing

Accessing financial capital/credit

Viability of the proposed plan or previous success

The character and ability of the farmer

Security

The cost of the loan

Advantages of credit/loans

Limitations of credit /loans for farmers

Farmer, market-orientation and resources

Three challenges faced by farmers :

1. Farmers are attracted by strong market demand and good prices for their products,

2. Farmers are under strong pressure from their dependents for a better life,

3. Farmers need to preserve the productive powers of their farm.

Farmer, market-orientation and resources

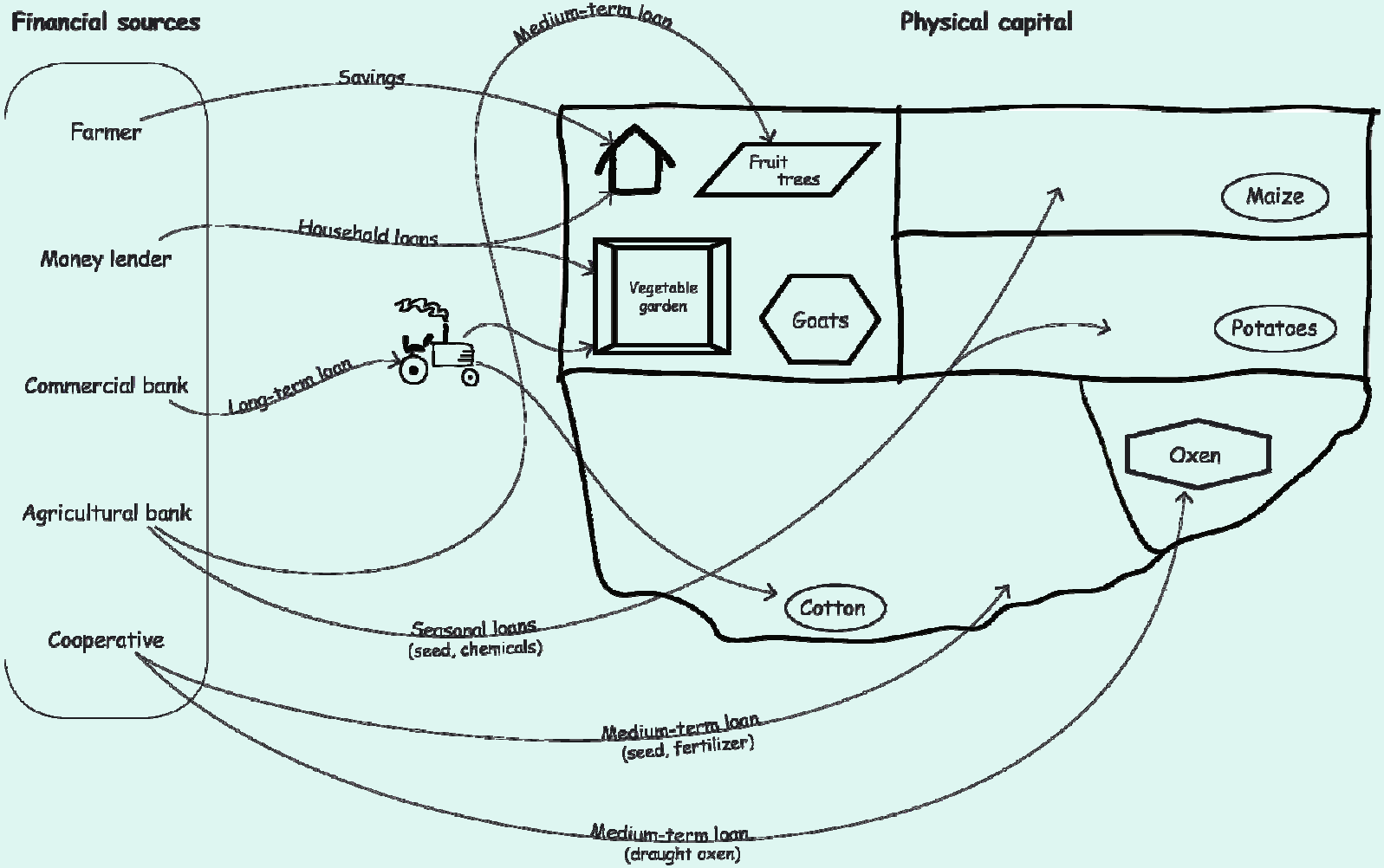
Hence a farmer needs to be :

1. A good farm business manager,

2. A capable decision-maker in the household,

3. A wise user of resources.

Diagram — Physical and financial capital on the farm



Session 2.3
Understanding Social Capital

Learning outcomes:

Understand the different ways of sharing natural, human, physical and financial resources

Understand the advantages and disadvantages of sharing

Understanding social capital

In this session you will explore the concept of social capital and the role it plays particularly in smallholder farming.

Social capital can be defined as the institutions, relationships and norms that shape the quality and quantity of a society's social interactions.

Understanding social capital

Social cohesion is critical for rural communities to prosper economically and for development to be sustainable.

Social resources consist of informal social networks and formal organizations used by farmers , the farm-household and communities to exchange resources and information.

The strength of social capital depends upon shared interests, common or mutual agreements on norms/rules, mutual trust and reciprocity within the rural community.

Understanding social capital

Social capital involves interaction between individuals and groups. These interactions can be informally or deliberately arranged.

The interactions increase confidence among the farming community to act for the overall benefit of members. Interactions help farmers to get to know each other and develop networks.

Social capital is dynamic and is both used and built through interactions where people share resources, knowledge, skills and values.

Understanding social capital

A useful way of looking at social capital is to ask the questions:

(i) Who owns it?
(ii) Who has access to it?
(iii) What are the relationships between people like?
(iv) What rules, norms and sanctions exist?
(v) How is social capital used?
(vi) How strong are the connections and networks?
(vii) What types of social arrangements exist?
(viii) How effective are local groups?
(ix) What are their weaknesses and how can they be addressed?

Understanding social capital

If the resource is collectively owned or held and there is access to it by the collective, then it is a social asset.

Conversely, a bicycle may belong to a single person; it is privately owned and it can become a shared resource if the owner decides to make it available . But in reality the owner has the power to withdraw the asset (bicycle).

In the case of human assets, one cannot own a person, so a shared human resource would be defined more by the right of access.

Five categories of social capital

Shared natural capital

Where communities have shared access; rivers, lakes, common grazing lands, shared crop lands, wildlife and fish.

Shared human capital

Includes social work contracts that can be called upon by members of the community.

Shared physical capital

Includes items like equipment, buildings, fences which are owned collectively to which the collective has access. It also includes privately held items which may be made available under a cooperative arrangement within a group of people.

Five categories of social capital

Shared financial capital

This is where financial assets are held collectively by the group; group savings, group loans, group investments.

Institutional social capital

Formal and informal social organizations that provide services, support and safety nets to the community. Some of the institutions may be structures that govern access to natural, human, physical and financial capital.

A cooperative is an example of institutional social capital which provides access to physical and financial capital to its members. A village bank is another example of institutional social capital providing access to finance.

Social capital characteristics

The intangibles

Beyond the more tangible forms mentioned, social capital can be also characterized by four elements:

Relations of trust

Reciprocity and exchanges

Common rules, norms and sanctions

Connectedness, networks and groups

Social capital characteristics

Relations and trust

Trust is the common thread in all forms of social capacity; 'thrust lubricates cooperation'. Social obligation and trust can replace time, money and energy when carrying out an activity.

Reciprocity and exchanges

Social capital often works on two levels; (i) where reciprocity or exchange is specific and timed, (ii) where reciprocal exchange is less defined.

Social capital characteristics

Common rules, norms and sanctions

It is rare that these are openly negotiated, they are known and understood, as they are traditional and have been passed from generation to generation.

Connectedness, networks and groups

Can be formal to informal groups to looser development networks. Connectedness consists of five groupings; (i) local connections, (ii) local-local connections, (iii) local- external connections, (iv) external-external connections, (v) external connections.

How is social capital used?

In many parts of Africa, social capital is an important means of survival and forms the foundation for society and for economic activity.

Social capital is used for many economic activities on farms such as buying of inputs, marketing of produce, exchange of information, mutual help, and accumulation of savings and provision of loans.

How is social capital used?

Social capital arrangements are used to manage more effectively labour, common property, infrastructure, finance, credit, organization, access to inputs and marketing, and knowledge (both acquired and indigenous).

Social capital also fulfills a welfare purpose within the village community, collecting funds for funerals or weddings and health.

How is social capital used?

Social capital is usually formed when people in the rural community come together either formally or informally to use their resources, such as labour, savings, land and water etc.

How is social capital used?

Social capital implies group action or joint action involving more than a single farmer.

Group action brings benefits;

More effective

More efficient

Higher level of information

Discipline

Support

Psychological stimulation

Functions of social capital

Providing mutual help at key times of the year when labour demands are great.

Sharing resources in periods of personal tragedy and celebration.

Providing food assistance at times of austerity and drought.

Reciprocity in breaking bottlenecks through the provision of scarce resources.

Functions of social capital

Construction/development of community projects.

The pooling of assets in order to expand the production potential.

Creating a safety net in times of hardship.

Types of social capital arrangements

The means of providing additional labour or other resources by farmers can be classified as;

Informal

Commercial

Cooperative

Sharecropping

Communal Labour

Types of social capital arrangements

Informal arrangements

These imply that help is given on a friendly basis without involving financial transactions and legal bindings. Relatives, friends and neighbours are most commonly used.

Commercial arrangements

Services made in expectation of payment and profit. Such arrangements do not carry any social obligation, but social ties may reinforce the contractual agreement.

Types of social capital arrangements

Cooperative arrangements

Grouping of farmers are established for mutual benefit of users; initiated by farmers, with prior discussion, formal commitment and legally binding for a period of time.

Sharecropping

The farmer makes another person (called a sharecropper) responsible for a particular crop, which the latter cultivates and harvests. The sharecropper is not paid a wage, but is allowed to keep a share of the crop yield.

Types of social capital arrangements

Communal labour

A common practice in which villagers work together. There are many societies where communal labour groups are the only means of supplementing family labour. Groups may be formed by kinship, neighbours and age, and organized on the basis of reciprocity, with incentives offered in kind.

Weaknesses of social capital arrangements

Breakdown of informal arrangements

Commercial and market trends are undermining the traditional basis of neighbour help and mutual aid;

Farm enterprise specialization

Increase in enterprise output

Awareness by more commercially minded farmers of the value of time

Need for more formal labour arrangements

Need for more skilled labour

Hiv/aids.

Weaknesses of social capital arrangements

Breakdown of more formal arrangements

In group work conflicts often arise. This may be caused by group size, heterogeneity of members, ineffective leadership etc. Conflict may lead to;

Inadequate provision to its members

Lack of member commitment

Low cohesion

Performance and sustainability

Weaknesses of social capital arrangements

Conflict can occur within all social capital arrangements mentioned. The causes of conflict are complex.

Common sources of social conflict:

1. Failure of communications
2. Formation of splinter groups
3. Difficulty in reaching consensus
4. Commitment of group members

Common sources of social conflict:

5. Interpersonal conflict

6. Group cohesion

7. Lack of trust and corruption

8. Lack of understanding

Addressing weaknesses

Groups size and composition

Effective leadership

Management training programmes

Organizational arrangements

Management procedures

Session 2.4
Input and markets:where profits are made

Learning outcomes:

Understand how money is made on the farm

Understand the role of inputs in profitability

Understand the concept of the market

Understand the role of markets in profitability

Understand the market for products

Inputs and markets-where profits are made

In this session you will be introduced to the off-farm management activities of input supply and marketing.

The farm is more than a place of production, it is a business that requires management activities beyond production activities; inputs, equipment and markets are where profits are made.

Inputs and markets – where profits are made

Farm management decisions do not only involve production related decisions.

Farm management also requires that decisions be made about off-farm opportunities.

Two key aspects of farm management are inputs and markets.

How money is made on the farm

Money is made when raw materials (called inputs) are combined with labour (another input) and processed (called production) into goods that are sold to consumers.

If the cost of the inputs and production are less than the income generated by sales, then the business (farm) makes money.

If the cost of inputs and production are greater than the income generated by sales, then the business (farm) loses money.

How money is made on the farm

Good production managers can be good business managers only when they understand clearly that money is made through the management of this process:

INPUTS ⟶ PRODCUTION ⟶ MARKETS

Inputs

Inputs can come from the farm, such as compost or manure, or can come from outside the farm, like specialized tools.

Farmers need to know which inputs to use and where to get them and determine whether the additional cost of using inputs will generate sufficient additional income to cover these costs.

Input categories

Labour

Equipment

Production requisites

Genetic material

Finance

Input categories

Labour

People who work on the farm. In some countries labour is the most limiting factor to growth and profitability, caused by shortage of labour (especially skilled labour) and / or the cost of actual labour.

Equipment

Tools, handling equipment, implements and means of traction (tractors/ draught animals). Technology choice is important for it has to do the job that the farmer requires and fit in the farmer's livelihood and household system. Farmer's will often make the choice between labour and equipment.

Input categories

Production requisites

For crop production, requisites are seed, fertilizer etc. For livestock production requisites are feed, medicines etc. As with equipment, production requisites need to be appropriate to the farmer's situation.

Genetic material

Trees for orchards, point-of-lay hen, day-old chicks, breeding stock, dairy stock, etc. These are critical inputs into the farm; quality and suitability for the climate and other factors are key issues to consider when choosing genetic material.

Input categories

Finance

Includes cash, loans, trading agreements and credit arrangements. How farmers finance their enterprise can make the difference between profit and loss.

Sources of inputs

The farmer's own farm

Other farms

Private suppliers

Local general dealers

Farmers' cooperatives

Product distributors

Importantly farmers must consider the price, quality and availability of various sources of inputs.

The market

Once the appropriate input and equipment has been selected the farmer can start producing.

However, farm products gain value only once they leave the farm and are exchanged for money.

What is the market?

The market is the place where the exchange of products for money takes place.

The market is made up of sellers, buyers, products and prices.

The relationship among these elements influences the amount of money received in exchange for products.

What is marketing?

Marketing is the process of exchange between the producer (farmer) who sells and the consumer who buys.

The exchange takes place when the two sides agree on an exchange rate (price).

If they do not agree on a price, no exchange will take place.

Price

Price is the exchange value of a product measured by money.

The price of a product is determined by two concepts: supply and demand.

Supply refers to how much of that product is available and on sale. Demand refers to how much consumers (people who buy it) want the product.

The balance between supply and demand sets the price of the product.

Price

High prices are a result of supply being lower than demand. Low prices occur when the supply of a product is greater than the demand for the product.

Understanding the relationship between supply and demand will help farmers to decide on product price.

When farmers plan they need to know what prices to expect. When they sell they need to know what prices to charge.

Why is it important to market agricultural 'products in Africa?

Two factors make it important to market agricultural products in Africa.

First, populations in towns and cities in Africa are increasing. This is increasing the demand for agricultural products.

Why is it important to market agricultural products in Africa?

Second, the economies in Africa have changed, people need and want things that require cash; school fees, uniforms, radios, televisions, soaps, cooking utensils and linens.

Rural farm families must rely on their farms to generate cash income. They do this by selling (marketing) agricultural products.

'Market-oriented farming' means thinking about and making decisions about selling agricultural products in the market.

Why is it important to market agricultural products in Africa?

Farmers can plan to take advantage of marketing opportunities; growing enterprises for the market.

Understanding the market reduces the farmer's risk in generating a cash income.

Good farm management requires a good understanding of the market; the decision-making boundary of the farm must extend to include the market.

Marketing is finding out what the customer wants and supplying it

Marketing is a process where a farmer finds out what the customer wants, supplies it at the quality and price at which the customer is prepared to buy and at which the farmer makes a profit.

Agricultural marketing involves a number of tasks including harvesting, grading, sorting, packing, transporting, storing, processing, distributing and selling of produce.

Price taker

Farmers who produce and sell in a competitive market with many buyers and sellers are called price takers.

Price takers have very little influence on the price. They can sell as much as they want at the market price.

Their marketing challenge is to cope with fluctuations in supply and demand during the year.

In such an environment, successful marketing implies selling as much as possible at higher prices.

Price maker

In situations where the market may not yet exist or may be very small, the farmers may be a price maker.

This is true for specialized products produced for 'niche' markets.

Their marketing challenge is to get a higher price by making their products different from other similar products.

This could be done by growing a new variety or producing a product of higher quality to be sold in specialized markets (e.g. mushrooms, flowers, etc.).

The marketing chain

The different steps involved in moving produce from the farm to the consumer is called the marketing chain.

At the simplest level, the steps involved may just be the time taken by farmers to walk to a nearby market and stay there until all of their produce is sold.

At the most complex level, a product may be stored for long periods, transported long distances and processed several times before reaching the form in which it is finally sold.

The marketing chain

The cost of marketing makes the price of a product in a shop or retail market higher than the price paid to the farmer.

Each person or agent who handles the product changes the product in some way and charges a fee.

This fee is added to the cost of the final product sold.

The marketing chain

If the farmer sells directly to the end customer, the farmer will receive the full market price, but will be responsible for all the marketing costs.

If the farmer sells to someone else, for example a processor, the farmer will receive only the price paid by the processor. The processor is then responsible for the marketing costs.

Costs involved in the marketing chain

Product preparation and packaging costs

Products must be prepared and packaged for marketing.

Handling costs

At all stages in the marketing chain, produce will have to be packed, unpacked, loaded and unloaded.

Transport costs

Transport by foot, bicycle, car, truck or other means are all costs which are added to the final price of the product.

Types of Markets

There are many different types of markets; some close to the farmer others far away.

In some markets, farmers can sell their products with very little packaging, handling and transporting.

Other markets may require substantial packaging, handling and transporting.

Types of Markets

Each type of market requires different information, different skills, and different decisions.

Most smallholder farmers sell at farm or local markets; you can help farmers improve their ability in using local markets to increase profits.

This will help farmers acquire skills, resources and yields necessary to access other markets.

Types of Markets

Local Markets

Distant markets

Export/International markets

Specialized markets

Marketing channels

A number of marketing channels exist for farmers;

Market directly from the farm

Supply processing units

Directly supply retail outlets

Market through farm and / or market stalls

Sell through contracts to commercial farmers or processors

Options for marketing produce

Farm-gate marketing

Consumers come to the farm to buy produce; the sale of vegetables from a farmer's garden, the sale of eggs from an egg production unit and the sale of pigs directly from the farm.

This type of marketing is common in traditional small farming.

Options for marketing produce

Village marketing with farm stalls

Farmers may sell as individuals or they may group together to sell collectively. Selling at a farm stall located in the village or along a main road.

Unlike farm gate marketing, the farmers take their products closer to the customer.

Options for marketing produce

Produce markets

Produce markets are set up in larger villages and towns. They usually cater for larger-scale commercial producers and, in turn, supply the larger urban centres.

These markets usually seek larger quantities of specific grades of produce. Farmers can use agents at the market to sell their produce.

Options for marketing produce

Stock sales

Stock sales (auction system) where the sellers offer animals for sale and buyers offer a price for the animals. The seller may decide whether or not to accept the price offered by the buyer.

The prices are not fixed. Generally, prices reflect the supply and demand position both locally and within the entire market. Pigs, cattle, goats and other animals are commonly marketed this way.

Options for marketing produce

Collective marketing

Farmers' associations may get together and jointly market their crop. This form of marketing is one of the basic functions of a cooperative.

Options for marketing produce

Contract marketing

With contract marketing the farmer sells directly to the retailer at prices, quantities and qualities agreed to in advance.

Options for marketing produce

Community-supported marketing

A farmer or group of farmers supported by a neighbourhood or community agree to provide produce at a set price or a proportion of yield based on the degree to which the community have supported them (i.e. supported their costs of production).

Common marketing problems

Lack of market information is the most important problem in marketing.

Farmers need current price information to plan properly.

Lack of information leads to frequent surpluses on the market which decrease prices.

Common marketing problems

Lack of expertise and information; including a shortage of extension officers to convey information.

Low volumes and quality problems with their produce leading to poor returns.

Government support is minimal.

Market flooding (over-supply).

Common marketing problems

Lack of local marketing outlet infrastructure (e.g. a lack of road-side stalls).

Lack of technical know-how on packaging and grading.

Inconsistent supply of farm products.

Little contact between producers and buyers.

Common marketing problems

Transport, availability, costs, financing to pay costs.

Lack of (or access to) storage facilities and pack-houses.

Prices of equivalent imported products are low.

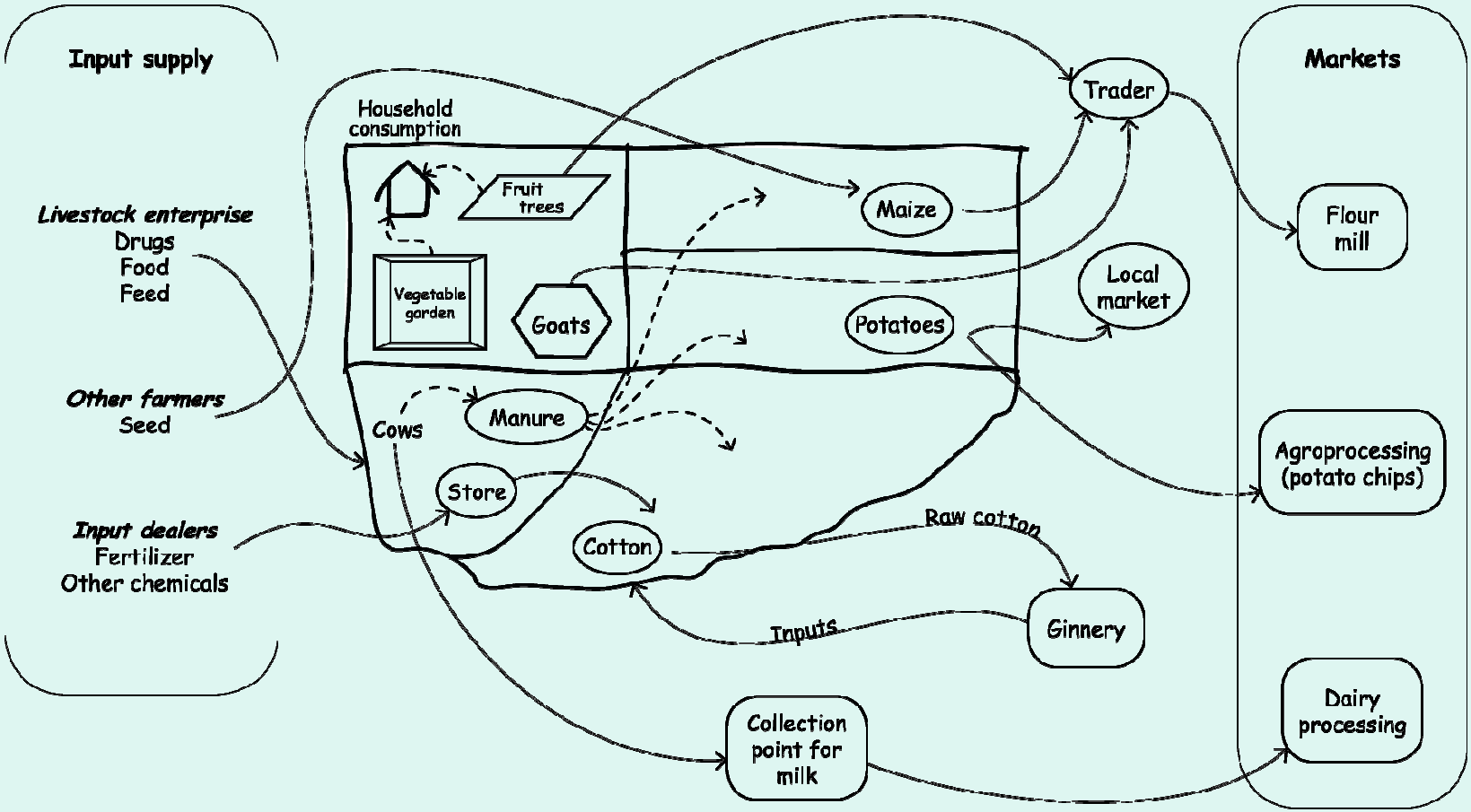
The decision-making boundary

The decision-making boundary (the farm management boundary) extends well beyond the production unit and the household.

It extends beyond the natural resource base of the farm.

It includes all the factors that affect the profitability of the farm: inputs, production and markets.

Diagram — Input supply and markets



Module 2:Review

- Do you believe that the overall purpose of the module has been achieved ?
- You should have a good practical understanding of the farm setting in which market-oriented farm management decisions are made.
- You will have learned about small-to medium-size family farms and their enterprises, the farm and its resources including social capital, and the input/ production/marketing process.

Module3:
FARM MANAGEMENT AND DECISION-MAKING

Session 3.1 The farmer and decision-making
Session 3.2 Resources and farm management
Session 3.3 Inputs, markets and farm management
Session 3.4 Risk, vulnerability and sustainability
Session 3.5 Information and farm management

Introduction

In this module the concept of farm management will be introduced. Farm management decisions will be covered relating to the five capitals, inputs and marketing.
The concept of risk will be introduced as the importance of data and information in management decisions.

Session 3.1
The farmer and decision-making

Learning outcomes:

Understand the farm/family goals

Understand the farmer as manager

Understand the farm management decision-making process

Understand the different roles family members play in the decision-making process

The farmer and decision-making

In this session you will learn to realistically visualize the decision-making boundaries of a farm.

The physical decision-making boundaries and how they extend to the farm household will be explored.

You will also cover the decisions that have to be made, who will make them and when.

The farmer and decision-making

Decision-making is central to farm management. Each decision has an impact on the farm and on the farm household. Even deciding to do nothing is a decision and has an impact.

The more a farmer is aware of the decision-making processes that affect farm and household, the more sustainable the enterprise will be and the more likely it will be profitable and sustainable.

The farmer and decision-making

In many parts of Africa, farm decisions are closely tied to decisions made in the household. Farm decisions affect food availability, play an important role in social ceremonies and are linked to issues of social status and wealth.

The farmer and decision-making

Two of the main features for understanding economic decision-making are;

(i) the way farm boundaries are determined
(ii) the ultimate social objectives for which farm goods are produced.

In this training programme we refer to the farm boundaries as 'decision-making boundaries'.

The production decision- making boundaries

We generally first think of a farm in terms of its physical enterprise boundaries; land, crops, livestock, fences etc.

Many of you are trained only in decision-making about production.

The production decision-making boundaries are just the beginning of the decision-making boundaries of the farm.

The production decision- making boundaries

Production decisions depend on a number of factors that fall outside the physical/ production area of the farm.

One of these factors is the farm family/household.

Farm and family household decision-making boundaries

In many parts of Africa, the farm and the household are virtually one entity.

Decisions about the farm directly impact on the household and decisions about the family directly impact on the farm.

Farm and family household decision-making boundaries

More and more, families require cash for things like school fees, medicines, transports, etc.

It is useful for anyone working with a farming family to understand the dynamics of the farm household and the relative decisions.

Farm and family household decision-making boundaries

Farm boundaries are determined by family structure.

There may be a family farm under the head of household, but the farm may have various sub-units over which a family member will have some level of control.

This will have implications for decision-making, particularly with reference to shared labour and equipment.

Farm and family household decision-making boundaries

Traditionally men are heads of households, but there are now many variations.

Even within a clearly established arrangement, different members of the family make different decisions for the family at different times of the year.

Farm and family household decision-making boundaries

For each specific farm, you will need to identify not only the physical boundaries of a farm, but who makes what decisions and when.

This is necessary in order to determine the decision-making boundaries of each farm in terms of access to resources, resource sharing at family level and the main objectives of production.

Social and economic goals

Farmers and their families need a secure source of food and they seek a secure source of income.

Many develop a strategy of producing for a market while at the same time ensuring food self-sufficiency either from the farm harvest or by use of cash to purchase food from the market.

Social and economic production goals

In many countries, even though the profit maximization objective is of greater importance, farmers are still bound by social obligations within their own communities.

In some areas farmers are less bound by these obligations and are freer to focus on farming for profits.

Social and economic production goals

Food security is a social goal. Generating income is an economic goal. These family goals often conflict. Uncertainty (or risk) is part of the conflict.

Often demands of food security are detrimental to farm profitability and it can happen that the sole focus on producing for the market can negatively affect food balances and other food security factors.

Social and economic production goals

Market-orientated farm management skills and tools can be used to make more informed decisions about food production and income generation.

Short-term versus long-term view

Good farm management requires a long-term view.

It requires thinking carefully about what might happen in the future as a result of a decision made today.

Short-term versus long-term view

Learning and applying principles of farm management enables farmers to look at their farms more impartially and to consider alternative actions in advance.

This will help improve performance and profit for the future.

The farmer as a manager

Any farmer has two main jobs;

(i) To take care of plants and livestock in order to get useful products

(ii) To manage the farm; that is, making decisions about how to use the farm's resources.

The farmer as a manager

Decisions require making choices between alternatives.

Farm planning is thinking ahead about farm activities and making decisions some time before they will be carried out.

As a farmer becomes more market-orientated, the farmer will need to improve planning and decision-making skills.

The farmer as a manager

The kind of decisions farmers make as managers can be summarized as follows:

(i) What to produce
(ii) Whether to produce for food, for income, or for both
(iii) How to produce it
(iv) How much to produce
(v) What resources will be used and when
(vi) What inputs to use and where to get them
(vii) How much of the products to sell and when
(viii) Where and to whom to sell the products and at what prices.

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Key aspects of decision-making

In order to make fundamental decisions farmers need to develop understanding and skills in four broad decision areas:

Diagnosis

Planning

Implementing

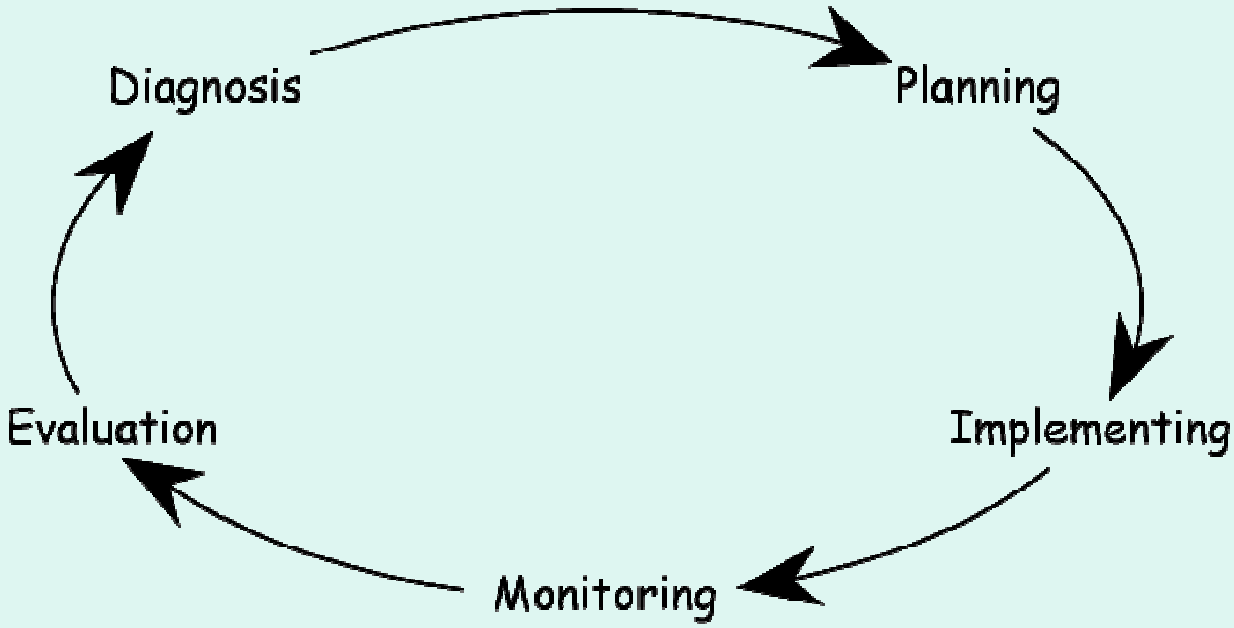
Monitoring & Evaluation

Key aspects of decision-making

Learning how to make decisions in these four areas will put farmers in greater command of the resources and processes that influence their food security and their income generation.

The four areas flow in a pattern which supports continuous learning processes about what works best for the farmer and the farm family.

Key aspects of decision-making



Diagnosis

Diagnosis means looking at the farm and household as it functioned over some period of time. For a first diagnosis, the farmer may want to understand how the farm has produced over several seasons.

Diagnosis

Just like a doctor with a patient, a diagnosis will give the farmer important clues about the 'health' of the farm.

How is it producing?
What is the condition of the farm's resources?
Are resources becoming more or less productive?
How profitable is it?
Are farm goals being achieved?
What problems are there?
What opportunities exist?

Planning

Once diagnosis is complete, planning can begin; decisions about what, how and how much to produce.

Some planning decisions will be based on knowledge; such as how much land and labour are available. Other planning decisions will be based on less certain things, such as rainfall and product prices.

The plan will also include an indication of the expected results in terms of yields and income.

Implementing

Implementing means putting the plan into action. In general, implementing does not require major decisions.

Things may not always work according to plan; less rainfall than expected, the price of a crop changes etc.

During implementation, plans may need to be adjusted to accommodate such changes.

Monitoring & Evaluation

Monitoring means keeping track of what is happening on the farm and the plan is a guide for monitoring.

Monitoring provides the farmer with the information needed to evaluate the success of the plan.

Monitoring & Evaluation

Evaluation means judging how well the farm performed when compared to the plan.

Did things go as planned?
Were expected yields achieved?
Were expected incomes reached?

Monitoring and evaluation provide the information the farmer needs to diagnose the farm for the next season. It is the basis for making the next plan.

Key aspects of decision-making

Farmers that follow these decision-making steps will have a very powerful process in their hands.

Just like a doctor, they will be able to know the 'health' of their farm business.

If the farm is healthy the farmer will know what to do again, if the farm has problems, the farmer will possibly know why and what to do about it.

Key aspects of decision-making

Such a process will increase the sustainability of the farm.

It will improve the family's food security and it will make the family's income more predictable and reliable.

Men and women in farm management decision-making

The role or place of women in making farm management decisions varies widely across Africa.

Women and men clearly have equal personal capacity to apply the principles and tools of farm management.

Men and women in farm management decision-making

Market–oriented farm management should not, in principle, be affected by gender.

In practice gender may play a very important role, especially regarding access to resources. Women often have less access than men to the inputs required for farming.

Farm management advice needs to be carefully targeted in order to address gender specific issues.

Session 3.2
Resources and farm management

Learning outcomes:

Understand the importance of maintaining value and productive power of resources

Understand the role of farm management in the sustainable use of resources

Resources and farm management

In this session you will cover in detail the kind of decisions required which affect the use and allocation of the five capitals used by farmers.

Resources and farm management

Each decision has an impact on the farm and on the farm household.

Farmer awareness of the range of decisions and factors affecting those decisions, the better the decisions will be, the more sustainable and profitable the farm will be.

Resources and farm management

We know that some of the key decisions to be made include:

What to produce?
Produce for food, for income, or for both?
How to produce it?
How much to produce?
What resources will be used and when?
What inputs to use and where to get them?
How much to sell and when?
Where and to whom to sell and at what prices?

Resources and farm management

Underpinning all these decisions are the resources available to the farmer.

Each decision a farmer makes is essentially about how to utilize farm and household resources.

Resources and farm management

Resources or capital are categorized into five types:

Natural capital

Human capital

Physical capital

Financial capital

Social capital

Resources and farm management

Each of these capitals is vulnerable. Each is subject to stresses and shocks.

There are many pressures on these resources that may cause them to decrease in value or reduce in their productive capacity.

There are other pressures and events which may completely deplete or remove the resource.

Resources and farm management

Farmers have two areas of concern:

1. Productivity of resources.
2. Profits.

To achieve both objectives, farmers will need to consider very carefully decisions about resource utilization.

Resources and farm management

Farming for profits does not imply that one must sacrifice resources to maximize income.

The real goal of market-oriented farm management is long-term sustained profits from farming; good farm management demands sustainable use of resources.

Resources and farm management

Maintaining and improving the value and productive power of farm resources, sustains profits.

Good farm management embraces sustainable agriculture and supports sustained profits from the farm.

Resources and farm management

One of the key decision areas of a good farm manager is maintaining the farm's resources.

Reducing the vulnerability of a farmer's natural, human, physical, financial and social capital will help ensure that they are productive for many years.

Resources and farm management

Maintaining control over the long-term value and productive power of resources is a very important part of market-oriented farm management.

Farming for high profits in the short-term without taking steps to sustain resources will eventually lead to lower profits.

Good farm management looks for ways to put these resources to work in such a way that the farm will be profitable in both the short and long term.

Farm management decisions : natural capital

Farmers do not farm in isolation. They take from and influence natural capital.

Natural capital is the first resource base on which a farm is established and run.

Farmers need to be very aware of the inter-relationship of their farms with their natural resource base.

Farm management decisions : natural capital

Natural capital is run down and destroyed by one of two forces:

1. Acts of nature such as droughts, wind and floods

2. Deliberate acts of humans such as over-grazing, harmful production practices.

Farm management decisions — natural capital

Some actions that can be taken by farm managers to enable land remaining productive and to help make sure that common property also remains productive are:

Improved land reclamation

Introduction of soil conservation measures

Development of better integrated on-farm livestock production activities

Farm management decisions — natural capital

While each of these steps take place at a cost, they have long-term benefits. They will contribute to the sustained profitability of the farm.

Farm management decisions: human capital

Decisions about human capital on the farm are among the most important decisions made by a farmer.

Decisions about human capital represent choices in technologies.

They represent productivity, technology choices and how the farm family earns its income.

These decisions represent the way the family sees itself and the way it sees its farm.

Farm management decisions : human capital

With the change in economies in Africa, the availability and the cost of labour are changing and with it farmers now face serious questions.

Farmers need to decide if it is better for their families to sell their labour in town or to use it on the family farm.

Understanding the concepts, principles and tools of farm management will help farmers assess the choices and to make better decisions.

Farm management decisions: human capital

You will need to take special care in assisting farmers with examining this aspect of farm management.

Human capital decisions touch on societal and cultural issues as well as on more purely management issues.

Many of the factors to be taken into consideration are related to the status of women.

Farm management decisions: human capital

Some technical or practical factors that might also be taken into account include:

(i) Issues of land rights and inheritance

(ii) Who is allowed to work outside the home

(iii) The effect of HIV/Aids and other health issues on 'head of household'.

Options for alternative labour sources

Farmers need to think carefully about options for providing power on the farm and to plan for them in advance.

Some of the options might include:

Labour saving technologies

Changing farm enterprises and combinations

Increasing productivity

Labour saving technologies

Most farmers could improve the productivity of their labour by adopting better tools that have been tried out successfully elsewhere.

This may include replacing hand-labour with animal power by using drought animals, tractors or motorized implements. Each of these is an additional cost to the farm.

Farmers should decide to use labour saving technologies only when sufficient returns can be generated to cover the extra costs.

Changing farm enterprises and combinations

Market-oriented farmers should consider adding or changing crops carefully. This can be a very effective way to increase farm profitability and cope with labour productivity problems.

Some possible changes include:

Intercropping

Introducing a new crop

Increasing productivity

There are a number of ways to increase labour productivity ;

Introducing new technology

Producing more per hectare

Choosing the right enterprises to produce

Improving farm layout

Using improved tools and working methods

Practicing good labour relations and paying wages in relation to the amount and quality of work done

Increasing productivity

Good relations means treating labourers justly, paying fair wages and providing good supervision for hired labour.

Increasing productivity

NOTE

Increased productivity based on intensification of cropping techniques together with mechanization often results in increases in labour constraints.

Farm Management decisions; physical and financial capital

Decisions made today limit the decisions you can make tomorrow.

Farmers need to make both short-term and long-term decisions about physical and financial capital.

Short-term decisions affect long-term decisions and long-term decisions affect short-term decisions.

Long-term capital decisions in different enterprises

Capital invested in livestock, perennial crops, orchard trees or buildings cannot be readily changed into another form of capital which might earn a higher rate of return.

Once capital has been invested in durable assets it is committed and flexibility is lost.

Long-term capital decisions in different enterprises

Capital is always limited. It should be used where it will add most to profits.

Different enterprises involve issues when making long-term capital decisions.

Tree crops

The capital cost involved in tree production is equal to the cost of growing that tree up to the stage of full production.

Taking good care of trees and controlling diseases and pests is very important to protect the money that has been spent growing the tree.

If the tree dies before it has produced anything, capital is lost.

Livestock

The capital cost involved in livestock production is equal to the cost of keeping that animal up to the stage it reaches full production.

Animals being kept for meat, milk, eggs or other products should be kept fit and healthy, so to produce efficiently. Only in this way can the farmers get high gross margins for their livestock.

Farmers want and need to protect investments. If the animal dies before producing, capital is lost.

Livestock

In cases where farmers cannot afford to raise livestock, they can also hire.

Buildings

The cost of buildings can be kept very low if the farmers and farm families do most of the building.

Careful repair and maintenance of buildings will make the buildings last longer and this will reduce depreciation cost.

Buildings

Where possible and practical, a farmer can hire a building. Buildings that are hired should be put to maximum productive use. An empty building is a waste of money.

There is no use in filling a building with stored produce where it will be losing value; if produce can be sold at a good price, it should be sold.

Machinery and equipment

Investment in machinery and equipment can be very profitable if the farmer can manage the finance and if it increases profitability.

Mechanization can be costly both in terms of buying it and in terms of repairs and maintenance.

Mechanization through animal traction

In many countries animal traction with draught animals is an immediate way of mechanizing.

The investment includes the animals and the equipment they will pull such as a plough, a planter, a cart or other farm implements.

Motorized machinery and equipment, intermediate power driven equipment

This includes two-wheel tractors and light four-wheel tractors.

Farmers can also invest in small-scale post-harvest equipment like threshers, mills or oil-presses; adding value to their products before taking them to market.

Heavier power-driven equipment

This includes tractors, combine harvesters or trailers.

Hiring is an option that can be used by farmers and this saves on the cost of buying the machine.

Hiring is often cheaper than buying.

Heavier power-driven equipment

Cooperative use of machinery or sharing is another option.

Shared use of equipment by two or more farmers has often been more successful than cooperatives.

Short-term decisions about physical and financial capital

Farms require many decisions that affect the farm for a single season;

Which seed to buy?

When to plant?

Which market to use?

Short-term decisions about physical and financial capital

Farms also require short-term decisions which impact on the long-term sustainability of the farm.

Often these decisions involve choices about what to do with limited cash.

Should the farmer repair a weakening fence this year, or use the cash to buy all the seed needed?

Short-term decisions about physical and financial capital

Not buying all the required seed will limit income this year.

Not repairing the fence may allow cattle into the fields and destroy the crop.

Farmers will need to think carefully about the many short-term decisions to be made. They need to anticipate what long-term effect short-term decisions will have.

Farm management decisions: social capital

Some farm management decisions involving social capital affect the farm directly.

Other farm management decisions involving social capital affect common property, such as in the case of common forests, grazing land and water to which the farm family has access.

Decisions affecting the farm directly

1. What are the sources of crop land available to me? How do I access that land?

2. What sources of labour are available to me? How do I access it?

3. What sources of finance are available to me? Can I borrow from family members? Should I be part of a group to negotiate better terms?

4. Should I buy my own tractor or alternatively hire from a tractor pool? Is it possible to borrow from a neighbour?

5. Should I market my own farm produce? Should I be part of an organized marketing group?

6. Should I buy my own inputs and materials? Should I work with others to buy in bulk?

Decisions affecting common property (off-farm)

7. How can I access water for irrigation? Is there adequate water for irrigation?

8. Should we establish a community forest plantation?

9. How should we as a community treat the watershed? How should we organize ourselves?

10. What are the sources of grazing land available to me? How do I access this land and vegetation? What are my responsibilities?

Farm management decisions: social capital

All these decisions have an impact on the farmer's resource base and income.

Farm household decisions are inseparable from the social relations of farming.

Farm management decisions: social capital

Social capital can lower the costs of performing farm operations. In this way it can improve the efficiency of farming. This often results in financial savings and increased income.

Farmers coming together as a group facilitate cooperation and foster confidence.

Farm management decisions: social capital

Social capital is useful in promoting collective action such as water saving and communal grazing.

It helps to ensure that farmers get greater benefits when negotiating with powerful bodies.

Social capital can also promote better use of natural and other resources, if managed correctly.

Farm management decisions: social capital

Joint or group interventions contribute to the formation of social capital by developing expertise within the group such as;

Working together for a common good

Learning and implementing formal rules and procedures

Democratic election of leaders

Participatory decision-making in allocation of credit and inputs for farm enterprise development

Farm management decisions: social capital

Social capital arrangements provide farmers and other members of the rural community with full control over the use of resources.

There are many benefits from such an association at grass roots level:

Higher productivity

Reduced costs

Increased efficiency

Building of democratic group organization

Enhanced self-reliance among the poor

Farm management decisions: social capital

The strength of social capital arrangements lies in the processes that they offer and their economic and social benefits.

Session 3.3

Inputs, markets and farm management

Learning outcomes:

Understand the range of decisions farmers make about inputs, equipment and markets

Understand the role of the extension worker in supporting the farmer in making decisions about inputs, equipment and markets

Inputs, markets and farm management

This session provides checklists for you to help farmers make decisions about inputs, equipment and markets. It also helps you identify your role in the farmer's decision-making process.

Decisions about inputs

Farmers need to know which inputs to use and where to get them.

They need to determine whether the additional cost of using inputs will generate sufficient additional income to cover these costs.

Decisions about inputs

Inputs can be obtained from a number of sources:

The farmer 's own farm
Another farm
Private suppliers
Local general dealers
Farmer cooperatives
Product distributors

In each case, the farmer must consider the price, quality and availability offered by the various sources of inputs.

Choice of inputs and equipment

When deciding on inputs and equipment there are a number of questions a farmer should ask:

Is it technically effective?

Is it of dependable quality?

Is its price reasonable?

Is it available locally when a farmer needs to use it?

Is it offered for sale in appropriate sizes or amounts?

Qualities of inputs (supplies and equipment)

Technical effectiveness:

Seed, fertilizer or other items must be technically effective.

Does the seed produce as promised?

Does the fertilizer perform as intended?

Does the livestock medicine really work?

Does the implement do the job it is supposed to do?

Is the input or equipment appropriate to the farmer's farm system?

Qualities of inputs (supplies and equipment)

Quality and dependability:

Sustained quality is another important characteristic for inputs and equipment.

Is equipment built to last?

Does it come with a guarantee?

Is the seed within its expiry date?

Do the pesticides contain any illegal chemicals?

Have the feeds been properly mixed?

Is the supplier reliable and honest?

Qualities of inputs (supplies and equipment)

Price relationships:

A farmer should not buy fertilizer or other inputs just because its price is low.

The inputs must also be effective and of a certain quality.

In all events the farmers must take into account the price, especially the relationship between prices and inputs and the prices the farmer can get for farm products.

Qualities of inputs (supplies and equipment)

Availability when needed:

The need for each input is highly seasonal.

Seeds must be available shortly before planting and can seldom be sold at any other time of the year.

Fertilizers must be applied at specific times and few farmers have facilities for storing them satisfactorily. The same is true of pesticides, although small amounts of them can be held for future use.

Qualities of inputs (supplies and equipment)

Quantity offered for sale:

The size of the containers in which many supplies are offered for sale is also important.

Frequently containers hold more than a small farm needs at any one time and the farmer may not have facilities for storing the extra amount until the following year when it may be needed again.

Choice of input and equipment supplier

Farmers also need to know who are reliable and trustworthy suppliers of inputs, equipment, machinery, spare parts and maintenance supplies.

Farmers also need to know what each supplier offers in terms of prices, quality and availability of inputs and equipment.

Operations and maintenance

One of the key factors in profitability is maintaining capital.

The better equipment is maintained, the longer it will retain its productive power.

Good farm management includes care for all of the physical capital on the farm.

Maintenance costs money, so as with all farm management decisions, the value of the maintenance must be measured against the income it generates.

Decisions about the market

Decisions about markets are among the most important decisions farmers will make.

They can also be among the most difficult to make because markets generally represent the unknown.

Farmers cannot be certain of the supply of farm products, the demand for certain products and the market prices.

Decisions about the market

Farmers can make decisions which are informed by knowledge of how markets have performed in the past.

They can make decisions based on the best available information regarding the following market issues:

The market

The product

The marketing chain

Decisions about the market

What can farmers learn about the market for the products they want to sell?

The market: markets and buyers

- How is the crop/livestock produce marketed at present?
- What are the main markets and where is produce sold?
- What has been the demand for the products?
- Who buys the produce and when? In what quantities?
- What is the best day for arrival in the market?
- Who are the most important intermediaries or buyers?
- Which buyers have the best reputation?

The market : prices and pricing

- What prices are paid?
- Is there a wide variation between the prices received by farmers for similar produce in the same area? If so, why?
- Is there competition between buyers?
- Do buyers provide credit to farmers and on what conditions?
- Do buyers expect credit from farmers in the form of deferred payment?
- What are current price levels, price policies, conditions of sale and payment terms found in the market?
- Is the farmer a price taker or a price maker?

The market: prices and pricing

- What market prices are obtained (average, maximum, minimum, effect of different quality standards and seasonal conditions on price)?
- How can premium prices be attained?
- If the farmer is a price maker, what price strategy should be followed? What is the percentage mark-up? Does the set price leave a margin for profit?
- What are the various cost factors to be considered in determining the pricing policy?
- How does the location of the market affect prices?
- How does time of day affect prices?
- How much does the price normally fluctuate during the year?
- What credit does the buyer require and how does this affect price?

The market : promotion

- Is the market aware of the product?
- Does the market know the volume available and how to purchase the product?
- Does the product need promotion?
- How can producers give advance notice of changes in their ability to provide the goods?

The market: marketing costs and margins

- What are the overall costs of marketing and what are the marketing margins?

The market: sales

- What factors are likely to affect sales (weather, special festivals, day of arrival in market)?

- What are the potentials and techniques for developing sales?

The product: product type and form

- What products are farmers interested in producing?
- What market forms (fresh, processed)?

The product: competition

- How competitive is the market?
- Who are the main suppliers to that market?
- Is the marketing plan being adjusted to reflect changes in competition?

The product: market potential

- What demand needs to be satisfied?
- How large is the market? How much can the market absorb?
- Which market is the farmer willing and able to satisfy?
- What percentage of produce should farmers be interested in producing?

The product: quality standards, packaging

- What are the grades and quality standards of the produce?
- What type of packaging is required? What is the cost of packaging?

The marketing chain: product preparation and packing

- Who can/should prepare and pack the product according to the market requirements?
- What is the cost of preparation and packing?

The marketing chain : handling

- Who can/should handle the product?

The marketing chain : transport

- What is the best way to transport goods to the market?
- Who provides transportation?
- What is the unit price of transport to the different markets?
- How long do the journeys take? How frequently does the transport leave the area?
- How efficient are the transport links?
- Should the transport of produce be pooled or sent individually?

The marketing chain: delivery of products

- How should the product be delivered?
- What method of transportation does the consumer require?
- What methods of transportation does the producer or trader have?
- Can small farmers meet the markets' delivery requirements?
- Is the crop/livestock produce stored? If so, where and by whom?

The marketing chain: delivery of products

- How much of the product should be stored?
- What storage arrangements are required?
- Are storage and stocking required to meet the buyers' delivery schedule?
- Are associations and cooperatives a necessary link in reaching the market?
- Are goods delivered directly to the buyer by producers?
- What size units does the buyer require?

Supporting farmers with inputs and making decisions

You have an important role in assisting farmers making management decisions about inputs, equipment and markets.

You can help farmers to ask the right questions about sources of inputs and equipment, and about the inputs and equipment themselves.

Supporting farmers with inputs and making decisions

You can provide farmers with information about inputs and equipment including:

Research information on the technical effectiveness of the inputs and equipment

Experiences of other farmers with the inputs and equipment

Availability of inputs and equipment in the area

Supporting farmers with inputs and making decisions

You can help farmers with reliable information about markets including:

Prices

Quality requirements

Handling

Packaging and transport

Niche marketing opportunities

Supporting farmers with inputs and making decisions

Remember

Your support for input and marketing decisions should always include information and guidance on the impact of the inputs and markets on farm profitability.

Session 3.4
Risk, vulnerability and sustainability

Learning outcomes:

Understand the concept and different types of risks

Understand farm-family strategies to cope with risk

Understand the concepts of vulnerability and sustainability

Risk, vulnerability and sustainability

This session introducers the concepts of risk and sustainability. You will learn about the different types of risk and what makes farmers and their farms vulnerable.

You will work with the idea of mapping sustainability to locate areas in the farming system that need strengthening.

What is risk?

Small-scale farmers in Africa are particularly exposed to uncertainties of weather, prices and disease.

Many farmers live on the edge of extreme insecurity, sometimes falling just below and sometimes rising just above the threshold of survival.

What is risk?

Farmers do not know whether rainfall will be good or bad over the season.

They do not know if the crop will be infected by disease.

Risks are usually not under the control of the farmers themselves, so they develop strategies to cope with them.

Types of risk

Risks have a direct impact on the farm family and their options to increase profitability and farm income.

Good farm management includes making decisions to reduce vulnerability to risk.

Production and technical risk

Crop and livestock performance are affected by weather, soils, pests, diseases and wildlife. These cannot be predicted accurately.

Farmers experience a wide range of weather conditions and refer to them simply as a 'good' year, 'normal' year and 'bad' year.

Poor rainfall leads to poor plant growth which may lead to reduced livestock fodder supplies and livestock production.

Production and technical risk

Pests or diseases can also cause major yield losses.

Seed is planted and inputs such as fertilizer are applied before the farmer knows what the weather will be.

Inputs do not change the weather.

Marketing or price risk

The prices of farm products may vary from year to year or even on a daily basis.

These changes are usually beyond the control of the individual farmer.

Supply of a product is affected by a combination of production decisions made by many farmers and the weather.

Marketing or price risk

Demand for a product is affected by the level of income of consumers, the strength of the general economy, the supply of competing products, and by changing tastes and eating habits.

Costs of production are another source of price risk.

While input prices do not usually change suddenly, they generally increase steadily year to year. Some inputs such as petrol and diesel are subject to sudden prices increases.

Financial risk

Financial risk occurs when farmers borrow money to cover their farm and family needs.

Risk may be caused by uncertainty about the interest rates lenders charge and their willingness to continue lending.

On the other end, financial risk is affected by the ability of the farm to generate the cash flows necessary for debt payments.

Institutional risk

Institutions include organizations and businesses on which farmers rely for inputs, markets, information or finance.

Unpredictable changes in the provision of services such as the supply of credit, purchased inputs and information from traditional and modern institutions are also risks faced by farmers.

Human and personal risk

Human risk refers to problems of human health and personal relationships that affect the farm business.

Illness and death threaten and disrupt farm performance through loss of labour or reduced productivity of labour.

Labour migration to towns and cities reduces availability of labour to farms.

Types of risk

Production, marketing, financial, institutional and personal risks exist on most farms and are often interrelated.

The ability to repay debts depends on production levels and prices received for produce sold.

Financing of production depends on the ability to borrow capital and the performance of the institution to supply capital in time.

The different types of risk often need to be considered together.

Vulnerability and the effect of risk

Vulnerability can be defined as the ability to recover from a stress or a shock.

Stresses erode the productivity or value of capital.

Part of coping with risk is reducing vulnerability.

The less vulnerable the resources, the more sustainable the farm.

Vulnerability and the effect of risk

High vulnerability leads to greater negative effect of risk.

The vulnerability of the family's livelihood often makes it difficult to cope with risks, making the family less able to control or influence their environment to reduce or recover from stresses and shocks. As a result they become even more vulnerable to risk.

Vulnerability and the effect of risk

Risks influence the amount and costs of inputs farmers use. These risks also affect crop yields and product prices.

As a result, farm profits are always uncertain. But not all of these factors have the same effect on farm profits.

As a result of vulnerability to risk, farmers often make a trade-off between maximizing profits and minimizing risks.

Risk – reducing strategies

The ways a farmer deals with risk depends on their personality, family situation and the extent to which they wish to gamble.

No two farm families are the same.

Some farmers like to take more risk than others.

Risk – reducing strategies

Decisions also depend on the situation of the farmer.

Generally, the higher the demands on the family for cash, the less likely the family will be able to absorb risk; it is more vulnerable.

Strategy : Choosing low risk enterprises

Based on their knowledge and experience, farmers may select enterprises or crop varieties that are usually reliable in preference to enterprises that result in variable yields between one year and the next.

Low risk enterprises often give lower, but more predictable incomes.

Strategy: Diversification, growing many things

Diversifying means producing more than one enterprise together on the farm. This can be done by producing more than one crop or combining with livestock.

Diversifying is done with the expectation that all enterprises will not fail together.

If one crop does not do well, the farmer has other crops on which to rely. This way, the farmers' income is not totally dependent on a single enterprise.

Strategy: Diversification, growing many things

Intercropping is a common form of diversification, but the benefit of diversification is often offset by increased costs.

The second enterprise may make very little money.

The income the farmer makes from the two crops may not be as high as if the farmer specialized in growing just one crop.

Strategy : Growing crops on different land parcels or plots

Farmers also rotate crops to protect their soils and stop diseases building up. This reduces costs and increases yields.

Growing crops in different locations on the farm reduces the impact of localized disease and micro-climatic factors.

But in order to increase the scale of their crop production, farmers must cultivate over a wide area which costs more money; the protection from risk needs to be weighed against the reduced income.

Strategy : Growing crops at different times

Staggered planting of the same crop can be used to ensure an even supply of food over as long a period as possible.

Staggered planting can help cope with uncertain rainfall.

Earlier planted crops may suffer, but later planted crops may still do well because the rains come at a better time for them.

Strategy: Selecting and changing production practices

Farmers can spread risk by using different production programmes.

Some farmers may buy inputs that control diseases or pests or support animal health.

These inputs reduce the chances of low yields.

Farmers may use pesticides and fungicides to reduce the risk of low yields.

Strategy: Selecting and changing production practices

Profits are also affected by the prices of inputs, using costly inputs could increase the risk of income shortfall; more stable yields from using costly inputs may not lead to a more stable income.

Farmers may use low cost, conservation practices such as composting and mulching as a way to manage risks and reduce the amount and cost of purchased inputs.

Strategy: Selecting and changing production practices

Determining whether or not an input reduces risk depends on the type of risks that the farmer is trying to address.

The added cost of doing this has to be compared against what could happen if they did not.

Strategy: Maintaining flexibility

Flexibility of the farming system allows farmers to shift from one cropping pattern to another without a negative effect on farm profitability.

Farmers may change the area of land planted or the number of livestock kept if, for example, market prices change markedly.

To avoid risking expenditure on inputs, a farmer may decide not to plant when rainfall is low.

Strategy: Maintaining flexibility

Intensive small stock farmers raising pigs or poultry might vary the use of their housing in response to price changes.

If farmers believe prices will be good, they may increase production by intensifying the use of the facilities.

If they believe prices will be low, they may try to increase efficiency and cut costs.

However, the costs associated with maintaining flexibility are often higher than farmers are willing to pay.

Strategy: Maintaining reserves

Reserves are a quantity of something stored for the future or for possible emergencies.

They can be kept by farmers in the form of money, physical inputs, final products and food.

Keeping reserves of inputs and products could protect farmers from the risk of price changes.

Food reserves also provide some security against the risk of crop failure.

Strategy: Spreading crop and livestock sales

Spreading sales means making several sales of a product during a year and can be used to reduce risk.

Farmers with marketing flexibility can spread cash sales and obtain a price similar to the seasonal average price.

This method of selling enables a farmer to avoid selling all production at the lowest price in the market.

Strategy: Partial processing

Drying perishable products such as vegetables, fruits and meats can also be used as a strategy to reduce risk.

Dried foods can be sold or used at times when the particular food item is out of season or in short supply.

This strategy can be used together with spreading sales and maintaining reserves.

Strategy: Traditional institutions and social arrangements

The customs and organization of traditional society tend to provide the individual family with a measure of security against risk.

Strategy : Maintaining resources

One of the key strategies to reduce the effect of risk is to maintain the farm's resources.

Sustainability

Sustainability is in a sense a balance between risk and vulnerability.

In terms of farm management, it is useful to assess sustainability in terms of the vulnerability of the farm's resources.

Such an assessment can be made in terms of the following basic factors:

Availability
Accessibility
Affordability
Appropriateness
Reliability (trustworthiness)

Availability

A resource is considered available when it is in regular supply.

In some African countries, there is a shortage of land.

In other countries labour is in short supply.

If farm profits are dependent on a resource that is in short supply, the farm is vulnerable and therefore less sustainable.

Accessibility

A resource is considered accessible when it is available and within reach of the farmer.

In many African countries, land is accessible only to men, not women.

Markets often require membership, and membership is exclusive.

Accessibility

Some social capital is accessible only by select members of the community.

Similarly, credit may be conditioned upon private ownership of land, making it not accessible to many smallholder farmers.

If a farmer plans a farm around a resource that the farmer cannot readily access, then the farm is more vulnerable, making it less sustainable.

Affordability

A resource is considered affordable when it is available at a price which allows for profits.

Many technologies are not accessible by smallholder farmers because the technologies are available only at high prices.

Sometimes this is a problem of quantities, other times it is a problem of exclusivity.

Either way, the most suitable resource in terms of production efficiency, may simply cost too much.

Appropriateness

Many resources are available and accessible, but not appropriate to the farmer's particular situation.

Often inputs such as seed and fertilizer are available only in quantities too large for the farmer to handle.

Often equipment choices are limited to those which require large land sizes to make them viable.

Appropriateness

Another aspect of appropriateness is social or cultural acceptability.

In many African cultures, pork is taboo. So even if it is a profitable enterprise, it may be inappropriate.

As with other factors, when the profitability of a farm relies on a resource that is inappropriate, the farm is less sustainable.

Reliability (Trustworthiness)

A resource is considered reliable when it produces consistent performance or behaviour.

Land that is known to be in good condition is reliable.

A supplier that supplies the right inputs at the right time is reliable.

Reliability (Trustworthiness)

Reliability is linked to trustworthiness.

Can a farmer trust the supplier to deliver according to his/her word?

Will the equipment or seed variety perform as advertised or promised?

Is the market information usually correct?

If a farmer must rely on a resource (particularly a human resource such as labour) that is not reliable or trustworthy, the farmer is highly vulnerable and the farm is not sustainable.

Session 3.5

Information and farm management

Learning outcomes:

Understand the role of information in farm management

Understand the difference between data and information

Understand sources of data and information

Understand the role of the extension worker in collecting and utilizing management information

Information and farm management

This session explores the role of information in farm management decision-making. Also it explores your role in supporting farmers in locating and using information.

Farmer decision-making

Farmers are constantly making decisions.

Farmers require timely and appropriate information at every stage in the farm management decision-making process.

Information is needed to diagnose the farm, to set objectives, to plan, implement, control and monitor farm activities and to make more efficient use of their limited resources.

Farmer decision-making

The better skilled farmers are in using data and information, the better their farm decisions will be.

In addition to being able to access and interpret data and information and to communicate this with farmers, you will also need to help farmers develop these skills.

Farmer decision-making

Assisting farmers to obtain information to make input, production and marketing decisions is an important part of your work.

It is not sufficient to provide information on production only; input and market information is just as vital to the profitability of the farm.

Farmer decision-making

As farmers become more market-oriented, you must also become more market-oriented.

If farmers cannot sell what they produce, then much of your advice on production techniques will have been wasted.

Farmer decision-making

Farmers' circumstances are not static.

There are often changes occurring that influence the farming operations.

Farmer decision-making

Whenever there is a change in the circumstances of a farmer, it may be necessary for you to review the situation with respect to target farmers, suitability of recommended technologies and the introduction of new enterprises.

Staying on top of these changes requires a good command of relevant data and information.

Farmer decision-making

You have an important role in the process of information gathering, interpretation, and dissemination.

They can be a vital element in feeding information to the farmer and the rural community.

For inputs, farmers need to know

- Who are the reliable suppliers?
- Where can they obtain credit?
- What is a fair interest rate for credit?
- What inputs are available/which are the most appropriate inputs?
- What prices will ensure profits/how will prices affect profit?

For production, farmers need to know

- What resources do they have available?
- What is their condition?
- What crops/enterprises are best suited to their resources?
- What skills are needed for each enterprise?
- What inputs and labour are required for each enterprise?
- What technologies are most appropriate for their resources?

For markets, farmers need to know

- What markets exist?
- Where can they sell their products?
- What are the quality requirements?
- What are the packaging and related requirements?
- How can they get their products to the various markets?
- What will this cost?
- What prices can they expect for their products?
- How will prices affect profits?

Farmer decision-making

You need to be good at communicating with farmers and passing on knew knowledge and skills.

In order to be effective as agents of information exchange, you have to have knowledge of sources of data and information and be able to obtain it quickly.

Farmer decision-making

Sources of data and information could include:

The experience of good farmers

The extension service itself

Private companies

Research workers

Up-to-date reference books

Libraries

Friends

Teachers

Agents selling equipment and inputs

Transport companies

Traders

Wholesalers

Retailers

Farmer decision-making

An important skill is the ability to assess the value and relevance of bits of information in solving particular problems in the local situation.

It is also important to know the difference between data and information.

What is the difference between data and information ?

Data refers to the raw numbers and facts such as prices, costs, quantities, etc.

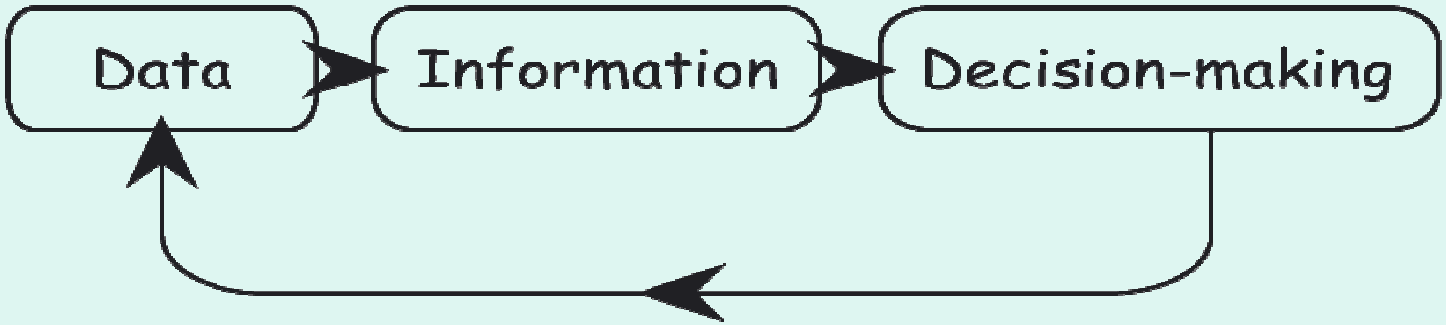
Information is data that is processed in a way that is useful for decision-making.

What is the difference between data and information ?

Information increases farmer's knowledge, which leads to improved decision-making and thereby results in higher income and livelihood outcomes.

Access to appropriate information empowers farmers and assists them in their efforts to become more food secure and more profitable.

The relationship between data, information and decision-making



Data can be categorized into different types, all of which should facilitate the decision-making process

Categories	Specific data
Technical and physical	Soil characteristics: soil type, soil texture, soil analysis data, etc. Weather: rainfall, humidity, temperature, storms, drought. Land characteristics: slope, topography, elevation, carrying capacity, etc. Production: yields per unit of land, yield per unit of labour Production technology: fertiliser, disease control, seed variety, harvest and post-harvest technologies, etc. Labour: source of labour, seasonal labour distribution, gender, etc.
Economic	Prices: prices of inputs and products Buyers: prices, quality requirements, terms of payment, etc. Supply and demand: conditions Sources of credit: conditions, terms of payment, interest rates, etc.
Social	Community culture: customs beliefs and traditions Community organization: farmer associations, cooperatives, civic groups, religious groups, etc.
Institutional	Support services: extension, research, banking, etc. Private organizations: NGOs and other private organizations Government organizations: International (e.g. UN), Regional, National, Provincial, Local
Political	Government: policies and priorities

What is the difference between data and information ?

Data is useful only when it has been processed into information.

Farmers need information that will help them make decisions about their farms.

Data must be processed in a way that will make it relevant to the farmers' individual situations.

It is one of your tasks to turn data into such information.

Guidelines for changing data into appropriate information

1. The combining and interpretation of data needs to match the issues of real concern to the farmers (these may differ for different groups of farmers).

2. The level of detail needs to match the educational level and literacy of the farmer.

3. Use definitions of terms and methods of presentation that make sense to the farmer's numeric background and technical knowledge.

4. The level of complexity of the message must be suited to the farmer and the farming system.

5. Graphics and other visual diagrams will be particularly useful in focusing the farmer's interest and aiding understanding.

Data and information sources

Farmers and extension workers can obtain data in two ways:

1. They individually or together collect data first hand; Primary data.

2. They can use data collected by someone else; Secondary data.

Data collected first-hand

Primary data is the data you and the farmer collect either independently or together.

The data is collected directly from respondent(s).

The table on the next slide gives some examples of first-hand data.

Source	Type of data collected
Farmer Semi-structured interviews, questionnaires, direct observation, case studies, etc.	Data on farm inputs, farm gate prices, yields, etc.
Farmer Examination of farm records	Historical production & marketing information including crop yields, livestock production and cost. (Note: Production records might tell the farmer and rural entrepreneurs and rural entrepreneurs how successful she was at managing the farm in the past. The combination of historical results and the risk preferences of the farmer and rural entrepreneurs and rural entrepreneurs is useful in the planning process as well as to identify possible risk management strategies for the future.)
Community, Group, Church/Religious leaders Key informant interviews, semi-structured interviews	Information about members of the community or population under study to identify lead farmer and rural entrepreneurs and rural entrepreneurs s with whom the extension workers can work. Information about the status of social capital arrangements.
Government officials, including extension staff Key informant interviews, semi-structured interviews; Review of government documents	Information relating to land holdings, the farmer and rural entrepreneurs and rural entrepreneurs s benefiting from government programmes or involved in trials and demonstrations, etc. Information about farmer and rural entrepreneurs and rural entrepreneurs -led initiatives, farmer and rural entrepreneurs and rural entrepreneurs responses to technologies and about government initiatives (e.g. infrastructure development) which may impact on farmer and rural entrepreneurs and rural entrepreneurs s' decisions.
Remote sensing and computer terminals Direct reading from instruments	Technical data relevant to agriculture
Weather stations and laboratories Review of published data; Direct readings	Rainfall, soils, vegetation, etc.

Data collected by others

Data used by a farmer or yourself, which has been collected by others.

The data could have been collected for some other purpose different from that of the farmers or your needs , but it can still be very useful.

There are a number of these sources available to you and farmers which can be seen on the next slide.

Source	Type of data and information
Lending institutions	Data on lending for agricultural enterprises and ventures.
Veterinary and fishery institutions	Data on livestock numbers and fish population stocking rates This data is often useful when planning grazing schemes or fish farming enterprises.
Publications and journals	Any issue related to rural enterprise management
Television and radio programmes	Data is provided on a regular basis particularly on market prices of major agricultural commodities.
Development projects	Baseline surveys and evaluations
NGOs (Non-governmental organizations)	Wide range of issues, depending on their particular areas of focus.
Agricultural input dealers	Product specifications, performance, prices, availability, etc.
National statistics	Historical yield and price information (Note: national data is often an average of the information collected from many farms and as such it does not tell the farmer and rural entrepreneurs and rural entrepreneurs exactly what he or she can get. Comparing historical farm yields to that of similar farms in the same area is an additional source of information on how the farmer and rural entrepreneurs and rural entrepreneurs can improve farm performance.)

Your role in data and information...revisited

As farmers become more market-oriented, you must also become more market-oriented.

Gathering data and information on your own, working with farmers to gather data, working with farmers to process data into useful information and helping/training farmers in data gathering and processing skills are all important parts of your job.

Your role in data and information...revisited

Most farmers tend to develop information from processing data gathered from their own experience.

They may gather production data from their own farms of other farmers.

Market data often comes from contact with traders (buyers).

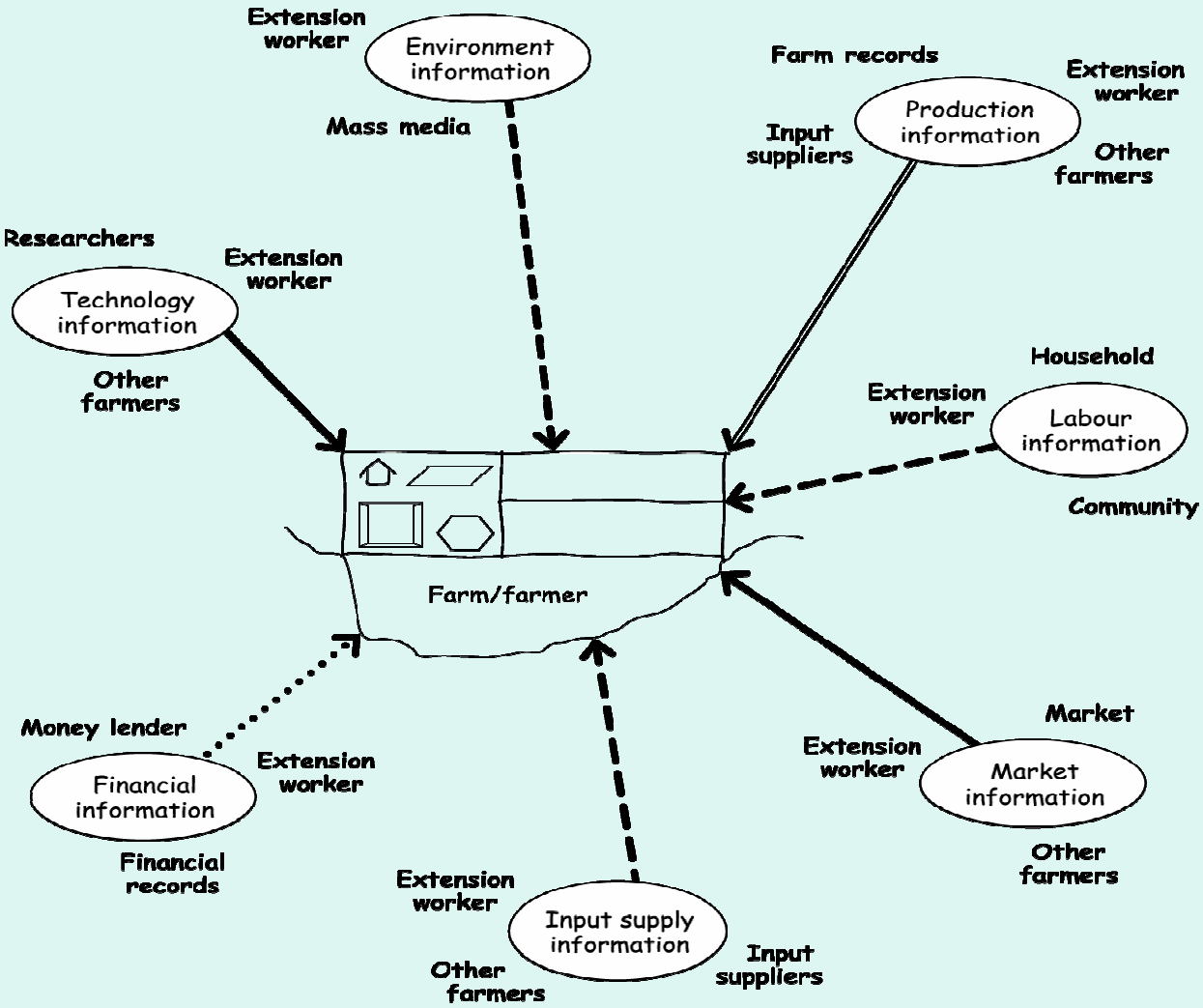
Input data comes from contact with suppliers.

Your role in data and information...revisited

When you are familiar with how farmers in their area currently obtain data and information, you will be better able to facilitate the process.

Special care must be taken to ensure that data and information is not only about production; input and market information is just as vital to the profitability of the farm.

Diagram — Information flow map



Module 3 :Review

- Do you believe that the overall purpose of the module has been achieved ?
- You should have a good understanding of the critical role of the farmer as a decision-maker related to resources, inputs, markets, risk, vulnerability, sustainability and information.

Module 4:
FARM MANAGEMENT TOOLS

Session 4.1 Constraints and opportunities
Session 4.2 Gross margin budgeting
Session 4.3 Marketing margins
Session 4.4 Break-even budgets
Session 4.5 Sensitivity analysis
Session 4.6 Planning for food requirements
Session 4.7 Labour planning
Session 4.8 Cash flow
Session 4.9 Records

Introduction

This module features nine farm management tools, all can be used at farm level and on individual farm enterprises to analyse and plan farm management activities.

They can be used for diagnosis of an existing situation, planning for the future and monitoring progress of farmers throughout the year. Here you will learn when to apply the different tools and how to use them.

Session 4.1
Constraints and opportunities

Learning outcomes:

Understand the purpose of the instrument

Ability to know when to use the method

Ability to use the method

Constraints and opportunities analysis

This session explains the tool of constraints and opportunities analysis; a tool used to identify weaknesses, potentials, the causes of the weaknesses and strategies for building potential strengths.

Constraints and opportunities analysis

The constraints and opportunities analysis is a tool used to identify specific problems within the farming system as a whole or within individual enterprises.

The tool helps a farmer identify weaknesses and potentials within the whole system or its parts. It also helps identify the causes of those weaknesses.

Constraints and opportunities analysis

The tool can help the farmer develop strategies for overcoming the weaknesses and building on the potentials identified.

The constraints and opportunities analysis is used to diagnose the situation of the farm or selected enterprises.

Constraints

A constraint is a situation or factor that prevents the goals set by the farmer from being attained.

Constraints can be physical, climatic, economic, institutional, social and political.

Some of them may fall within the control of the farmer while others may not.

Constraints

A farmer uses a constraints analysis to trace the source or cause of a problem.

Most problems are symptoms of other problems. It is important that the farmer is aware of the cause of the problem so that the farmer doesn't waste resources treating a symptom alone.

The constraints analysis takes into account all factors so that proposed actions could be taken to address the constraints.

Constraints

For example, let us say a farmer identifies low income as a constraint in an enterprise.

Is this the cause of the problem?

What is the cause of the low income?

Low income may be due to low yield, low price or both.

Constraints

Low yields may be due to low input use, which may occur as a result of high costs or non-availability of inputs, lack of technology, attack of pests and diseases, or lack of irrigation water.

On the other side, low prices may be due to poor quality of production, seasonality of the produce, oversupplies of produce in the market, lack of market information, poor quality of produce, lack of storage facilities, lack of drying facilities etc.

Constraints

Constraints may also be related to the physical factors such as soil type, climatic factors, or to socio-cultural, policy and institutional over which farmers have no control.

These constraints are not always obvious, so they need to be pointed out.

Constraints

When farmers know what the real constraints are, they will know which constraints they can change and which they cannot change.

Farmers will be in a position to make decisions about how to change the ones they can change and how to change the farm to make profits within the constraints they cannot change.

Opportunities

In planning for improvements on farm, opportunities need to be considered in the light of the identified constraints.

Opportunities should be identified in relation to the constraints in order to design improved farm plans.

Conducting an analysis

To conduct a constraints analysis requires two tools: a constraints tree and a constraints and opportunities matrix.

A constraints tree helps the farmer trace the actual constraint by refining and digging deeper into the issue.

Having completed a constraints tree, the analysis can be completed by using a constraints and opportunities matrix.

Example; Conducting an analysis

The farmer experiences low enterprise profitability. Low profitability is found to be caused by low yield and low price.

Here low yield is found to be caused by three different factors:

Untimely planning

Pest infestation

Poor soil

Example; Conducting an analysis

Low price is found to be caused by two factors:

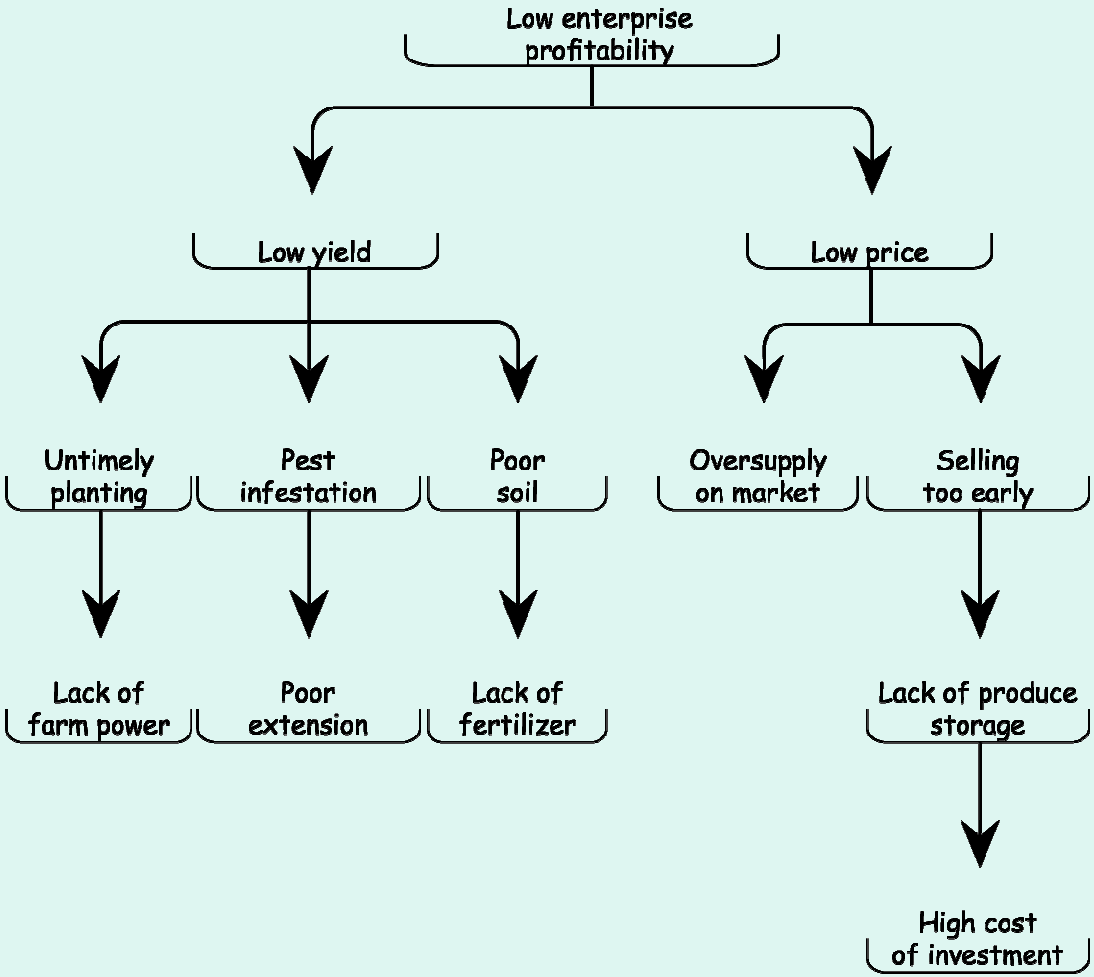
Poor quality produce

Selling early

Each of these factors are in turn caused by another factor.

This process of identifying the causal constraints continues until it reaches a logical conclusion within the immediate knowledge of the farmer.

Conducting and analysis : Example of a constraints tree



Example; Conducting an analysis

Note

It is important that the constraints identified must be real and not just possible.

In other words, they must be things the farmer knows or believes to be true about the farm or farm situation.

Constraints and opportunities analysis

After a constraints tree has been completed, list the constraints and identify the opportunities

A format of a matrix is shown on the next slide

Constraints and opportunities matrix

Enterprise:					
Key constraints	Lowest level constraints	Opportunities	Changes to be made to current practice	Resources needed	Who is responsible

Steps for completing the matrix

1. **Enterprise**: Write the enterprise that you are engaged in.

2. **Key constraints**: Using the constraints tree analysis as a guide, identify the key constraints in each particular enterprise. List all the constraints except the last one. (The last one is the lowest level constraint.)

3. **Lowest level constraints**: These are the constraints listed at the end of a particular listing of constraints. They are usually the boxes at the bottom of the constraints tree.

Steps for completing the matrix

4. **Opportunities**: Decide and write down a specific opportunity to address each of the identified lowest level constraints; write specific opportunities.

   Constraints will present new objectives or opportunities to pursue. In some cases something will need to be fixed. In other cases, the constraints may point to an opportunity not considered before.

Steps for completing the matrix

5. **Changes to be made to current practice**: Specify the changes to be made to current practices. Consider the following when deciding what changes to make:

   (i) *Practices*: In what way does my current management practice need to be changed to address the constraint identified?

   (ii) *Technology*: What are the current technologies available? What new technologies can be adapted for improving the enterprise?

Steps for completing the matrix

Changes should reduce or remove existing constraints; they should focus on the lowest level constraint. Changes can relate to enterprises, the farm and the non-farm area.

For example, at the enterprise level, changes may mean changing an agricultural practice. At the whole-farm level, the changes may include the introduction of alternative enterprises.

Steps for completing the matrix

6. **Resources**: What resources are needed (technical, financial and human)? Is their room for expanding the existing resources for the enterprise selected?

7. **Who is responsible**: Identify the person (s) responsible for implementing the identified changes.

Steps for completing the matrix

8. Once changes and resources have been identified,
the overall effects on the farm system should be appraised. In practice, many enterprises are technically and economically interrelated.

For example, higher grain yields may increase the availability of straw as feed for livestock. A small change may affect the whole farm-household system, posing many questions to be answered by farmers and extension workers.

An example of a completed constraints and opportunities matrix using the information from the constraints tree shown earlier

Enterprise: Maize					
Key constraints	Lowest level constraints	Opportunities	Changes to be made to current practice	Resources needed	Who is Responsible
Low profitability -Low price	Oversupply on market	Introduce a higher value crop; Soybeans	Plant half the maize lands under Soy beans	Extension information on how to grow Soybeans.	Farmer with support from extension service
Low profitability -Low price -Sell too early -Lack of product storage	High cost of investment relative to ability to finance	Investigate alternative options; seek loan	Train labour to pack and store for the market	Training support from extension service	Farmer with support from extension service
Low profitability -Untimely planting	Lack of farm power	Negotiate with brother-in-law to use tractor	Use tractor on at least 50% of the farm		
Low profitability -Pest infestation	Poor extension information	Learn about integrated pest management at FFS	Apply ISP on fields	Training	Farmer with support from extension service
Low profitability -Poor soil	Lack of fertilizer	Buy fertilizer	Apply fertilizer on 50% of crops	Guidelines on using fertilizers	Farmer and rural entrepreneur with support from extension service

Analyzing constraints and opportunities

Note

There is no single right or wrong set of answers

Each analysis will differ depending on the resource base of the farm , the farmer's attitude toward risk or the reliability of information.

What is most important is that farmers begin to apply a systematic process of identifying constraints and opportunities. This will help them improve their farm management skills.

Session 4.2
Gross margin budgeting

Leaning outcomes:

Understand the purpose of the instrument in diagnosis and planning
Understand the application of the tool for forward planning
Understand the use of the tool in choosing between alternatives
Understand when to apply the budgeting tool
Understand how to apply the tool
Ability to know when to use the method
Ability to carry out the method
How to budget for annual crops/ enterprises
How to budget for livestock and perennials

Gross margin budgets

This session explains the concept of a gross margin, its relation to production costs, gross income and profit. A gross margin is a simple and powerful tool for analysis and planning.

You will look at the components of gross margin and learn how to calculate it and when to use it.

What is a gross margin budget?

The term gross margin generally refers to the remaining income from an enterprise after the variable costs are deducted;

Gross income less variable costs.

A gross margin budget is a fairly detailed estimate of the output, cost and profitability of individual crop and livestock enterprises.

The gross margin budget includes all variable costs involved in producing the enterprise.

What is a gross margin budget?

Gross margin is not profit; it does not include all costs; excludes fixed costs which the enterprise shares with other enterprises. But it is an indication of the profitability of an enterprise.

If an enterprise does not have a positive gross margin, then that enterprise is not profitable.

What is a gross margin budget?

Gross margin can be used to compare the performance of a single enterprise using different farming practices and technologies.

Similarly, it can be used to calculate the potential profitability of growing an entirely new crop if farmers wish to diversify their products.

What is a gross margin budget?

A gross margin is usually calculated on a unit basis.

It can be calculated on a per hectare basis, or as a return to labour, based on the number of days worked by the farmer and his/her family. These would be expressed as:

$ per ha, $ per worker, $ per person day

What is a gross margin budget?

Farmers who market some farm products should know the costs of production and should be able to calculate the gross margin.

This will help farmers to analyse the current performance of an enterprise using current prices and input-output information.

What is a gross margin budget?

Using the gross margin they can project information into the future. This will help them plan and make decisions. This is called budgeting.

Components of a gross margin

The gross margin is made up of two major parts:

Gross income

Variable costs

The basic calculation for a gross margin is as follows:

Gross margin = Gross income - Variable costs

How can gross margin be used?

Gross margin is a simple, useful and practical tool for assessing the comparative profitability of different farm enterprises or different technologies.

Gross margin analysis can be done by simple arithmetic.

How can gross margin be used?

Note

Refer to participatory methods to learn non-number based methods of calculating gross margins.

This will make it possible for less literate and numerate farmers to make comparisons; this will assist such farmers in taking better decisions about their farms.

How can gross margin be used?

Gross margin analysis is particularly suitable for farmers who are selling increasing amounts of their farm production in the market place.

Comparisons can be made:

Between farmers

Within the same farm over time

Between different technologies on the same enterprise.

How can gross margin be used?

Gross margin can be used as a planning tool in evaluating the potential value of alternative technologies and/ or enterprises.

This will help farmers make informed decisions about their future farming activities and about opportunities as they present themselves.

How can gross margin be used?

The advantages of gross margin analysis include:

Information required is simple and easily collected

Analysis is easy to complete

Results are easy for both farmers and you to understand

How can gross margin be used?

Gross margins ensure that values for non-purchased inputs such as family labour, draft power and manure are included among the variable costs.

When this is done, farmers begin to value these inputs more accurately. This in turn will help them make better decisions about non-purchased inputs.

How can gross margin be used?

The results from the gross margin analysis can be useful in helping:

Farmers decide whether or not to adapt a technology or farm enterprise

Farmers decide whether or not to introduce new market-oriented enterprises

You decide whether or not to encourage farmers to adopt a particular technology or enterprise

Calculating a gross margin

The basic formula for calculating a gross margin is as follows:

Gross margin = Gross income – Variable costs

Gross income (value of production) for crop enterprises

Calculating gross income is different for annual crop enterprises and livestock and perennial crop enterprises.

The gross income or value of production is the money received from the sales of produce plus the value of unsold produce.

Gross income (value of production) for crop enterprises

The gross income is obtained by multiplying the physical output by the farm gate price of the product and valuing home consumption. The farm gate represents the point of first sale.

Gross income = yield x farmgate price

Gross income (value of production) for crop enterprises

It is generally incorrect to calculate gross income for the enterprise by using the price at which the farmer sold the produce in the marketplace or elsewhere off the farm.

If the farm gate price is not known, then it can be calculated by deducting the costs of transportation and other marketing expenses from the market price.

Gross income (value of production) for crop enterprises

For example, let us say that a farmer had harvested 3 tonnes of cassava.

The farmer sold most of it at the market for $200/tonne. It cost $10/tonne to take the cassava to market. There were no other marketing expenses.

Gross income (value of production) for crop enterprises

The outcome of this is as follows:

The farmgate price was:$200/tonne - $10/tonne = $190/tonne

The gross income was: $190/tonne X 3 tonnes = $570

Gross income (value of production) for crop enterprises

When farmers are planning, they will not yet have sales, consumption and storage data for the crop which has not yet been planted.

In this case they will want to estimate the gross income.

To do this, they need data about yield and price. If they know that the farm produced 3tonnes per ha last year and know the average farm gate price was $200 per tonne, then by using the formula, they can estimate the gross income per ha.

Gross income (value of production) for crop enterprises

No matter how much farmers sell, consume or store, the value of the crop (gross income) can be determined by multiplying yield by price.

However, a more detailed understanding of gross income highlights that the gross income from an enterprise comprises a number of sources of income:

Produce sold
Produce consumed by the farmer's family/workers
The produce put into storage
By-products.

Produce sold

The money received from the amount of the farm product sold on the market is part of the gross income of the enterprise.

Gross income from sales is calculated as follows:

Income from sales = Quantity of produce sold × Farmgate price

Produce consumed by the farmer's family/workers

Not all of the product produced on a farm will be sold. Some will be consumed (eaten) by the farm family and / or the workers.

This does not bring in cash directly to the farm, but the product has a value and therefore is included in the gross income. The contribution to gross income from produce consumed is equal to the value of the produce consumed.

Produce consumed by the farmer's family/workers

This value is calculated as follows:

Value of produce consumed = Quantity of produce consumed × Farmgate price

Produce put in storage

Some of the harvest will be stored. This may later be sold or consumed. But either way, it has a value.

The contribution to gross income from produce stored is equal to the value of the produce stored.

This value is calculated as follows:

Value of produce stored = Quantity of produce stored × Farmgate price

By-products

In addition to the main produce, the enterprise may also produce by-products.

An example is stover from maize or the manure from a livestock enterprise.

These by-products can be sold or used on the same or another enterprise.

By-products

In either case, they have value. If some or all of the by-product is sold, the contribution to gross income is equal to the income received from the sale of the by product.

This is calculated as follows:

Income of by-product = Quantity of by-product sold × Price of by-product

By-products

If some of or all of the by-product is used on the farm, the contribution to gross income from by-products is equal to the value of the by-products.

This value is calculated as follows:

Value of by-product used on the farm = Quantity of by product used × Price of by-product

By-products

Thus the total value of the by-product is calculated as follows:

Total value of by-product used on the farm = Income from by-product sold + Value of by-product used on the farm

Gross income

Therefore, the gross income of an enterprise is calculated as follows:

	Income from sales
+	Value of produce consumed
+	Value of produce stored
+	Value of by products on the farm
=	Total gross income

Gross income for crop enterprises; an example

Gross income of 1 hectare of maize:

Maize grain sold	11 bags of 90Kg at $13/bag	= $143.00
Grain consumed at home	2 bags of 90Kg at $ 13/bag	=$ 26.00
Stover sold as by products	5 tonnes at $ 9.00/tonne	= $ 45.00
Gross income		=$214.00

Gross income for livestock enterprises and permanent crops

Farming activities for perennial crops (e.g. fruit trees) and livestock enterprises extend over more than a single year.

Here gross income is defined as the difference between the closing valuation of produce stored, plus sales (including marketable produce and by-products consumed on the farm) and the opening valuation of produced stored plus purchases.

On the next slide you can see an example of a gross income calculation format for a livestock enterprise.

Example of a gross income calculation for a livestock enterprise format

	Item	$	
	Closing valuation (at the end of year)		
-	Opening valuation (at the beginning of year)		
=	**Increase/decrease in value of stock (inventory change)**		(A)
	Income from sales (livestock)		
+	Income from sales (by-products)		
	Value of products used for home consumption		
=	Value of sales and consumption		
-	Purchases of animals (during the year)		
=	**Net sales**		(B)
	Gross income		(A+B)

Gross income for livestock enterprises and permanent crops

The gross income calculated for perennial crops uses the same calculation method.

Changes in the values of tree crops and the value of produce stored on the farm would be part of the gross income calculation.

Gross income for livestock enterprises and permanent crops

Since it is possible to produce more than a single short-term crop from the same land area within a year, a distinction needs to be made between gross income for a particular season and gross income for a particular year.

The gross income of a crop for the year may be the sum of the gross income for two or more crops grown during the year.

Variable costs

Costs associated with a farm can be divided into two kinds of costs: variable costs and fixed costs.

Total cost of production = Variable costs + Fixed costs

Variable costs

Variable costs are the costs of actual production. They apply to specific enterprises on the farm.

These costs vary as output changes. These costs occur only if something is produced. They do not occur if nothing is produced.

Variable costs

Typical variable costs include the cost of seeds, fertilizers, sprays, fuel for machines, hired labour, livestock feed, and veterinary costs, among others.

Variable costs can be allocated to specific enterprises.

An example of variable costs for maize is shown on the next slide.

Example

Variable costs for maize

Item	Unit	Quantity	Unit price ($)	Amount ($)
Seed	kg	10	0.90	9.00
Fertilizer	50 kg per bag	1	13.00	13.00
Manure	Tonnes	4	13.00	52.00
Pesticide	kg	4	2.00	8.00
			Total inputs and materials	82.00
Labour				
Land preparation	person-days	20	0.70	14.00
Planting/manuring	person-days	10	0.60	6.00
Weeding	person-days	15	0.60	9.00
Harvesting/ threshing	person-days	10	0.60	6.00
			Total labour	35.00
			Total variable costs	**117.00**

Fixed costs

The fixed costs apply to the farm as a whole.

Fixed costs are costs which do not vary with changes in production output of a specific type of crop or livestock.

Fixed costs remain the same regardless of the output. Even if there is no output, there will still be fixed costs.

Fixed costs

Fixed costs include, for example, the cost of purchasing a tractor or a piece of equipment which is used on the whole farm, and the cost of a head of livestock.

Most of the costs of keeping a tractor, equipment and draft cattle remain the same if the item is or is not fully used.

Fixed costs also include permanent labour, management, and depreciation, among others. (Depreciation is the costs of the declining value of things like tractors, machinery and buildings. Depreciation is usually calculated as an annual payment).

Calculating the gross margin

Costs and income analysis are usually done after the harvesting of the crop at the end of the cropping season or year.

In the case of perennial harvest, yields and prices vary during the year.

Therefore, the time of analysing costs and income should be done for a given crop year. In such cases, it is important that inputs and output refer to the same year being considered for analysis.

Calculating the gross margin

A calculation of a gross margin (using the figures from the previous examples) for 1 ha of maize is shown below.

Gross income	$214.00
Variable costs -	$117.00
Gross margin =	$ 97.00

Calculating the gross margin : Scaling to units for comparison

To be able to make comparisons, the gross margin calculations must be made on the same unit basis, such as hectare, labour or water.

If the information available to farmers is for more or less than one unit, then they need to convert it to one unit.

See two examples on the next slides .

Example
Farmer 1 with 0.75 hectares of millet

Source of Income	**Quantity (Tonne)**	**Farmgate price ($)**	**Value ($)**
Sales at Market	1.0	200	200
Consumed	0.5	200	100
Stored	0.5	200	100
By- Product	0.2	50	100
Total yield			
Millet	2.0		
By- Prodcut	0.2		
		Gross income	410

Example
Farmer 1 with 0.75 hectares of millet

Gross income for the millet enterprise is $410.
Suppose variable costs are $300

Gross income = $410

Variable cost = -$300

Gross Margin = $110

Example
Farmer 1 with 0.75 hectares of millet

Gross margin for 0.75 hectares is $110.

But to make a comparison it is necessary to convert this to a unit basis, in this case 1 hectare;

$110/0.75= $147 per 1ha

Farmer 1 has a gross margin of $147 per hectare.

Example
Farmer 2 with 1.5 hectares of millet

Source of Income	**Quantity (Ton)**	**Farm Gate price ($)**	**Value ($)**
Sales at Market	2.0	200	400
Consumed	0.5	200	100
Stored	1.5	200	300
By- Product	0.5	50	25
Total yield			
Millet	5		
By- Product	0.5		
		Gross income	825

Example
Farmer 2 with 1.5 hectares of millet

Suppose farmer has variable cost of $700;

Gross income = $825

Variable cost = -$700

Gross Margin = $125

Example
Farmer 2 with 1.5 hectares of millet

Gross margin for 1.5 hectares is $125, but to make a comparison it is necessary to convert this to a unit basis, in this case 1 hectare:

$125/1.5= $83.3 per 1ha

The farmer has a gross margin of $83.3 per hectare

Comparison

Total gross margin for farmer 1 is less than the total gross margin for farmer 2.

When gross margin is converted on a unit basis, farmer 1 has a higher gross margin, despite the enterprise is smaller.

Although farmer 2 has a larger final income, farmer 1 has a more profitable farm.

With more land, it is likely that farmer 1 would earn more income than farmer 2.

Comparison

Note

The unit of measure for a gross margin is usually the unit of the most limiting factor. This may include land, labour, water or money invested.

In the case of crops (and most trees), the unit of measure is normally per hectare (or acre) – that is, based on land.

In the case of livestock, the unit of measure is production per head for livestock and sometimes in the case of trees, the unit of measure is production per tree.

Calculating the gross margin : Converting from units to determine actual income

In many cases, the farmer will obtain gross margin information about a crop where the information is presented on a unit basis.

A farmer who wants to know what the actual gross margin would really be, needs to convert from a unit to the actual size.

To do this the farmer must multiply the per-hectare gross income by the actual number of hectares.

Example:The gross margin for maize in the area is $200 per hectare

Case 1 : Farmer 1 has 0.8 ha, which yield;
0.8ha x $200/1ha = $160 per 0.8ha

Case 2 : Farmer 2 has 1.6 ha, which yield;
1.6ha x $200/1ha = $320 per 1.6ha

Farmer 1 can expect to have a total gross margin of $160, while Farmer 2 of $320.

Farm profit

The farm profit (or whole farm income) is an estimate of the overall profitability of the farm as a whole.

Farm profit is calculated by combining the gross margins of each of the farm enterprises and deducting fixed costs.

The final figure represents the profit or income of the farm.

Whole farm income (profit) = Gross margins of all enterprises - Fixed costs

Calculation of whole farm profit; example

A farmer with 3.5 ha of land has the following gross margins from three enterprises.

Example: Gross margins for three enterprises

Enterprises	Ha	Gross Margin per hectare ($)	Gross margin ($)
Millet	1.5	150	225
Maize	0.5	120	60
Groundnuts	1.5	200	300
Total			585

Example: Gross margins for three enterprises

The whole farm gross margin is $585. To calculate the whole farm profit, the farmer needs to deduct the fixed costs;

Whole farm gross margin	$585
Fixed costs	-$200
Farm Profit	=$385

Calculation of whole farm profit; example

Since fixed costs do not change very much with changes in production, if the farmer can increase the gross margins on the farm, profits will automatically increase.

For this reason it is possible to plan in terms of gross margins and leave the farm profit to look after itself.

Since most small-scale farmers in Africa have very few fixed costs, the gross margin is a very useful indicator of overall farm profit. Farmers need only to plan in terms of gross margins.

Example of the whole farm gross margin for a farm with livestock and crops

Enterprise	Unit	Gross margin per unit ($)	Gross Margin ($)
Millet	1.5ha	150	225
Maize	0.5ha	120	60
Ground nuts	1.5ha	200	300
Goats	2 LSU*	25	50
Total	3.5ha 2 LSU		635
*LSU (Livestock units)			
		Fixed costs	200
		Farm profit	**435**

Calculation of whole farm profit; example

Note

The unit for crops is hectares and the unit for the livestock is LSU (livestock units).

The actual gross margin is calculated by multiplying the gross margin per unit by the number of units.

Fixed costs and depreciation; an example

For example, if the total cost of a tractor were added to the other costs of a particular crop in one year, then the enterprise is likely to appear to be unprofitable.

To give a truer picture of profitability, the cost of durable capital items has to be applied over several years. A method is used to spread the costs of durable capital items over their useful life.

It gives us a fairly accurate idea of what it costs to use the item for a year.

Depreciation; an example

The cost of a tractor is $35 000. It has a useful life of 7 years.

Therefore, each year, one seventh of the cost of the tractor is taken off its value and added to the enterprise costs.

The formula is as follows:

$$\text{Depreciation/year} = \frac{\text{Purchase price (\$)}}{\text{Useful life (years)}}$$

Depreciation: example

$\frac{\$35\,000}{7 \text{ years}} = \$5\,000$ per year

Each year, for seven years, $5 000 will be a fixed cost to the farm.

This fixed cost remains on a yearly basis until the tractor comes to the end of its life.

Steps for calculating gross margins

1. Determine an average yield per hectare for the enterprise.

2. Determine the average farm gate price for the enterprise (The farmer or you will need to take the information on prices available in the market and deduct all of the marketing costs from the farm gate to the market.)

3. Calculate the gross income from sales per hectare (i.e. the average yield per hectare multiplied by the price at the farm gate.)

Steps for calculating gross margins

4. Calculate the value of consumed and stored produce.

5. Calculate the non-labour variable cash costs of inputs and materials per hectare for the enterprise. These should include the costs of seeds, fertilizer, pesticides, machinery services etc.

Steps for calculating gross margins

6. Estimate the labour costs per hectare per activity for each enterprise (e.g. land preparation, sowing, weeding, harvesting, etc.).

   First: Determine the number of hired person-days required per activity per hectare.

   Second: Determine the rate of pay for hired labour.

   Third: Calculate the cost of hired labour by multiplying the number of hired person day per activity by the current wage rate for each activity.

Steps for calculating gross margins

Note

In some countries there is different rate of pay per hectare per activity. If this is the case, then the costs will be calculated per hectare per activity.

In some countries labour is hired at a fixed rate per day. If this is the case, then the costs will be calculated on the total person-days.

Steps for calculating gross margins

7. Calculate the cost of family labour by multiplying the number of family labour person day days per activity by the opportunity cost of family labour (i.e. the current wage rate, as in step 6).

8. Calculate the total variable costs by summing the cost of inputs and materials, hired labour and family labour.

Steps for calculating gross margins

9. Calculate the gross margin per hectare by subtracting variable costs from the gross income.

10. Repeat this calculation for each enterprise on the farm.

11. Compare the gross margins among enterprises and determine which is more profitable.

Steps for calculating gross margins

Note

The procedure for calculating the gross margin in terms of returns to labour or per labour-day is similar to the previous procedures except that the total family labour is not included.

Returns to labour are calculated by taking total income less variable costs and dividing by the total labour days used.

$$\textbf{Return to labour} = \frac{\textbf{Total income - Variable costs}}{\textbf{Total labour days}}$$

Session 4.3
Marketing margins

Learning outcomes:

Understand the purpose and tool in diagnosis

Understand when to use the method

Understand how to carry out the method

Marketing margins

In this session you will learn the basics of calculating marketing margins. By understanding and knowing how to use such a tool, you will be able to help farmers understand the reason why there are large price differences between what farmers receive and what market prices are.

Marketing margins

Why is the price of a product in a shop or retail market often so much higher than the price paid to the farmer?

Getting a product from the farm to the consumer is part of the marketing process.

Each of the different steps involved in moving produce from the farm to the consumer, along the marketing chain involves costs.

Marketing margins

Traders spend money on transport or packaging but there are many other less obvious costs.

These costs are not always visible; those doing the marketing are often accused of making unreasonable profits.

Farmers look at the prices paid to them by traders and compare them with the prices consumers pay for the same product. They often assume that farmers and consumers are being exploited.

Likewise, consumers often feel prices are too high.

What are marketing margins?

A marketing margin is the difference between the value of a product at one stage in the marketing process and the value of the same product at another stage.

Measuring this margin shows how much has been paid for the marketing services for the product at that stage of the marketing process. It is the added cost of marketing.

When are marketing margins used?

Farmers producing for the market should be aware of the choices that are open to them with respect to marketing.

Calculating marketing costs and margins can help the farmer and/or you decide which marketing procedure will give the best benefit.

Added or marginal costs must result in at least an equal marginal return; otherwise, the market is not profitable.

What are marketing costs and how are they calculated?

Marketing costs are the costs incurred when moving produce from the farm to the market.

There are several stages involved, in each there are costs incurred.

The stages are:

Produce preparation
Packaging
Handling
Transport
Storage
Losses

Produce preparation

The first marketing cost incurred is produce preparation.

This involves cleaning, sorting and grading.

This may be done on or off the farm. Either way, the cost associated with preparation is a marketing cost.

Packaging

The next cost that is normally faced is packaging.

Types of packaging used may range from simple jute bags to plastic packaging for the direct transport of fruits to consumers in supermarkets. This too may be done on or off the farm.

Handling

Handling costs are incurred at all stages of the marketing chain. They include loading and unloading.

Each time a product is handled the cost per kilogram is small, but a product may be handled many times before it reaches the market.

The total of all of these small handling costs can end up being quite substantial.

Transport

Transport costs are incurred by farmers when they take their produce to market.

Sometimes transport costs are very clear because they involve the direct payment by a farmer to the transport owner each time a delivery is made.

In other cases these costs are less direct, for example when farmers own and operate their own vehicles. In the latter case, the farmer needs to determine the running costs of transport per kilometre.

Transport

When the running costs and the quantity of products carried per trip are known, the cost of transport per kilogram or per tonne of product can be calculated.

To calculate transport costs using their own vehicles, farmers need to know:

Vehicle running cost/km ($/km)

Quantity that can be carried per trip (kg or tonne/trip)

Distance to the market (km)

Example
Calculation of transport costs

The farmer has a vehicle that can carry 200kg of produce per trip. The running cost of the vehicle is $0.50/km. It is 10 km to the market.

Detail	Amount	Unit
A. Running cost for transport	$0.50	per km
B. Distance to market	10	km
C. Cost per trip (A x B)	$5.00	per trip
D. Mass/weight per trip	200	kg
E. Cost per kg (C/D)	$0.025	per kg
F. Cost per tonne (E x 1000)	$25.00	per tonne

* These are the costs per kg or tonne to transport 200kg. If less than 200kg is transported, then the costs will be higher. Thus, one way to reduce marketing costs is to use transport optimally.

Storage

Storage is an important cost for many products. The main purpose of storage is to extend the availability of produce over a longer period than if it were sold immediately after harvest.

The assumption behind storing produce for the market is that the price will rise sufficiently while the product is in store to cover the costs of storage.

The costs of storage will vary, but they are usually very clear because they are paid for directly.

Losses

Losses are common when marketing agricultural produce. Even if nothing is actually thrown away products may lose weight in storage and transit.

Post-harvest losses of produce, particularly fresh produce, can be substantial, both in terms of quantity and quality. This will affect both the amount of product for sale and the selling prices.

The following are common causes of post-harvest (marketing) losses divided in terms of quantity and quality.

Losses

1. Quantity-related losses

- Large quantities of the product on the market or 'gluts' (as often happens during the main season) often means that much will be thrown away unsold

- Moisture loss (reduces weight of the product, e.g. grains, fruit and vegetables)

Losses

2. Quality-related losses

- Produce damaged while being handled or transported
- Produce deteriorates (including over-ripening) over the period its waiting to be sold
- Moisture loss (particularly with fruit and vegetables)

Example; The cost of loss

A trader purchased 2 kg of green peppers from a farmer at $5.00/kg.

When the trader gets to market only 1.8 kg are still available for sale (e.g. a loss of 10%).

Marketing costs are an additional $2.00/kg for the 2kg of green peppers purchased.

The selling price of green peppers is $9.00/kg.

Quantity lost	Market price of product	Value of loss
0.2 kg	$9.00/kg	$1.80

The impact of this loss on the margin to the trader can be calculated as follows:

Activity	Quantity	Price	Total	20 Kg Purchase	
Income from sales	1.8kg	$9.00/kg	$16.20	$162.00	**A**
Purchases	2kg	$5.00/kg	$10.00	$100.00	
Packing and transport	2kg	$2.00/kg	$4.00	$40.00	
Costs			$14.00	$140.00	**B**
Margin to the trader			$2.20	$22.00	**(A-B)**

Example;
The cost of loss

If the trader had prevented the loss, the margin would have been $4.00 ($2.20 + $1.80).

This may seem insignificant, but if the trader had purchased 20kg instead of 2kg, the value of the loss would have been $18.00 and the margin $22.00 instead of $40.00.

This is a substantial cost.

Other marketing costs

People using markets may have to pay market fees.

People using markets may have to pay to have the produce weighed.

Traders normally have to be licensed and pay licence fees.

In some markets, wholesalers charge commissions.

Taxes may have to be paid.

Sometimes, bribes are needed to get produce through roadblocks or to get permission to operate a business.

More on marketing costs

There are two types of marketing costs: variable marketing costs and fixed marketing costs.

Variable costs are costs which are incurred if marketing activities are carried out, for example, transport costs from the farm to the market, handling costs, packaging materials, parking fees, commissions based on weight.

More on marketing costs

Fixed costs are costs that will be paid by the farmer whether or not marketing activities are carried out.

Fixed marketing costs include taxes, insurance, fixed rent for the stalls, fixed salary of the workers involved in marketing, depreciation of the trucks, weighing scale and other equipment.

Calculations

Once all the marketing costs have been calculated it is then necessary to put them together to work out the total marketing costs for the farmer.

Marketing margins are related to the prices received for produce.

Costs have to be related to these prices.

Calculations

Farmers selling their produce directly to the market are likely to get different prices at different times of the year and even at different times of the day.

Farmers need to understand how the markets they use operate, because this will affect the marketing margins.

The marketing margin is the difference between the prices farmers receive for their produce and the costs incurred in marketing.

Example;
Farmer selling tomatoes in the nearest rural market

100 kg of tomatoes are harvested by the farmer; there is a 10 per cent loss due to damage and other causes.

The remaining tomatoes (90 kg) are sold at the market at the prices shown in the next slide

Example; Farmer selling tomatoes in the nearest rural market

Quantity (kg)	Price per Kg	Income from sales ($)
50	1.10	55
20	1.00	20
15	0.80	12
5	0.60	3
10	not sold	0
Total income		**90**

The average selling price per kg is $90/100= $0.90/kg

Example; Farmer selling tomatoes in the nearest rural market

Other marketing costs charged over the season included the following:

Marketing costs	**Amount ($)**
Market fees	1
Handling labour	2
Cost on route	1
Transport	0.50/10 kg per box (0.05/kg)
Packaging	0.50/10 kg per box (0.05/kg)

Given all this information, it is now possible to calculate the marketing margin.

Example; Farmer selling tomatoes in the nearest rural market

Quantity sold	**Value ($/kg)**	
0.9 kg x weighted average selling price of $0.90 per kg	0.81	**(A)**
Marketing costs		
Market fees	0.01	
Labour employed by farmer to pack, load and unload	0.02	
Cost on route	0.01	
Transport to wholesale market	0.05	
Packaging	0.05	
Total marketing costs	0.14	**(B)**
Marketing margin	**0.67**	**(A-B)**

Calculations

Note

The market margin calculation should be conducted on a unit weight basis.

You should be careful to convert all of the items to the same base.

In this example the calculation is carried on a per kilogram basis.

Session 4.4
Break–even budgets

Learning outcomes:
Understand the purpose of the tool
Understand when to use the method
Understand how to use the method

Break-even budgets

This session introduces a tool you can use to help farmers determine break-even points of their enterprises.

The session will define the concept of break-even, will examine a break-even budget and demonstrate how it is calculated.

One use of the tool is to assist farmers becoming price makers, not price-takers.

Break-even budgets

We have previously estimated gross margins, by using average costs and prices that are the only sensible choices, but averages can be deceiving.

Averages represent the common mid-point between two extremes, and therefore give a picture that intentionally does not reflect either case.

Break-even budgets

But what happens when we move away from the average or expected case and toward either of two extremes – the best case or the worst case.

The break-even budget is a tool used to determine the effect of these extreme possibilities.

Break-even budgets

Break-even analysis is a technique for studying the relationship between costs and income at different levels of production and different prices.

A break-even budget estimates the point at which a farm's gross income is equal to its total variable costs

Break-even budgets

On one side, the break-even budget gives an indication of maximum acceptable level of cost. That is, the point at which, if costs increase, the farm will not be profitable.

On the other side, the break-even budget gives the minimum acceptable level of a benefit given an estimated level of cost. That is, the point at which, if the income decreases, the farm will not be profitable.

Break-even budgets

Break-even budget looks at the level of the activity where income equals total cost, so that no profit (gross margin) is made.

Break-even occurs where total variable cost and gross income are equal.

Break-even budgets

One can determine break-even points for yield and market price. The break-even essentially answers the following questions:

Yield: Given a known price and cost, at what level of production (yield) would the farm 'break even' (costs equal income)?

Price: Given a known yield and cost, at what market price would the farm 'break even' (costs equal income)?

Break-even budgets

Calculating break-even budgets in price and yields can help a farmer plan enterprises, particularly when the farmer is considering making a change in production/commodities (yield), inputs/mechanization (cost), or markets (price).

For example, a farmer might be interested in substituting one variety of tomato for another.

Break-even budgets

If the production potential of the new variety is unknown, a break-even budget is constructed to estimate the minimum yield that would have to be achieved to make the change worthwhile.

Alternatively, if the expected yield is known but the price is not, the budget could indicate the minimum price that must be obtained to make the change economically feasible.

Cost variations could also be explored for the new variety using the break-even budget.

Example; Gross margin for 1 ha of maize, Kenya

Item	Unit	Quantity	Unit price (Ksh)	Amount (Ksh)	
Income					
Maize yield	Bag (90 kg)	20	1 000	20 000	
Stover	Load	1	400	400	
			Total income	20 400	**(A)**
Variable costs					
Seed	kg	10	70	700	
Fertilizer	50 kg bag	1	1 000	1 000	
Manure	Tonnes	4	1 000	4 000	
Pesticide	kg	5	100	500	
Land	Person-days	18	50	900	
Planting/ manuring	Person-days	10	50	500	
Weeding	Person-days	16	50	500	
Harvesting/ threshing	Person-days	8	50	400	
			Total variable costs	8 500	**(B)**
			Gross margin	11 900	**(A-B)**

Break-even yield (BY) is the yield required to recover all the costs incurred in production at given prices of the product and given input costs. The formula for calculating the break-even yield of a given enterprise is:

$$\text{Break-even yield/ha (BY)} = \frac{\text{Total variable cost/ha}}{\text{Product price}}$$

So break-even yield for the previous example is;

$$\text{Break-even yield/ha (BY)} = \frac{\text{Ksh 8 500/ha}}{\text{Ksh 1 000/bag}}$$

Break-even yield/ha (BY) = 8.5 bags/ha

Example
Gross margin for 1 hectare of maize, Kenya

From the data presented, the break-even yield for the Kenyan maize farm is 8.5 bags per hectare.

If the actual maize yield is higher than 8.5 bags per ha (the break-even yield), it will be profitable for the farmer to grow maize.

Conversely, if maize yield is lower than its break-even yield (8.5 bags per ha), the farmer will incur a loss if he/she grow this crop.

Determining the break-even price

Break-even price of the product is the product price needed to recover all variable costs incurred in production at a given output level and cost of input.

Determining the break-even price

$$\text{Break-even price/bag (BP)} = \frac{\text{Total variable cost/ha}}{\text{Expected yield/ha}}$$

$$\text{Break-even price/bag (BP)} = \frac{\text{Ksh 8 500 /ha}}{\text{20 bags/ha}}$$

Break-even price/bag (BP) = Ksh 425/bag

Determining the break-even price

The break-even price of maize is Ksh 425 per bag.
This means, if the price of maize is above the break-even price, it will be profitable to grow maize.

If the price of maize falls below Ksh 425 per bag, maize farmers will sustain a loss if they grow maize.

Session 4.5
Sensitivity analysis

Learning outcomes:
Understand the purpose of the tool
Understand when to use the method
Understand how to use the method

Sensitivity analysis

This session introduces a tool you can use to help farmers make more informed decisions to deal with risk. The tool analyses the sensitivity of an enterprise to changes in such factors as yield, input and market price.

What is sensitivity analysis?

Sensitivity analysis is an instrument that can help farmers analyse the sensitivity of an enterprise to changes in factors such as yield, input price and market price.

It can be used to identify the critical variables and their effect on projected profitability.

What is sensitivity analysis?

The tool helps answer the question: "What if…?" or "What would happen if?"

What if our production decreases or increases?

What if the price of our product goes up or down?

What if the cost of an input changes?

What if the family increases the amount of crop it consumes?

What is sensitivity analysis?

This technique quantifies the outcome of a change in a single or combination of selected variables that effect enterprise profitability.

Sensitivity analysis can be used with any of the farm business planning and management techniques that we have discussed to date to help make decisions on the farm.

What influences enterprise profitability?

Yields may be only one of the factors which influence enterprise profitability. Others include:

The amount of harvest which is marketed, rather than consumed on the farm

The price received for produce sold

The prices of inputs

What influences enterprise profitability?

Where maize and other food crops are concerned, the amount of produce marketed by the farmer may be even more variable than yields.

This is because the farmer markets only that portion of the food crop that is not required for on-farm consumption.

If yields decrease, on farm consumption may remain almost the same because the farmer will first reduce the amount of produce marketed before reducing on-farm consumption.

What influences enterprise profitability?

Yields and prices tend to move in opposite directions for food crops.

When yields fall, there is a scarcity of the crop and prices tend to rise.

When yields rise there is an abundance of the crop and prices tend to decline.

What influences enterprise profitability?

The movement of prices and yields in opposite directions means that the enterprise budgets vary less than they would if prices were held constant or moved in the same direction as yields.

Thus, yields, on-farm consumption and prices together influence the farmer's gross margin. This makes sensitivity analysis a very useful tool to apply

What influences enterprise profitability?

This is illustrated by way of a simple farm budget example that compares the situation in a normal rainfall year with the situation in a bad year.

The normal year enterprise income is assumed to be $320

Example; rainfall

A simple farm budget that compares the situation in a normal rainfall year with the situation in a bad year.

In a low rainfall, 'bad year', production falls by 50%, but on farm consumption requirements remain the same. Consequently, the quantity of produce marketed also decreases.

Prices subsequently rise but the farmer's cash receipts are still greatly reduced

Example; rainfall

	Normal Year	***Bad Year***
Produce yield (tonnes)	10	5
Produce consumed on-farm (tonnes)	2	2
Marketed produce (tonnes)	8	3
Farm gate price per tonne	40	55
Total enterprise cash income	320	165

Example; rainfall

The information on yields, consumption and prices under the 'bad year' scenario provides one element of the total farm cash income.

Cash expenditures may also change in a 'bad year' depending on when the low rainfall occurs. At different times in the season, low rainfall will affect different activities.

Example; rainfall

When low rainfall is noted before the crop is planted and continues throughout the crop season, a farmer may anticipate the effects shown on the next slide;

Example: rainfall and its effects

Area of effect	Effect
Yield	Decrease
On-farm consumption of crop	No change
Product price	Increase
Land preparation cost	Decrease
Application of materials used in planting	Decrease
Application of materials used after planting	Decrease
Cost of purchased materials purchased used in planting	Decrease
Cost of purchased materials purchased used after planting	Decrease
Harvest Costs	Decrease

Example; rainfall

If, however, the poor rains come only later in the season after the crop is in the ground, the following effects can be expected;

Example; rainfall and its effects

Area of effect	Effect
Yield	Decrease
On-farm consumption of crop	No change
Product price	Increase
Land preparation cost	Decrease
Application of materials used in planting	No change
Application of materials used after planting	Decrease
Cost of purchased materials purchased used in planting	No change
Cost of purchased materials purchased used after planting	Decrease
Harvest Costs	Decrease

Example ; Applying a sensitivity analysis

A maize farmer expects to generate a profit of Ksh 11 000 over the next year.

The farmer is concerned because a neighboring farm has suffered from a disease which has decreased crop yields by 25%.

The question the farmer needs to answer is:

"How will my profits change if my crop gets the same disease?"

The following data is given about the farm

Current yield of maize	20 bags
Price of maize	Ksh 1 000
Total variable costs	Ksh8 700
Gross margin	Ksh11 300
Harvesting cost per bag	Ksh20

Example; Applying a sensitivity analysis

Remember

The sensitivity analysis is used to calculate the change in gross margin that could occur following changes in selected key variables which affect profitability.

In this case yield could change and the farmer's wants to determine how this will affect income and profits.

1. We calculate the change in the margin for maize in the event of the farmer's crop getting the same disease as the neighbour's crop.

Reduction in yield = current yield + % reduction

The implications are a 25% reduction in yield and the costs saved as a result of the drop in production

Reduction in yield = 20 bags x 25% reduction

Reduction in yield = 5 bags

2. We calculate the decrease in gross income as a result of the reduced yield.

Lost gross income = reduction in yield x commodity price

Lost gross income = 5 bags x Ksh 1000/bag

Lost gross income = Ksh 5000

3. We calculate the variable costs saved by the reduced yields. In this case the only variable cost affected by yield is the harvesting cost.

Reduced variable costs = reduction in yield x cost of harvesting

Reduced variable costs = 5 bags x Ksh 20/ bag

Reduced variable costs = Ksh 100

4. We calculate the overall reduction in gross margin

Reduction in gross margin= lost gross income- reduced variable costs

Reduction in gross margin= Ksh 5000 – Ksh 100

Reduction in gross margin = Ksh 4900

5. Calculate the new gross margin based on the projected loss in yield.

New gross margin= original gross margin – reduction in gross margin

New gross margin = Ksh 11 300 – Ksh 4 900

New gross margin = Ksh 6 400

Conclusions

A 25% reduction in the yield of maize results in a 56.6% decrease in gross margin.

The conclusion is that the margin generated appears to be extremely sensitive to the problem and that appropriate management time should be devoted for its prevention.

Link to assessing risk and vulnerability

Sensitivity analyses can help a farmer determine how vulnerable they are to risks.

Using results from the sensitivity analyses and comparing them with break-even figures will provide even more about vulnerability to risk.

Farmers will have an idea of the risk boundaries of their farm. This is very useful farm management information to have when making decisions.

Session 4.6
Planning for food requirements

Learning outcomes:
Understand food requirements
Understand how to do the calculations

Food requirements

This session introduces a tool you can use to help farmers and their households determine the quantity of food required to produce, for the household and for the market.
It is an important tool to help optimize land use and increase profitability , while not compromising the basic food security for the farm family.

Planning for food needs

For most farm families in Africa, self-sufficiency in food is the first objective. Consequently food production is a main objective for the farm.

Self-sufficiency in food can either be obtained from the farm harvests or by use of cash. A majority of family farmers in Africa still prefer to produce their own coarse food needs.

Coarse food is basic carbohydrate foodstuffs like maize, root and tuber crops, sorghum, millet and rice.

Planning for food needs

Coarse foods are differentiated from other foodstuffs such as oilseeds, vegetables, fruit, fish, meat, dairy products and others. These are of higher per unit value, but are needed in smaller quantities.

They are either produced or gathered on or around the farm or purchased on the market. Although they are of great importance for the qualitative value of nutrition, only coarse foodstuffs are taken in consideration in this session.

Planning for food needs

Families who suffer from food insufficiency generally also suffer from malnutrition.

It is important to note that having sufficient coarse grains is only one part of food security.

Food security also includes access to other important food groups.

Food and market-oriented farming

As farmers become more market-oriented they need to keep in mind the family's food requirements.

Can they risk growing only for the market and buying all the family's food?

Should they grow some food for their family and some crops to sell?

How much of their land should be planted to food crops for the family?

How much land can be planted to crops to be taken to the market?

Food and market-oriented farming

To decide, the farmer first needs to know how much food the family will need for the year.

The amount of food (coarse grains) an average person (child or adult) needs per day is 0.65 kg. This works out to about 240 kg per year.

Therefore, the farmer simply needs to multiply 240 kg times the number of family members to know how many kilograms of coarse grains will be needed each year to feed the family.

See the next slide for the food requirements table.

Family size (People)	Food required each day (kg)
1	240
2	480
3	720
4	960
5	1 200
6	1 440
7	1 680
8	1 920
9	2 160
10	2 400

What to grow?

Now that the farmer knows how much food the family is going to need each year, two things are required:

(i) What grains they want to eat

(ii) Whether to grow these grains or buy them using money from crops sold on the market.

What grains do they want to eat?

This is a matter of personal preference and a matter of what is available.

Grow food or buy food?

Buying food.

Can the crop planted for the market make enough profit to feed the family?

Risk can be reduced by:

Investigating the market and learning about what crops get what prices

Investigating access to the market in terms of roads, transport and facilities

Honestly assessing family farming skills; what can be grown confidently?

Grow food or buy food?

Growing food.

This is limited by what crops can be grown in the area and the knowledge needed to grow.

Again there is a risk.

Will the crops planted for food grow?

Can risk be reduced by making a careful calculation of family food needs and then converting this into hectares?

Grow food or buy food?

You should be prepared to advise farmers on food crop options.

Eventually a decision will have to be made.

Let us take a case where a farmer has chosen to grow all the food for family needs and to grow other crops to sell.

How much land is needed for planting food?

The amount of land the farmer needs depends on:

The total amount of food needed

The types of crops to be grown

The expected yields of the chosen crop (s).

Example;
A farmer with a family of 6 people

Sarah calculates that she will need 1 440 kg of grains to feed the family for the year.

She has 2.5 ha of land for planting. They are in two parcels.

One is 1.8 ha and the other is 0.7 ha. Her crop choices are millet and maize.

She wants to have them in equal quantities for her family.

Example
A farmer with a family of 6 people

In other words, she wants 720 kg of millet and 720 kg of maize to give her the 1 440 kg.

She knows she can get 3 tonnes per hectare growing maize and 0.75 tonnes per hectare growing millet.

How much land does she need to plant to maize?

How much to millet?

Maize

Sarah knows that 1 ha of maize will give her 3 tonnes. This is the same as 3000 kg. She wants only 720 kg.

.

If she can get 3000 kg from 1 hectare ...

$$\frac{\textbf{3 000 kg}}{\textbf{1 ha}}$$

How many hectares does she need to get 720kg?

$$\frac{\textbf{720 kg}}{\textbf{X ha}}$$

We can set these equations equal to each other ...

$$\frac{\textbf{3 000 kg}}{\textbf{1 ha}} = \frac{\textbf{720 kg}}{\textbf{X ha}}$$

Maize

$$3\,000\,X = 720$$

$$X = \frac{720}{3\,000} = 0.24$$

Therefore, Sarah needs to plant 0.24 ha of maize.

This is very close to 0.25 or $\frac{1}{4}$ hectare.

Maize

Let's check the answer:

If she plants 0.25 ha or $\frac{1}{4}$ ha of maize, she can expect 0.25 or $\frac{1}{4}$ of the yield.

0.25 ha × 3 000 kg/ha = 750 kg

Therefore, if she plants $\frac{1}{4}$ hectare of maize, she will have enough maize to feed her family.

Millet

Sarah knows that 1 ha of millet will give her 0.75 tonnes of millet. This is the same as 750 kg. She needs 720 kg.

The calculations are similar to those for maize.

$$\frac{750\ kg}{1\ ha} \quad \frac{720\ kg}{X\ ha}$$

$$750\ X = 720\ ha$$

$$X = 0.96\ ha$$

Millet

This means she should plant 0.96 ha.

This is almost 1 ha.

So now Sarah knows that she must plant 0.25 ha of her land to maize and 1 ha of her land to millet.

Millet

In order to make sure her family has the food they need for the year she will use 1.25 ha of her land.

Her total land size is 2.5 ha.

After planting the maize and the millet, she will have 1.25 ha (2.5 – 1.5 ha) left to plant to crops for the market.

Millet

To make the decision of what to plant on the remaining 1.25 hectares, the farmer can use the enterprise budgets to calculate gross margins. In addition, she will also want to:

Look at opportunity costs and risk

Plan her market

Check on the sustainability of the input/output support for different crop choices

Check on her labour

Food flow planning

In addition to understanding the quantity of food required in a year, it is also important to know when there is likely to be a shortage of food.

This can be done through a simple matrix exercise in which the family consults about when different foods are available and when they are not.

The following matrix is an example for a food flow.

Example;
Food flow for a family of 6
(coarse grain requirement: 1 140kg)

Months	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**	
													Total
Foods													
Maize (Kg)	80	80	0	0	0	80	80	80	80	80	80	80	720
Sorghum (Kg)	90	40	40	35	35	65	65	65	65	65	65	90	720
Total	170	120	40	35	35	145	145	145	145	145	145	170	1440
Coarse Grain Requirement (Kg)	120	120	120	120	120	120	120	120	120	120	120	120	1440
Shortfall/surplus	-50	0	-80	-85	-85	25	25	25	25	25	25	50	0

Food flow planning

Note

In the food flow matrix quantities can also be expressed in bags

Food flow planning

This food flow shows that this family has a shortfall of grains in the months leading up to the harvest.

An investigation would highlight that one of the reasons they have this shortfall is because they consume too much each month.

A causal diagram would help the family identify why it is consuming more than is needed.

Session 4.7
Labour planning

Learning outcomes:

Understand the purpose of the seasonal labour calendar

Understand when and how to apply the seasonal labour calendar

Understand the use in identifying solutions

Understand the impact of stresses and shocks on labour

Labour planning

In this session you will learn about a tool that will help farmers analyse their labour needs against their labour availability. If labour is not planned it will affect profits.

The session will define labour analysis, when it is used and how to carry it out. It will also examine the effect of changes on the labour balance over the season and explore suggested solutions.

Labour planning

Labour refers to the people who do the physical work on the farm.

All farms need labour to carry out basic activities of farming.

Pre-production activities, production activities, and marketing activities all require someone to do the work.

Labour planning

Labour can be provided in kind (without pay) by the family.

It can be hired or it can be secured through a social capital arrangement.

Labour costs are often a high percentage of the total costs of production.

Therefore, it is important to plan carefully the use of family, hired and social labour.

Labour planning

The use of labour can be planned on two levels;

Individual enterprise

The whole farm.

Labour planning for the individual enterprise is used to improve the performance of the different operations associated with the enterprise and to ensure that the right number of workers are engaged when required.

Labour planning

At the farm level, use of labour throughout the year is assessed.

The planning of labour for an individual enterprise affects the labour for the whole farm.

The two are closely linked.

Labour planning

If a farmer makes any change which affects labour in an individual enterprise, the farmer will need to examine the impact of this change on the labour requirements and resources for the whole farm.

Similarly, if there is some change to the overall farm operation, the farmer will need to examine the impact on the individual enterprises.

Labour planning

A tool often used to analyse labour requirements and resources is to use a seasonal labour calendar.

This calendar can give a visual assessment of labour on individual enterprises and on the farm as a whole, over a given period of time (e.g. month, season, cropping cycle, year).

Procedure for a seasonal labour calendar

The procedure for constructing the labour seasonal calendar is as follows:

1. List the different farm activities to be undertaken during the year or at a particular season by the family.

2. List the household activities to be done also during the year or the season.

Procedure for a seasonal labour calendar

Note

In most cases in Africa, women work both on the farm and in the household. Therefore it is essential that planning for farm labour include the household.

This will give a clearer picture of the total demand for labour by a farming household.

Alternatively the labour planning could also be broken down by gender.

Procedure for a seasonal labour calendar

3. Assess the labour requirements required for each enterprise and household activity.

4. Assess the person-days required

5. Assess family members who will be available to work both for household and farm activities at different periods of the year.

Procedure for a seasonal labour calendar

6. Calculate the person-days available per month

7. Examine the labour supply based on the availability of family members and labour shortages or where additional labour is required.

8. Formulate a strategy for dealing with labour shortfalls and surpluses (labour peaks and troughs).

Procedure for a seasonal labour calendar

It is important to consider the peaks and troughs of seasonal labour availability in relation to the farm labour requirements.

By modifying the cropping pattern and making changes to the enterprise operations it is possible to achieve a better allocation of labour and ensure its more efficient use.

Procedure for a seasonal labour calendar

Periods of trough can be used for general farm maintenance or to generate income through off-farm activities.

Labour requirements during the peak periods could be met through the employment of either part-time or causal work or alternatively the introduction or use of more efficient mechanization or drought power.

Example
Seasonal labour calendar in person days for labour required
(1 ha maize, 1 ha sweet potatoes and 10 livestock on communal land)
Assumes farm family can work 26 days per month

Months	J	F	M	A	M	J	J	A	S	O	N	D

Farm activities													Total
Buying inputs		4					4						8
Ploughing			8							8	8		24
Planting				10							10	10	30
Weeding	10	10		10	10						10	10	60
Fertilizing				14						14	14	14	56
Herding cattle	24	24	24	24	24	24	24	24	24	24	24	24	288
Harvesting					30	46	30				30	30	166
Remove stover							3					5	8
Marketing					8	8	8				8	8	40
Farm maintainance	4	4	4	4	4	4	4	4	4	4	4	4	48
Total farm labour	38	42	36	62	76	82	73	28	28	50	108	105	728

Example...continued

Months	J	F	M	A	M	J	J	A	S	O	N	D	
Household activities													Total
Fetching water	5	5	5	5	5	5	5	5	5	5	5	5	60
Fetching firewood and fuel	3	3	3	3	3	3	3	3	3	3	3	3	36
Food preparation	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	6
Cleaning	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	6
Tending to children	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	6
House repairs	0	0	0	1	0	0	1	0	0	0	1	0	3
Total household labour	9.5	9.5	9.5	10.5	9.5	9.5	10.5	9.5	9.5	9.5	10.5	9.5	117
Total labour required (person-days)	**47.5**	**51.5**	**45.5**	**72.5**	**85.5**	**91.5**	**83.5**	**37.5**	**37.5**	**59.5**	**118.5**	**114.5**	**845**
Family members available	5	3	3	4	4	3	4	3	4	4	4	5	46
Family members available (person-days)	130	78	78	104	104	78	104	78	104	104	104	130	1 196
Additional labour requirements (person-days)	**0**	**0**	**0**	**0**	**0**	**13.5**	**0**	**0**	**0**	**0**	**0**	**0**	

Session 4.8
Cash flow

Learning outcome:

Understand the purpose of the tool

Understand when and how to apply the tool

Understand its use in identifying solutions

Understand the impact of changes on cash

Understand farm and household income and expenses

Understand the timing and volume of cash short fall and ways of addressing them

Cash flow

In this session you will be introduced to the concept and practice of developing a cash flow, this will enable you to help farmers where their money goes and where it comes from.

This puts farmers in a better position to control their financial situation.

What is a cash flow?

Gross margin is a tool to assess the profitability of an enterprise.

Gross margin indicates how worthwhile a change may be if the quantities and prices assumed are realized.

When a new enterprise is introduced into the farming system a gross margin is usually prepared to assess whether the enterprise generates enough income to cover expenditures. But this is only a part of the analysis.

What is a cash flow?

It is also useful to assess the overall effect of the enterprise on the household finances.

To do this, the farmer needs to prepare a cash flow.

The cash flow is simply the flow of money into the farm from sales and the flow of money out of the farm through purchases and other payments.

What is a cash flow?

Common to prepare a cash flow for a farm or business enterprise; in the case of smallholder farm families, it is more useful to include the household in the cash flow calculations.

Farmers can use cash flow to determine the financial performance of their households as a whole.

It helps to assess whether the family will have enough money to carry out their plan or if they will be short of money in any month.

Enables the farmer to find the time of the year where additional financial resources may be required.

What is a cash flow?

There is an important difference between a gross margin and a cash flow.

The gross margin looks at the overall performance of the farm and its enterprises, in a cash flow, only actual cash income is included.

What is a cash flow?

The difference is important because although an enterprise may be profitable in terms of gross margin, if the farmer is not selling enough of the crop, then the cash needed to pay inputs, hired labour and other cash costs may not be generated.

Net cash flow

The net cash flow is the difference between the cash inflows and cash outflows.

Net cash flow is calculated by subtracting the money (cash) spent over the year from the money received. (Non-cash items like crops consumed by the family, unpaid family labour, depreciation are not included in the flow of cash.)

Net cash flow = cash inflow - cash outflow

Cash inflow

Cash <u>inflow</u> is made up of:

Sales of produce marketed

Income from wage labour and other employment

Gifts

Loans

Cash outflow

Cash <u>outflow</u> is made up of :

Purchases and payments for inputs for the farm (e.g. hired labour, fertilizers, seed, pesticides, animal feeds, salt licks, etc)

Land preparation costs, purchase of new machinery and other operational costs.

Household expenses (e.g. medicine, food, school fees, taxes, gifts).

Net cash flow

The farm should try to generate a positive cash flow.

This comes about by ensuring that more cash flows into the farm than out of the farm.

Analysis of a farm cash flow generates a detailed projection of the farmer's ability or inability to finance an enterprise.

In the absence of records, details of household expenditure usually have to be estimated.

Use of cash flow

Farmers can use a cash flow to analyse their farms, monitor farm activities and plan for the future.

Controlling the flow of cash in and out of the farm is an important task of the farmer.

Use of cash flow

Cash flow budgets are important in:

Developing the farm plan

Choosing between alternative farm enterprises

Comparing actual and budgeted results (to enable corrective action to be taken on time)

Arranging for loans.

Use of cash flow

As a planning tool, the cash flow can be used to see the effect of a small change on the farming system or the financial impact of a complete farm plan.

It can be used to examine whether financing is available within the farm household, or alternatively if there is a need to take out a loan.

In cases where the farmer has already decided to take a loan, the cash flow will also indicate whether and when the interest and debt can be repaid.

How to construct a cash flow

The main feature of a cash flow is that it focuses specifically on cash.

The non-cash items included in gross margin analysis are not included in a cash flow.

Non-cash items include items such as depreciation, the value of family labour and food consumed at home are excluded.

How to construct a cash flow

The cash flow for smallholder farmers includes the on-farm and off-farm (household) inflows and outflows.

It needs to cover;

All cash income and expenditures for the farm household

Include loans that the farm household receive from moneylenders, friends and lending institutions as cash inflows

Include repayment of these loans (principal and interest) as cash outflows.

How to construct a cash flow

A cash flow can be calculated on a monthly, quarterly or annual basis.

Annual cash flows are common for longer term investments such as livestock and tree crops.

Monthly and quarterly cash flows are well suited to annual crops.

A farmer can construct a cash flow on what they are currently doing or they can construct a cash flow on the basis of what they intend to do over the next year.

How to construct a cash flow

A farmer can construct a cash flow on what is currently being done or on the basis of what is intended over the next year.

In the example that follows, we will construct a cash flow budget to examine the projected cash situation of a plan to introduce a new enterprise.

We will look at cash flow on a monthly basis over one year.

How to construct a cash flow: An example

Let us imagine a farm household that earns some income from selling maize and cassava and rearing dairy cows. They also have some chickens.

The family has three children attending school.

The farmer wishes to introduce beans into the system, and knows that the enterprise is profitable but wonders whether there are enough funds to finance the enterprise.

How to construct a cash flow: An example

When the farmer plans the farm programme for next year, the farmer wants to find answers to the following questions:

How to construct a cash flow: An example

How much money are the farm enterprises likely to generate and how much cash expenditure will be needed to cover costs?

When will they receive the money (inflow) and when will the money be needed (outflow)?

If the amount of money they expect to receive over the year does not cover the amount needed, how can they make up the difference? Will it be made up by savings? Do they have reserves? Do they have access to loans?

1. Identify Inflow and Outflow

Cash inflow			Cash outflow		
Description	*Month*	*Income ($)*	*Description*	*Month*	*Expenditure ($)*
Sale of maize	January	270	Money spent on farm inputs (maize)	March	300
	March	300		September	300
	September	300	Money spent on farm inputs (cassava)		37
	October	100	Money spent on farm inputs (livestock)	January	30
	November	100		February—September	400
Sale of cassava	April	340		October—December	90
	August	120	Brooding cost and feeding (chickens)	September	60
Sale of milk	March—September	420	Money spent on input (beans)	April	200
Sale of chicken	January	130		May	50
				July	40
Planned sale of beans	July	450		October	180
	December	400		December	40
			Money to cover living expenses	January—December	120
			Money to cover school expenses	February	200
				May	140
				September	100
			Money to cover health expenses	January—December	120
	Total	2 990		Total	2 407

2. Prepare a cash flow table: Money coming in

MONEY COMING IN	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sales of farm products:												
Maize	270		300						300	100	100	
Cassava				340				120				
Milk			60	60	60	60	60	60	60			
Chicken	130								60			
Planned sale of French beans							450					400
Total Cash Inflow	**400**	**0**	**360**	**400**	**60**	**60**	**510**	**180**	**420**	**100**	**100**	**400**

Prepare a cash flow table: Money going out

MONEY GOING OUT	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Payments & Purchase of inputs:												
Maize inputs			300						300			
Cassava inputs				37								
Farm inputs livestock	30	50	50	50	50	50	50	50	50	30	30	30
Chicken feeding expenses									60			
Beans inputs				200	50		40			180		40
Household expenses:												
Living expenses	10	10	10	10	10	10	10	10	10	10	10	10
School fees		200			140				100			
Hospital Expenses	10	10	10	10	10	10	10	10	10	10	10	10
Total Cash Outflow	**50**	**270**	**370**	**307**	**260**	**70**	**110**	**70**	**530**	**230**	**50**	**90**

3. Calculate the monthly net cash flow

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Total Cash Inflow	**400**	**0**	**360**	**400**	**60**	**60**	**510**	**180**	**420**	**100**	**100**	**400**
Total Cash Outflow	**50**	**270**	**370**	**307**	**260**	**70**	**110**	**70**	**530**	**230**	**50**	**90**
Monthly Net Cash Flow	350	-270	-10	93	-200	-10	400	110	-110	-130	50	310

4. Calculate the cumulative net cash flow

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Monthly net Cash Flow	350	-270	-10	93	-200	-10	400	110	-110	-130	50	310
Cumulative balance	350	80	70	163	-37	-47	353	463	353	223	273	583

5. Analyze the net cash flow

The farmer could decide not to introduce beans

The farmer could try to save some money in order to cover the financial shortfall

The farmer might decide to cut back on some of the inputs used for growing beans

The farmer might decide to reduce some of the area under maize and cassava in order to reduce costs

The farmer might sell some of his livestock to cover the financial gap

The farmer might decide to take a loan to cover the shortfall

Example; using a loan

Assume that farmer Bill decides to finance the shortfall with a loan, Bill needs to determine how much of a loan is needed and whether and when payments could be made to repay the loan.

The shortfall which cannot be covered amounts to $104.

Example; using a loan

A loan of $200 would ensure the cash flow required.

If Bill is to repay the loan over four months and is charged a rate of 18% interest, Bill will make 4 payments of $59 each. The total repayment would be $236.

How a loan and repayment schedule could be planned to make this proposal feasible.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Monthly Balance	350	-270	-10	93	-200	-10	400	110	-110	-130	50	310
Proposed Loan				200								
Proposed Repayments							-59	-59	-59	-59		
Cumulative Balance	350	80	70	263	163	153	494	545	376	187	237	547

Example; using a loan

Assumptions:

loan of $200 paid back over 4 months

grace period of two months

interest rate at 18%

payable at four equal instalments

Example; using a loan

In this example, if farmer Bill took out a loan of $200 , Bill would cover the financial shortfall and would have the funds available to repay the loan.

The cumulative balance would then be positive for the entire twelve-month period showing that there is no more need for finances.

Example; using a loan

Where loan options are viable it is necessary to understand that taking out a loan is treated as an inflow, but the cost of repayment (principal and interest) also needs to be taken into account and is treated as an outflow.

In conclusion farmer Bill should be confident that introducing beans into the farming system is profitable and by taking a loan would also be financially feasible.

The final decision rests with him.

Example of a complete cash flow budget

		J	F	M	A	M	J	J	A	S	O	N	D
	Sales of farm products												
Money coming in	Maize	270		300						300	100	100	
	Cassava				340				120				
	Milk			60	60	60	60	60	60	60			
	Chicken	130								60			
	Beans (planned)							450					400
	Total cash inflow	**400**	**0**	**360**	**400**	**60**	**60**	**510**	**180**	**420**	**100**	**100**	**400**
	Payments and purchase of inputs												
Money going out	Maize inputs			300						300			
	Cassava inputs				37								
	Farm inputs livestock	30	50	50	50	50	50	50	50	50	30	30	30
	Chicken feeding expenses									60			
	Beans inputs				200	50		40			180		40
	Household expenses												
	Living expenses	10	10	10	10	10	10	10	10	10	10	10	10
	School fees		200			140				100			
	Hospital expenses	10	10	10	10	10	10	10	10	10	10	10	10
	Total cash outflow	**50**	**270**	**370**	**307**	**260**	**70**	**110**	**70**	**530**	**230**	**50**	**90**
	Total cash inflow	**400**	**0**	**360**	**400**	**60**	**60**	**510**	**180**	**420**	**100**	**100**	**400**
	Total cash outflow	**50**	**270**	**370**	**307**	**260**	**70**	**110**	**70**	**530**	**230**	**50**	**90**
	Monthly net cash flow	**350**	**-270**	**-10**	**93**	**-200**	**-10**	**400**	**110**	**-110**	**-130**	**50**	**310**
	Cumulative balance	**350**	**80**	**70**	**163**	**-37**	**-47**	**353**	**463**	**353**	**223**	**273**	**583**

Session 4.9

Records

Learning outcomes:

Understand the purpose and importance of keeping records on the farm

Understand and apply some basic farm records

Records

In this session you will learn about records. Most of the farm management tools learned in module 4 depend on reliable and accurate data and information.

Farmers who keep good records of farm activities will be in a much better position to make farm management tools work for them.

Keeping farm records

As learned in Module 3, information is an essential part of farm management.

In order for farmers to be able to use any of the farm management tools they will need information about their farm. They will want to examine their farm's performance over a number of years.

Without some means of recording data and information, farmers will find it difficult to analyse their farm and to plan for improvements.

What is record-keeping and what are farm records?

Record keeping is a process by which data is systematically collected, organized and stored.

Farm records are the means of storing data and information so that it can be recalled and used at some later date.

Each of these types of records helps the farmer remember what has happened on the farm and within the business.

Farm records may also include off-farm information about things like market prices, input prices, and market demands

Why keep records? The value of keeping records

The farmer can use the data and information from farm records to:

Measure the production performance of the farm

Measure the financial performance of the farm

Examine the farm business

Plan the farm business

Why keep records? The value of keeping records

Without good records, a farmer must rely on memory for making decisions.

Having a workable system for recording and retrieving data and information will make it much easier to improve the profitability of the farm.

The farmer will need to record, keep and be able to retrieve data about production, marketing, processing, household consumption and expenses.

Why keep records? The value of keeping records

Farm records also provide useful information for you to help farmers increase farm profits, adjust farm practices, select enterprises, determine the best use of available resources, obtain credit and formulate production plans.

Many extension workers only keep approximate figures for the area they are working, but it is much better if each farmer has accurate farm records of what has happened.

Why keep records? The value of keeping records

Records are important management tools that enable you and farmers to:

Provide them with a history of what has happened on the farm between seasons and years

Asses the physical and financial performance of an enterprise or the whole farm business

Assess how a farm is progressing over a given period

Establish a basis for budgeting and planning changes in the farm business

Why keep records? The value of keeping records

Tell farmers how much they are earning

Facilitate advisory services to farmers wishing to borrow money for investment, sales and marketing of produce

It allows the farmer to adhere to legal responsibilities on the farm

Apart from its potential use in farm management decision-making, farm records are sometimes used to formulate national policies, programme and action plans

Why farmers do not keep records

In many cases in Africa record keeping is not well developed among farmers.

This is in part due to the low levels of education, literacy and numeracy.

Very few farmers keep records and know how to use the information collected.

Why farmers do not keep records

Reasons	**Suggested solutions**
Cannot read and write	Use pictorial illustrations Get help from children/literate neighbours
Forgetting to record	Making frequent contacts to remind them to record
Discouraged by low yields	Encouraging farmer and rural entrepreneur to farmer and rural entrepreneur learning
Procrastinating recordings	Encouraging them by examples from like farms
Tiredness after the day's work	Advise to carry record book along and make use of children
No safe place to keep record books	Create a simple, secure place Explain importance of record books to children and other family members
Don't have record book to record in	Help develop simple records Ask government, NGO, coop, etc. to assist farmer and rural entrepreneurs with record books.
Farmer and rural entrepreneur's spouse or children market without recording	Demonstrate to them the importance of recording sales
Lack of reasons why records need to be kept	Take time to explain reasons to farmer and rural entrepreneurs
Laziness and lack of encouragement by neighbouring farmer and rural entrepreneurs	Encouragements and invitation to group discussions and meetings.
Not recording home consumption, gifts, donations and ceremonial usage	Extending the importance of recording home consumption and gifts

Types of records

Record-keeping can be kept simple and need not take up much of the farmer's time.

There are many simple methods that have been devised for farmers to keep records even though they may not be literate.

It does require self-discipline and commitment to fill them in regularly.

Types of records

Various types of farm records can be introduced for literate, semi-literate and illiterate farmers.

Farm records require self-discipline and commitment to fill them in regularly.

So farmers have to be motivated by a desire to improve their level of income.

Physical records

These serve the daily needs of farmers in managing their operations and are designed to control specific activities.

The records cover the main farm enterprises: crop, livestock, fisheries and household based food processing.

Physical records

Records are used to produce specific kinds of information.

Production records could be divided according to the main input;

Crop inputs

Livestock inputs

Fisheries inputs

Processing inputs

Physical records

Physical records show the quantities of the inputs used and outputs obtained.

They also indicate the timing and methods of operation.

Physical records

The farm map

Production records

Labour records

Machinery and equipment records

Livestock/poultry records

Marketing records

Financial records

Financial records are used to evaluate the financial performance of an individual enterprise or of the whole farm.

Financial records help the farmer to know how well individual enterprises perform and contribute to overall farm profit at the end of the season or production cycle.

Financial records include the main cash transactions on the farm: sales, purchases and money borrowed as expressed in the cash flow and gross margin calculations.

Financial records

Financial records are kept in the form of accounts of what the farmer spends and receives.

Purchases and expenses can be recorded on one page.

Sales and receipts can be recorded on another.

Simple account book

Purchases and expenses

Date	Detail	$

Sales and receipts

Date	Detail	$

Home consumption, income and expenditure

Records can also be kept of home consumption, of other non-farm sources of income, and of expenditure.

If the farmer uses a large part of the production to feed the family it should also be recorded.

This part of production does not appear as sales in the account book, but it has value.

Home consumption, income and expenditure

The value of the crop includes not only what is sold, but also what is consumed by the farmer and his family.

Keeping a record of farm products consumed acknowledges the value of that production.

It also ensures the farmer has an accurate record of production from the farm. This will help determine the true profitability of the farm.

Example; Information recording

Date	Detail	$	Comments
Jan-01	6 eggs	2.50	
Jan-15	2 kg Spinach	1.00	

Home consumption, income and expenditure

At the end of the year the farmer adds up the total value of home consumption.

The value is added to the farmer's total receipts to give the value of total production of the farm.

The value of sales plus the value of home consumption, less total expenses provides an assessment of farm profit.

Home consumption, income and expenditure

Another record could cover household non-farm income sources and expenditures.

This will help the farmer to understand the role of the household cash flow on the farm.

Example record of household non-farm income sources and expenditures.

Income sources		
Date	Item of Income	Amount $

Expenditure		
Date	Item of Expenditure	Amount $

Records for non-literate farmers

It is possible to help farmers keep records without having to be literate or numerate.

For example columns can be allocated to the local denominations of money and amounts taken or spent on certain items can be recorded by making a mark in the relevant column.

Records for non-literate farmers

☼	⊕	$
1-7-06	100	800
1-7-06		100
1-7-06		60
1-7-06		40
		1000

☼	⊖		$
1-7-06		2 × 200	400
1-7-06		1 × 250	250
1-7-06		1 × 120	120
1-7-06			60
			830

100 1000 − 830 = 170

Principles of record keeping

Accurate and complete and filled in as soon as possible after the operation

Neat and written clearly

Complete by not leaving out any information

Be simple in design, easy to keep and retrieve

Easy to analyze

Appropriate

Principles of record keeping

Care should be made that only the really vital information required by the farmer is collected through record keeping.

The whole purpose of record keeping is to improve the standard of farm management.

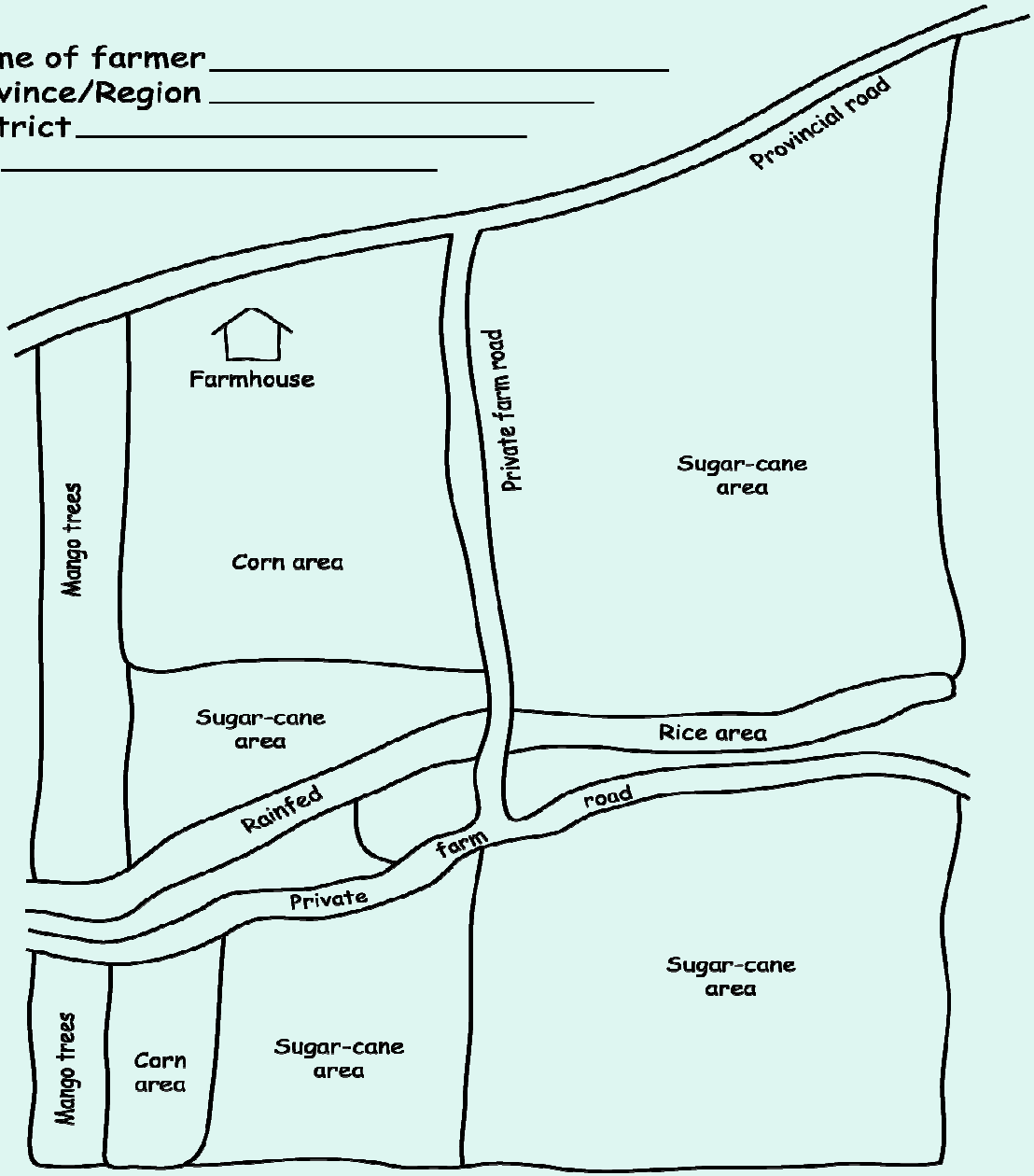
Principles of record keeping

There is no value in spending time on records and calculations of profit and production in individual enterprises, if no use is made of them.

All of the results should be compared with some standards as discussed.

Examples of forms for record keeping

Name of farmer _____
Province/Region _____
District _____
Lot _____



Note: a simple farm map, such as the one above, can be drawn by hand

Module 4 :Review

- Do you believe that the overall purpose of the module has been achieved ?
- You should have a good understanding and basic skills to apply a set of farm management tools:
- Constraints and opportunities analysis, Gross margin budgeting, Marketing margins, Break-even budgets, Sensitivity analysis, Planning for food requirements, Labour planning, Cash flow, Records.

Module 5
PARTICPATORY APPROACHES

Session 5.1: Overview of participatory methods and tools
Session 5.2: Use of methods
Session 5.3: Symbol-based methods and calculations

Participatory approaches

This module consists of participatory methods and tools to complement the farm management tools covered in module 4 .

You will explore symbol-based methods to assist farmers in making better farm management decisions.

The participatory methods and tools can be applied to the teaching and application of farm management particularly among farmers with limited literacy and numeracy skills.

Session 5.1:
Overview of participatory methods and tools

Learning outcomes:

Understand different ways of collecting data using participatory methods

Acquire the ability to choose between methods

Overview of participatory methods and tools

In this first session you will learn about participatory methods for data collection and analysis and the role they have in farm management extension.

You will be also given guidance on how to choose appropriate methods.

The session ends with a reflection on their advantages and disadvantages.

Overview of participatory methods and tools

Participatory approaches are essentially tools used to facilitate participation by a wide range of stakeholders.

They are used to help people work with data and information.

They can be used to collect, analyse and share data and information.

Overview of participatory methods and tools

Some participatory methods can also be conducted using symbols to represent numbers and words.

This is especially helpful when participants are semi-literate or speak different languages.

Importance of participatory methods

There are a number of participatory methods that are used in farm management, so that farmers are able to realise and analyse their problems in input procurement, production and marketing.

An individual or group approach can be applied in using these methods.

Rapid Rural Appraisal (RRA)

A small team is involved in conducting a rapid appraisal of the agricultural setting that might include identifying constraints and opportunities in farming.

RRA consists of a series of techniques for 'quick and dirty' research that generate results of less apparent precision, but of greater evidential value.

Participatory Rural Appraisal (PRA)

Similar to RRA, but with greater participation of local farmers.

PRA is a way of learning from and with farmers to investigate, analyse and evaluate constraints and opportunities and to make informed and timely decisions.

Participatory Rural Appraisal (PRA)

PRA can be used for example to obtain information about the villages, assess production potential and conduct economic feasibility and social acceptability studies of particular technologies.

Monitoring and evaluation of specific project activities can also be done in a timely and focused manner.

Participatory Rural Appraisal (PRA)

The most commonly used primary data collection techniques are:

Group interview techniques

Focus group interviews

Key informant surveys

Observation (See session 5.2)

Transect walk (See session 5.2)

Seasonal calendars (See session 5.2)

Venn diagrams (See session 5.2)

Group interview techniques

Group interviews are useful for tapping the collective knowledge or memory of groups of farmers or the community.

Controversial issues or issues which are not very clear could be used as topics or themes for group interviews.

You do not need to formulate questions or statements, but should have a clear idea of the issue that they would like to discuss and be able to guide and direct the discussion. This needs some special skills.

Group interview techniques

Farmers should be encouraged to talk openly about the issue under discussion.

It is best to orient the discussion about what most people in the group/community do instead of what individuals do.

The aim is often to gain consensus of issues under discussion but you should be mindful of the social dynamics of the group.

Focus group interview/discussion

Focus group interview is another form of group interview addressing a specific topic/ issue confronting the group.

Typically some 6-8 people discuss a particular topic in detail under the guidance of a facilitator.

Focus group interview/discussion

When the ideas and opinions are needed at field level about a specific problem or intervention, then a focus group interview is the most appropriate technique to use.

This type of discussion may reveal the perspective, attitude, understanding and reactions of farmers.

To get the maximum benefit, the group interview is cost effective, can be carried out quickly and can obtain a wide range of information.

Key informant interviews

This is a process of data collection from interviews with selected and knowledgeable persons.

Key-informants are not only people with a high status; they may also be farmers with specific knowledge about a particular type of farming.

Key informant interviews

Visiting key-informants and local organizations is not only useful to gather information, it also provides an excellent opportunity for awareness raising and to build relationships for cooperation.

Possible key-informants and their knowledge base

Key Informant	Knowledge Base
Extension/Development workers	General farming situation, macro- and micro level constraints
Research workers	Potentials, opportunities
Village elders	Historic developments, tradition, consensus, etc.
Priests/Religious leaders	Beliefs, taboos, religious obligations
Women	Gender issues, decision-making, family
Local businessmen, merchants	Marketing channels, banking, loan prices, trade regulations, transport
Women farmers	Socio-religion-cultural and economic; them as producers
Progressive farmers	Development opportunities, adoption of new prerequisites for adoption
Staff of development projects or agencies	Local experience
Managers of processing, commodity delivery schedules	Demand projections, pricing, quality issues, systems, marketing boards, etc.

Additional participatory methods and tools

A number of methods can be used to engage farmers with input, production and marketing data and information.

Some methods are more specific and accurate, some are more general and some focus on particular types of information while others include a wide range of information.

Method	Type of data to be collected
Calendars	•Production/productivity of different crops •Labour/food availability •Amount and/or cost of inputs •Farm income changes over time and expenditures •Rainfall patterns •Use of certain products in the community over time •Crop/livestock/ human diseases •Prices, marketing •Migration
Transects	•Details about the environmental, economic and social resources in the locality. •Location of pests, soil erosion, resource use •Problems of different zones
Maps/Mapping	•Location, size and production problems •Social/physical structure of the farmers •Resource allocation within the farm/variations in resource access
Trend lines	•Farmer perception of change in the local environmental, economic, social and institutional patterns. •Price/market changes over time or product use over time (changes over time) •Migration, yields
Venn diagrams	•Perceptions on importance of local groups and institutions •Clarifying decision-making roles and identifying potential conflicts between different socio-economic groups •Identifying linkages between different and among different groups
Semi-structured for group interviews/ discussions	•Collect production data or production practices •Input supply (sources, prices) •Collect data on off-farm, on-farm demonstrations •Marketing systems
Direct observation	•Cross-checking data obtained through interviews •Resource use •Marketing:-packaging, marketing outlets
Flow diagrams	•Flow of commodities and cash in a marketing system •Production cycle for a major commodity •Effects of major changes or innovations
Participatory 2020theatre or drama	•Main changes in relative values and use of natural resources •Changes in social relations (i.e. gender roles in decision making) •Marketing systems or linkages

Participatory methods and tools

Choosing a method

Different participatory approaches can be used for collecting, analysing and sharing data and information.

The method used should be determined by:

(i) The purpose of the exercise;

(ii) Use

(iii) Availability of resources: money, people, vehicles, etc.

In many cases, combinations of these methods would be used to generate the information that farmers require.

Choosing a method

Choosing a method that is appropriate and feasible depends on a number of factors:

What needs to be accomplished?

Do you need quantitative or qualitative information?

What context and medium would be most appropriate?

Suitability of the method

What needs to be accomplished?

What do you need to do: asses, register, compile, anaylse or disseminate information ?

Do you need quantitative or qualitative information?

Quantitative methods are useful when you require numeric information such as 'how much, how many, the frequency of...'

Qualitative methods are more appropriate when you want to understand attitudes, opinions, experiences and priorities.

What context and medium would be most appropriate?

Choices include written, oral, visual and dramatic.

The choice depends on how the people involved prefer to communicate, how they are able to communicate, and on their level of literacy and numeracy.

Suitability of the method

The method you choose must produce the information you want.

There is no point selecting a method simply because it is fun or easy for the farmers to do.

Whatever method you choose, it must be able to produce the kind of information being sought and the information it produces must be reliable.

Who collects the data?

Data can be collected by any number of stakeholders.

Farmers and other participants should be encouraged to record data and information generated by these methods.

A detailed recording of the process is critical.

Often a great deal of information is lost because of failure to take good notes and relying too much on the products of the chosen methods (for example a diagram or a map).

Who collects the data?

In the process of collecting the data you must assess the quality of information. To do this you must carefully listen, observe, probe and judge.

As data is developed, it is important to regularly review the process and assess information. It is important to leave the farmers to conduct the participatory methods without much interruption.

Who collects the data?

You should guide them, but must be objective in guiding the process and as well as in collecting, analysing, or sharing the data.

You should encourage farmers to keep or take record of the process.

Who uses the data?

Farmers

Other community members

Local institutions

Government services staff, research or donor organizations

Advantages of participatory methods

Data can be easily validated with the farmer groups.

The methods enhance farmer-to-farmer dissemination of farm management technologies.

Methods enhance understanding of local situations.

The process encourages participation and learning among the participants, encourages a two-way process of exploration, questioning and learning.

Advantages of participatory methods

Information can be collected from literate and illiterate people.

Methods are simple to use, relying mostly on oral and visual techniques.

Advantages of participatory methods

The methods facilitate making full use of local knowledge and experience, limiting the imposition of outsiders' preconceptions on local conditions.

Local people are given the opportunity to describe how they do things, what they know and what they want.

Disadvantages of participatory methods

It is very easy to go off-track and collect unnecessary data.

It is a time consuming process.

Quantification of data can be difficult with some of the methods.

It is not always the case that the participatory process leads to consensus; it may, in fact, expose deep differences and conflict among various groups.

Session 5.2:
Use of methods and tools

Learning outcomes:

Understand and be able to apply a selection of participatory methods

Use of methods and tools

In this session you will explore a range of participatory methods that can assist you in more effectively applying farm management tools, covered in module 4.

Participatory methods and tools

The only way to learn participatory methods is to practice them:

Seasonal calendars

Transect walks

Venn diagrams

Trend lines

Flow diagrams

Participatory theatre

Maps and mapping

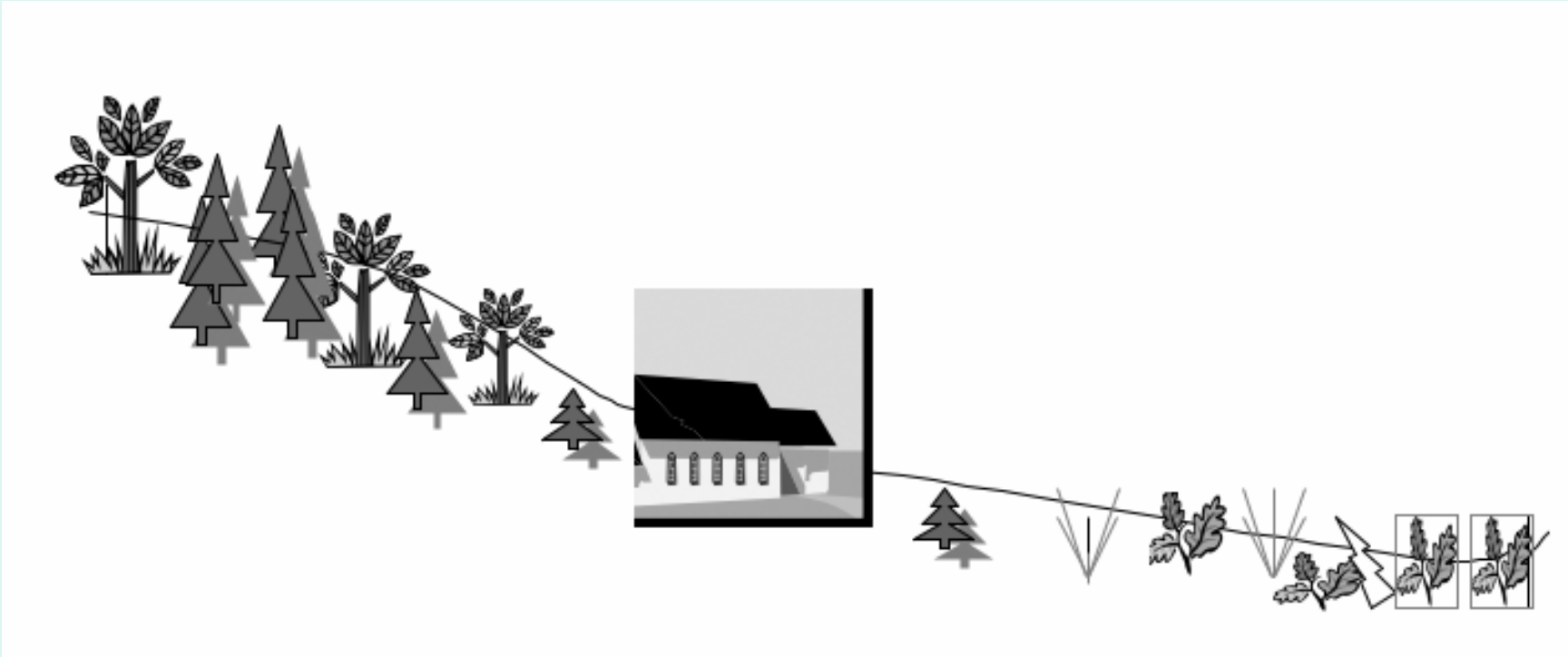
Semi-structured interviews

Observation

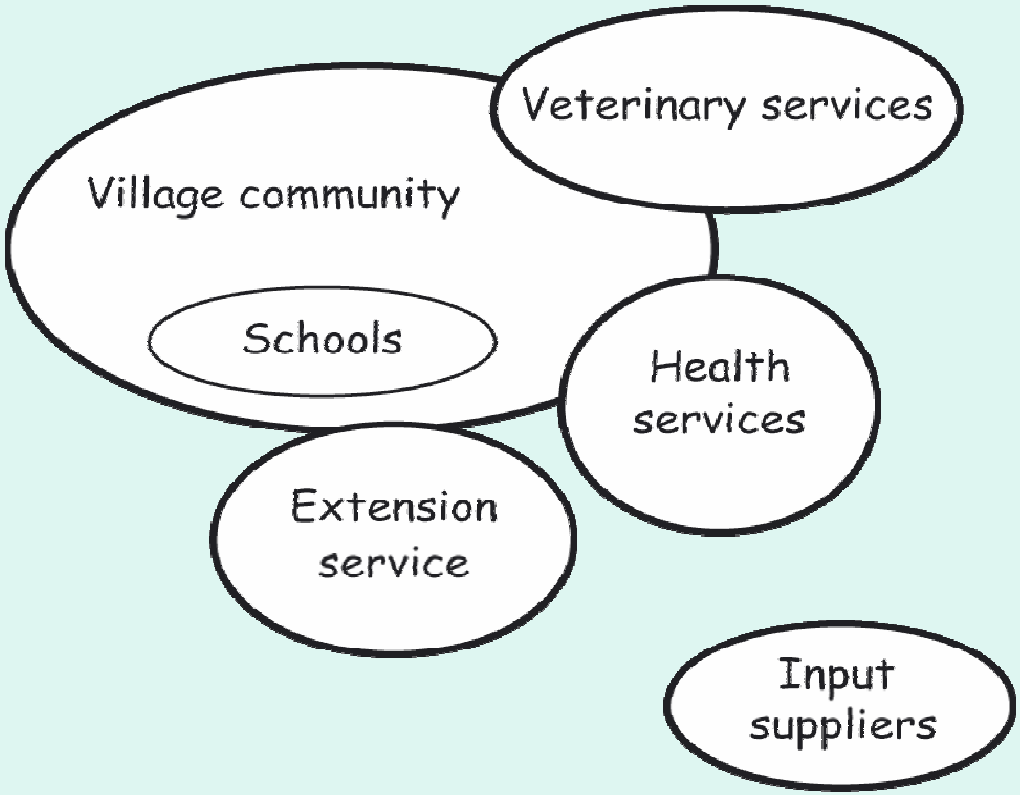
Seasonal calendar

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rainfall	Heavy		Light	Slight			Slight		Ligth		Light	Good
Land preparation									2 Labourers			
Planting/ manuring/ fertilizing	2 Labourers								2 Labourers	1 Labourer		
Weeding	5 Labourers	2 Labourers	1 Labourer							1 Labourer	5 Labourers	5 Labourers
Irrigation		1 Labourer	1 Labourer							5 Labourers	1 Labourer	
Spraying		1 Labourer								2 Labourers		2 Labourers
Harvesting				5 Labourers	2 Labourers							
Bagging-selling				2 Labourers	5 Labourers							

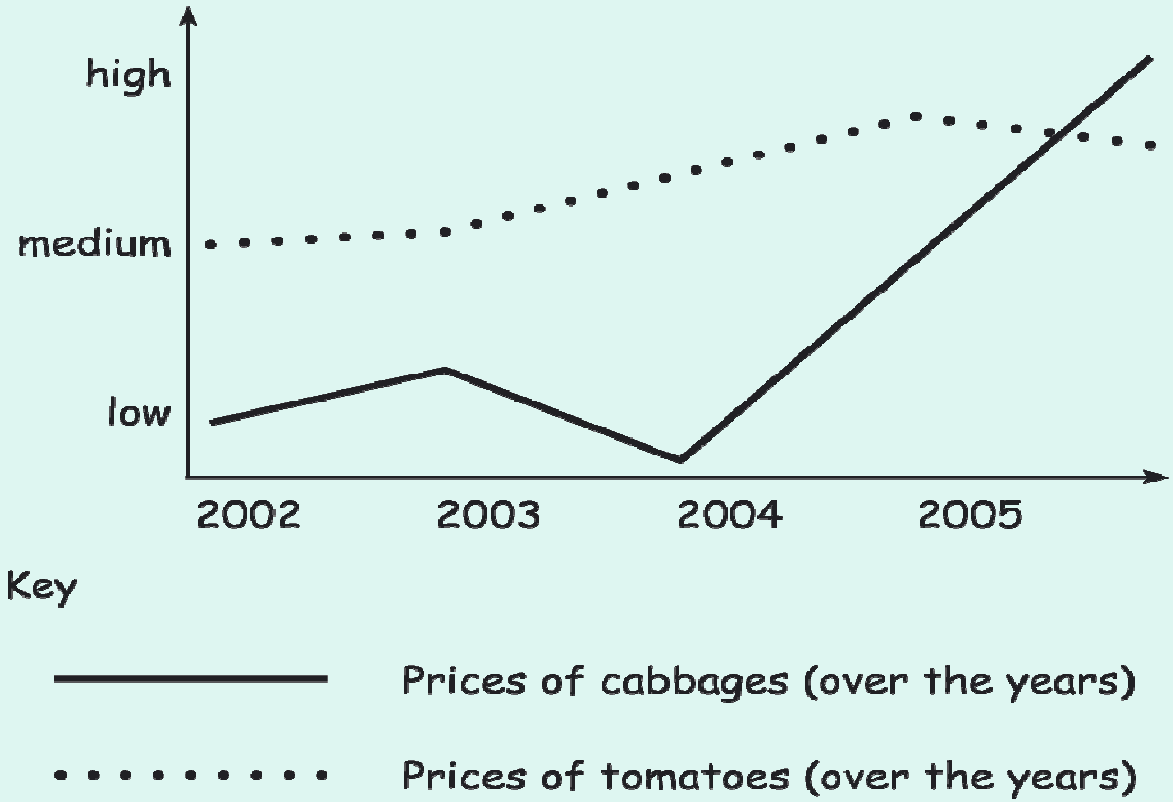
Transect walk



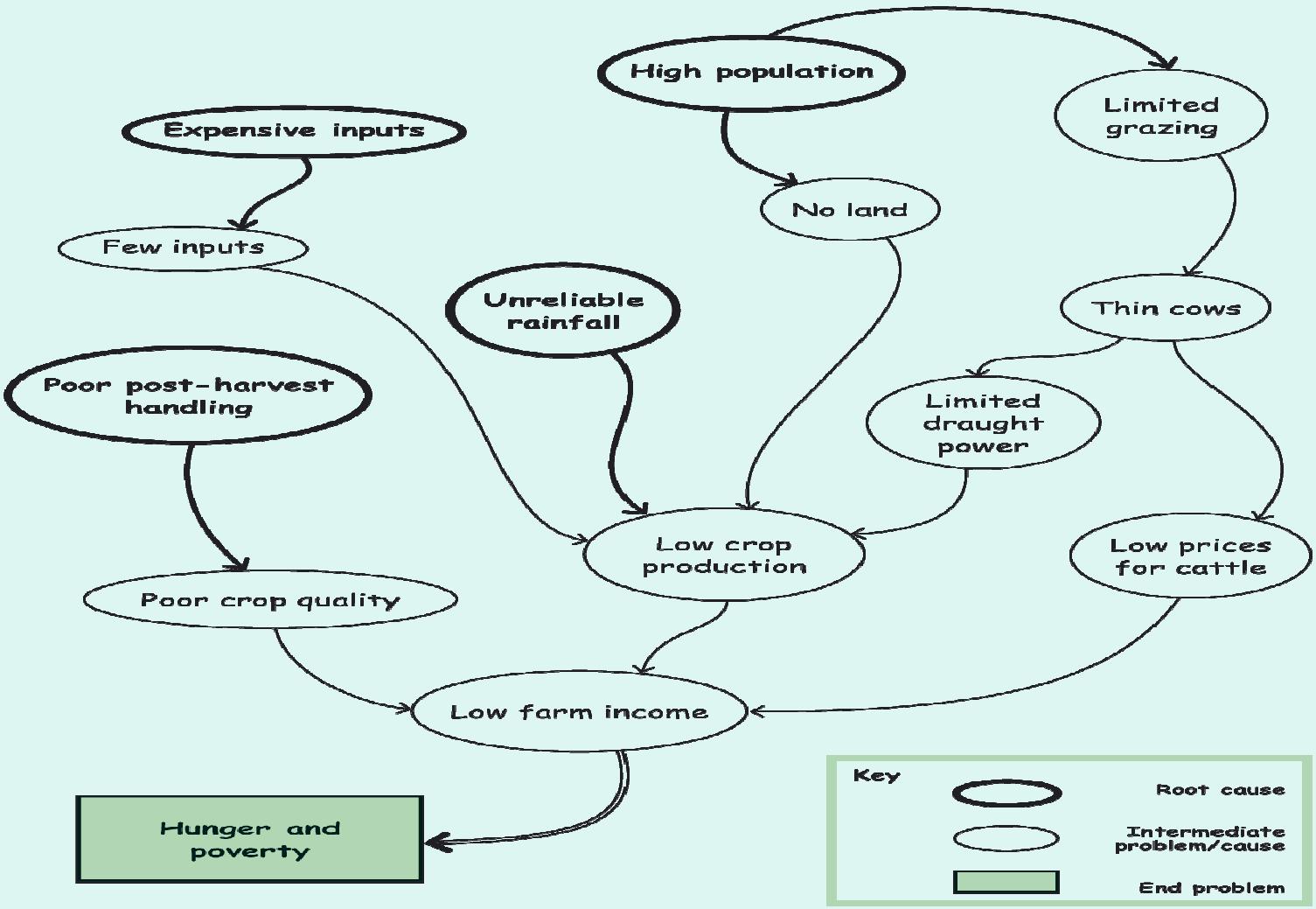
Venn diagram



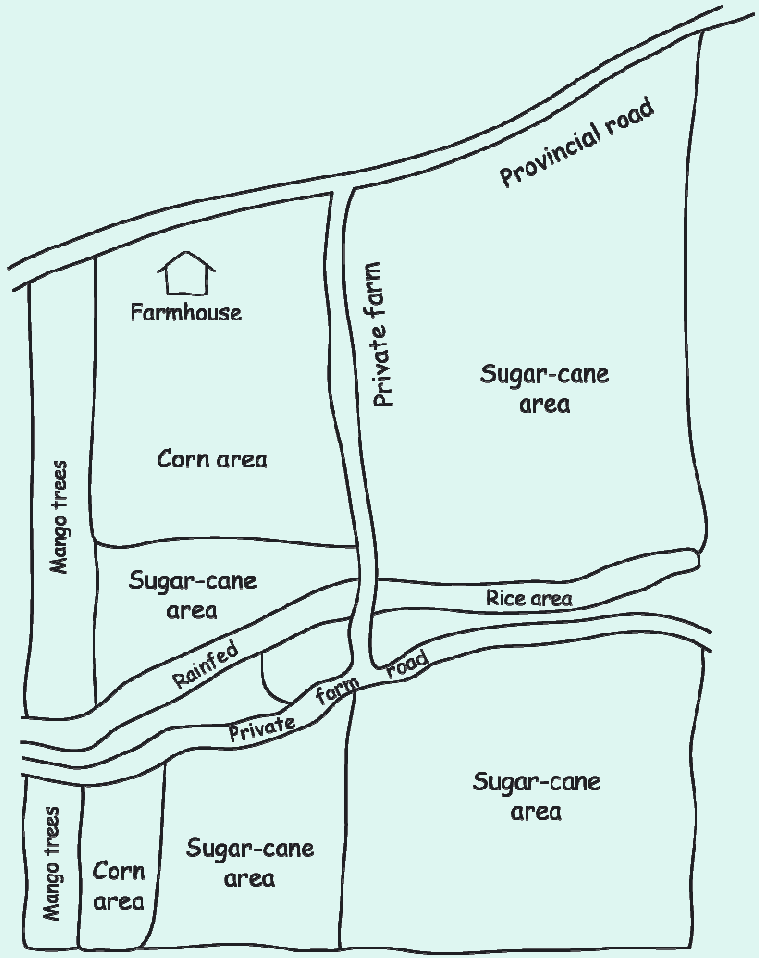
Trend line


high
medium
low
2002
2003
2004
2005
Key
Prices of cabbages (over the years)
Prices of tomatoes (over the years)

Flow diagram



Map and mapping



Session 5.3:
Symbol-based methods and calculations

Learning outcomes:

Understand and apply symbol-based methods and calculations

Symbol-based methods and calculations

In this session you will learn about symbol-based communication and the role it can play in extension, particularly among semi-literate and semi-numerate farmers.

The methods will include gross margins, food requirements and labour planning.

With this basic practice, you should be able to apply symbol-based communication to other tools, such as break-even and cash flow.

Symbol-based methods and calculations

Farm management tools can be divided into two groups:

Complex calculations

Gross margin budgets
Marketing margins
Break-even
Sensitivity analysis
Cash flow

Simple calculations

Food requirement

Labour planning

Symbol-based methods and calculations

Each of the tools can be conducted using both numeric and symbol-based methods.

The basic principle for symbol-based calculations applies to both groups: that is, numbers are replaced with symbols.

When applying this method with farmers, you will have to decide how to create the symbols.

Symbol-based methods and calculations

If calculations are done in a room where paper and pens are available, then it is possible to draw symbols.

If they are done in the field, it may be necessary to create symbols with rocks, beans, sticks.

In either case, the first step is to create a matrix or framework that represents the farm management tool.

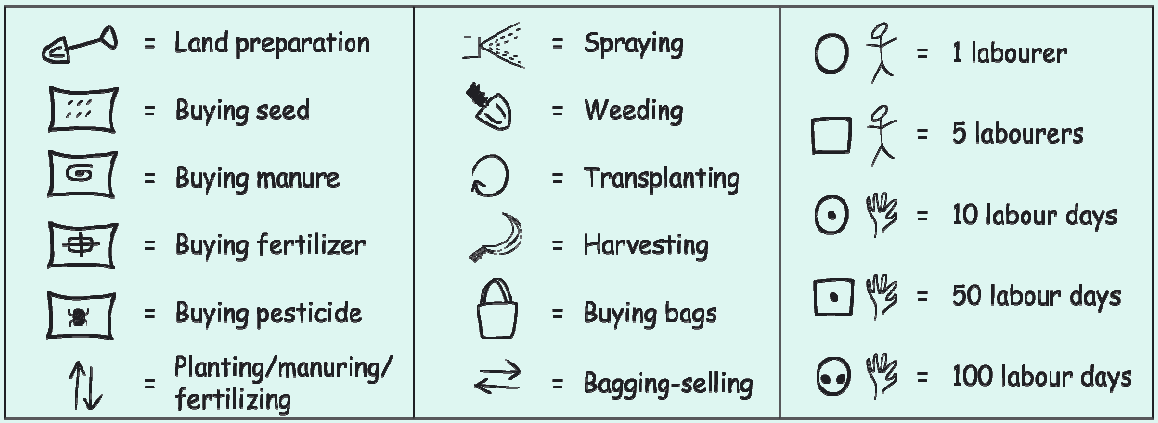
The next slides show an example of a symbol-based labour plan.

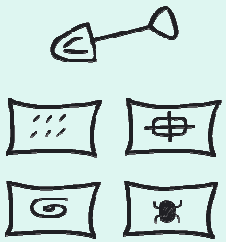
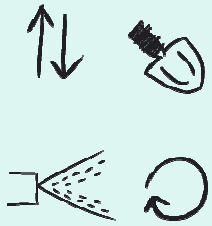
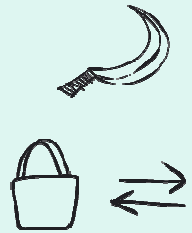
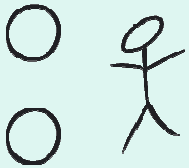
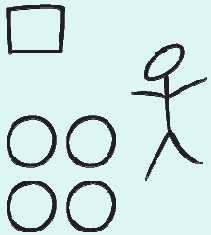
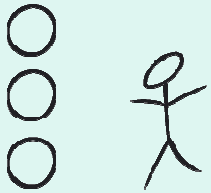
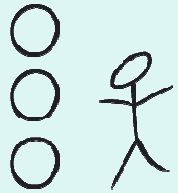
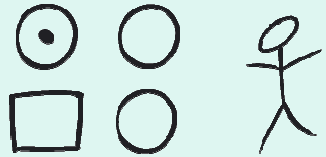
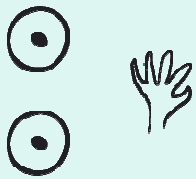
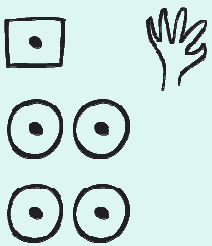
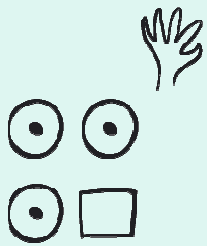
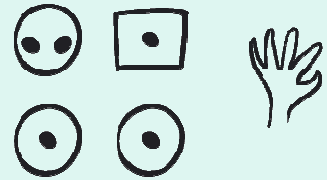
Labour Analysis. Below is a basic labour plan for 2.5 acres of cabbage with a yield of 168 bags per acre and 420 bags in total.

	January	February	March	April	May	June	Total
Activities	—	Land preparation Buying seed Buying manure Buying fertilizer Buying pesticide	Planting/manuring Spraying Weeding Transplanting	Weeding	—	Harvesting Buying bags Bagging-selling	
Total labour required	—	2	9	3	—	3	17
Labour days	—	20	90	35	—	25	170

To translate this to a symbol-based method we need to create symbols for numbers and activities.

Activity symbols



	January	February	March	April	May	June	Total
Activities	–				–		
Total labour required	–				–		
Labour days	–				–		

Module 5 : Review

- Do you believe that the overall purpose of the module has been achieved ?
- You should have an understanding and skills to apply participatory methods and symbol-based tools in support of market-oriented farming.

Module 6
PLANNING

Session 6.1 The planning process
Session 6.2 Farm performance analysis
Session 6.3 Planning for the market
Session 6.4 The farm plan

Planning

Market-oriented farming begins by determining what buyers want, in what form and when they want it. This module looks at what you need to know about the planning process, farm performance and the market. This will enable you to support farmers in preparing farm plans, increase profitability and income.

Note

This module is designed to give you an opportunity to practise a selection of tools and skills you have learned during the course of this programme.

Effectively you will conduct an in-depth plan of a 5 hectare farm.

Session 6.1
The planning process

Learning outcomes:

Understand the planning process and the planning cycle

The planning process

In this session you will look at the process of farm planning. Typically farmers are concerned about the future and they determine on their own what enterprises to produce, but there is a role for you in assisting farmers in making planning decisions.

The planning process

Some of the decisions that farmers make when planning the enterprise and the farm for the future are:

What crop should I produce and what variety or breed?

What area of land do I need?

How much should I produce?

When should it be produced?

How much labour will I need?

Do I have enough cash to buy inputs and materials or will I need to get more?

The planning process

Planning is one of the stages in the farmer's decision-making process.

Some forward-looking planning decisions are immediate, others are more long-term.

Farmers often plan just for their next season or in some cases they plan for a number of years.

The planning process

Planning means working things out before they happen.

Helping farmers gain skills for better planning is a role for you.

The planning process

Farmers who keep track of their past farm performance are in a better position to make good plans.

Farmers need to identify the strengths and weaknesses in their farming methods.

Before making a change, farmers should estimate what the results of that change are likely to be.

The planning process

It can only be an estimate of the outcome, because we cannot see into the future. Nevertheless it is important that we try to imagine the expectation.

It would not be good management to change the farm system without having any idea of the possible or likely outcome.

The method of estimating the results of a farming plan is known as budgeting.

Budgets

Budgets are used to decide whether a proposed plan will effectively increase profits.

Similarly, a farmer can use budgets to decide between two or more alternative enterprises and even to make whole farm plans.

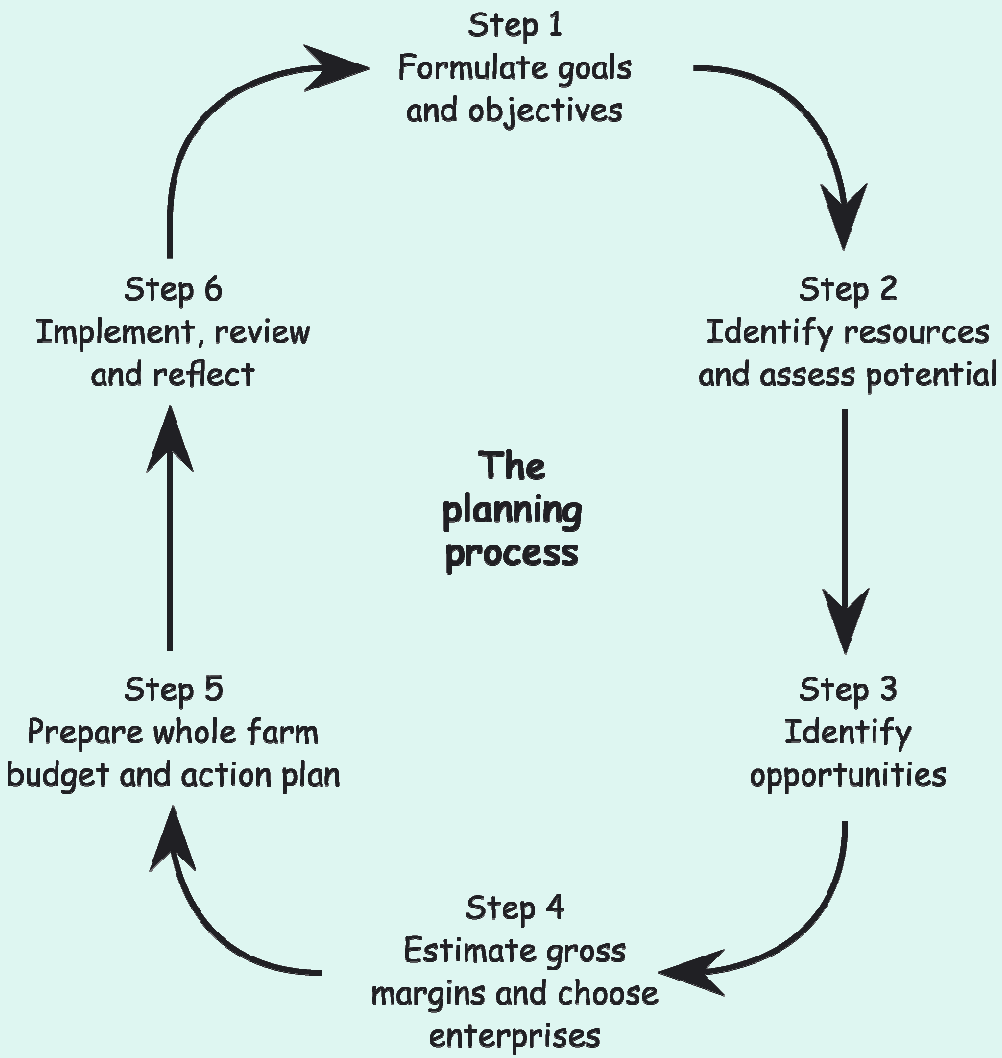
Budgets

Most farmers make some attempt at budgeting their farm plans, even though they may not work out their calculations on paper.

Farmers need to be encouraged to develop the habit of making more formal budgets.

By keeping some form of record it is less likely that some important information will be forgotten.

The planning process



Step 1: Formulate goals and objectives

This step typically begins with identification of the farm household goals and a listing of the priorities to the farmer and family.

This may simply consist of a single goal; maximization of profit or competing goals; increased profit and leisure.

The goals reflect the farm-family preferences.

Step 1: Formulate goals and objectives

Some basic questions for the farmer to ask might include:

What are my family's needs and what is the best way to provide for them?

What are some of the things my family wants to achieve?

Step 2: Identify resources and assess potential

Here the farmer draws up the resources available to the farm family.

You can provide guidance using the information studied in Module 2 of this programme.

Step 2: Identify resources and assess potential

In addition to a list of resources, the farmer should be encouraged to make a map of the farm.

The map should show the current crops and record the soil types and conditions for each plot on the farm. The farmer should do the same for common land for grazing, and forestry.

Step 2: Identify resources and assess potential

This record of the available land will serve as a guide as to what crops are suitable and what area may be grown.

It will also suggest what yields to expect.

At this stage the farmer needs to identify problems related to important resources such as land.

Step 2: Identify resources and assess potential

Farmers should also take stock of themselves as managers and objectively evaluate capacity and interest to manage certain crops and / or live-stock.

Farmers should identify weaknesses in management of the business, for example, excessive debt, high variable costs, depreciation and the use of labour.

Step 2: Identify resources and assess potential

The resources available set a limit on the plans which are possible.

It is important that any proposed plan must fit in with the available land, labour and financial capital, and with the farmer's ability as a manager.

It is no good trying to make a change which requires more of these resources than the farmer can acquire.

Step 3: Identify opportunities

A careful assessment of market and consumer demand is required.

The market appraisal should include an assessment of the demand for the product, the marketing arrangements and probable prices that can be attained, availability, cost and quality of purchased inputs and transportation and storage of the final product.

Step 3: Identify opportunities

Even if the resource inventory shows that certain crop and livestock enterprises are technically possible, choosing an enterprise must also take into account market opportunities.

Step 3: Identify opportunities

For many farmers the decision on what enterprises to include in a farm plan is based on personal experience and preference, together with considerations of comparative advantages of the different activities.

Some ideas and suggestions for activities can come from discussions held with family members, other farmers or with you, all of which could provide important sources of new information.

Step 3: Identify opportunities

The range of potential opportunities identified and evaluated could be broad and would need to be reduced through a process of 'short listing' or shortening the list to include the most likely opportunities.

Step 4 : Estimate gross margins and choose enterprises

Estimates are made of the income and variable costs for each of the possible alternative plans.

These estimates are used to calculate gross margins.

Based on the gross margins and other factors, the most profitable and viable enterprises should be selected.

Step 4 : Estimate gross margins and choose enterprises

Note

The gross income is made by multiplying the farm gate price with yield.

By looking at the market as the final destination of produce, it is important to take into account what we have called the marketing margin.

By taking the market price and deducting the costs, such as transport or handling, the farmer can arrive at the farmgate price.

Step 4 : Estimate gross margins and choose enterprises

Note

The gross margin for each potential enterprise should be calculated on a per unit basis (hectare, person-day).

The gross margins should be prepared on the basis of the most limiting resource.

If land is limited, the enterprises giving the highest gross margin per hectare would be best.

If labour is limiting, the enterprises giving the highest gross margin per person-day would be the best.

If capital is identified as the limiting resource the plan giving the highest gross margin per $100 of capital would be the best.

Step 4 : Estimate gross margins and choose enterprises

Usually a farm plan is for one year, and costs related to land, family labour, and machinery are considered fixed.

Therefore, in the short-run, maximizing gross margin is similar to maximizing profit (or minimizing losses) because the fixed costs are constant.

Step 5: Prepare whole farm budget and action plan

After the enterprise profitability is calculated, comparisons of profitability between alternative business ideas can be made.

Some farmers may even prepare different farm plans to analyse the best options and combinations of enterprises.

Step 5: Prepare whole farm budget and action plan

A whole farm budget checks the effect of changes in the cropping pattern and the introduction of new enterprises on the economic viability of the entire farm.

The gross margin for each enterprise will help the farmer make sure there is a match between amount of physical resources available to the farmer and the decisions taken as to the most viable enterprise for each land parcel on the farm.

Step 5: Prepare whole farm budget and action plan

The decision would require that there is agreement among the following aspects:

The physical characteristics of the resource base

Market opportunities

Use of other resources (labour and capital) available to the farmer

Individual preferences of the farm family

Step 5: Prepare whole farm budget and action plan

This often involves a process of trial and error.

Once the enterprise combination has been selected, the farmer then assesses the overall gross margin and whole farm net income.

The latter would require the preparation of an inventory of the fixed asset costs.

The difference between the overall gross margin and the fixed costs provides an estimate of whole farm net income.

Step 5: Prepare whole farm budget and action plan

An action plan is then prepared taking into account physical and financial aspects of the plan.

The plan could include an assessment of;

Land suitability
Enterprise selection
Planned crop rotations
A calendar of operations
Schedules of supplies required
An assessment of farm investments
Labour profiles
Cash flow projections
Enterprise budgets

Step 5: Prepare whole farm budget and action plan

One of the simplest ways to do this is with a seasonal calendar. This will give the farmer a visual picture of the plan, showing when inputs, labour and finance are needed, and when various activities need to take place.

Step 5: Prepare whole farm budget and action plan

For a new farm, or a large-scale change in an existing farm system, a complete budget is necessary.

For smaller changes in the farm system only variable costs are affected and a partial budget may be a sufficient guide.

Step 6: Implement, review and reflect; putting the plan into action

Once the best plan for the farm has been selected, it has to be put into operation.

If tree crops and livestock are included in the plan, this may take a long time, since these enterprises do not reach full production for several years.

If the farmer introduces new enterprises, farmers have to learn new skills and working methods to manage the enterprise effectively.

Step 6: Implement, review and reflect; putting the plan into action

Once the new plan is fully established it should run smoothly without too many management problems.

The period during which the plan is put into operation is usually the most difficult and requires very careful management.

Step 6: Implement, review and reflect; review and reflection

While the plan is being implemented and after it has been fully implemented, farmers will need to reflect on;

The outcomes of the plan

Evaluate it in terms of the goals set at the beginning of the planning process.

To what degree did the plan meet those objectives?

What adjustments can be made to correct new-found weaknesses or to build on new-found strengths and opportunities?

Session 6.2
Farm performance analysis

Learning outcomes:

Understand the purpose of performance analysis and its potential value in extension

Understand how to do a performance analysis

Farm performance analysis

In this session, you will focus on the concept of benchmarking; you will first identify a benchmark farm in your area and then you will practice analysing performance variations to highlight problems and possible solutions.

What is farm performance analysis?

Farm performance analysis is a way to assess how farms and their enterprises are performing in comparison with other farms in the vicinity.

Comparative analysis is an analysis of past results, but it gives useful guidelines for the future.

The analysis will help farmers understand where weaknesses occur in their farms and identify ways of addressing them through better planning for profits.

What is farm performance analysis?

Many factors affect the performance of the farm and the individual enterprises; level of production, productivity, input costs and product prices as well as the management skills and ability of the farmer.

In order to assess these factors it is often useful to divide the farm into its separate enterprises and to compare each one both separately and in combination.

What is farm performance analysis?

Farm performance can be carried out through three methods:

1. Comparing the performance of enterprises on a single farm over time
2. Comparing the performance of groups of farms
3. Comparing the performance of a farm with a more successful farm

The tools of constraints analysis and gross margin analysis can be used for the analysis.

Benchmarking

Farm performance analysis through making farm comparisons is based on the idea of benchmarking.

Benchmarking is a practice of identifying those farmers who are the best at doing something and understanding how they do it in order to learn from them and improve farm performance.

Their performance is set as a standard or benchmark for other farmers.

Benchmarking

Benchmarking involves studying the actual performance of the selected farm and comparing other farms of similar size and farming system for detailed financial and technical analysis.

The intention is to identify strengths and weaknesses and steps to improve the performance of the individual enterprise or the farm as a whole.

Benchmarking

You need to be able to calculate benchmarks for both average and better-managed farms.

There are several alternatives available for setting performance standards or benchmarks.

Benchmarking

Generally, benchmarks for farms are made up by averaging the actual performance data from a large group of farms.

The high profit benchmarks are typically derived by selecting the one-third of the farms in that large group that are the most profitable and averaging the performance measures from those farms.

Benchmarking can also be conducted by comparing individual farms.

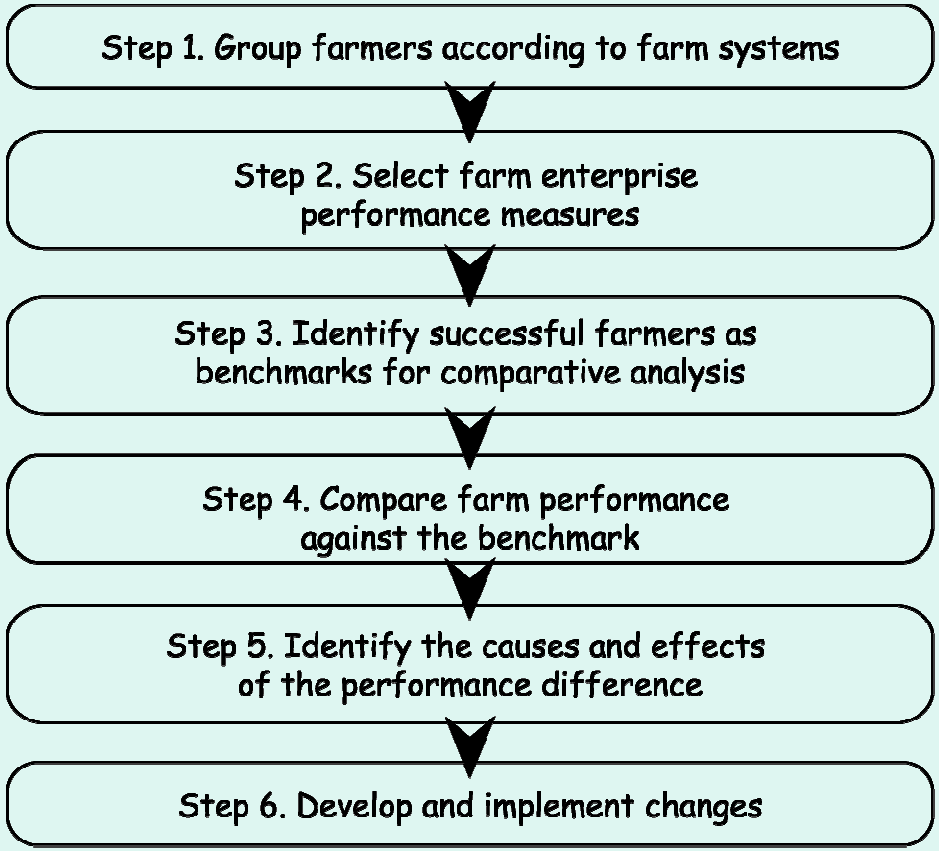
How is a performance analysis carried out?

The approach taken shows the basic steps of comparative farm performance analysis.

This analysis is conducted by you in collaboration with farmers.

The results of the analysis can be used as a useful extension tool for dissemination of feedback information to farmers.

How is a performance analysis carried out?



Step 1. Group farmers according to farming system

Look for a common factor upon which farmers can be grouped. This should be a factor that is relevant to the group of farmers with whom you work. This might be land size, agro-ecological zone, or technological package.

Step 2. Select farm enterprise performance measures

Select the farm enterprise that you want to study and identify key performance indicators that reflect farm performance.

Step 2. Select farm enterprise performance measures

- **Market related measures**
- Final market price achieved
- Quality of harvested produce
- Marketing costs
- Prices attained after taking into account marketing costs

- **Output–input related measures**
- Yield per hectare
- Cost per tonne of packaging
- Milk produced per kilogram of feed
- Cost of hired labour

Step 2. Select farm enterprise performance measures

A decision should be taken whether to use the overall indicator of gross margin per hectare, per person-day or per $100 of capital.

The indicator should be the most limiting factor. This is to make sure the farms are compared on the same basis.

Step 3. Identify successful farmers as benchmarks for comparative analysis

Identify which of the farmers are performing well and who can be used to set the benchmark for performance.

Step 4. Compare farm performance against the benchmark

Once the performance measures are established, data about the farm(s) to be compared needs to be collected. Such data should come from farm records. If these are not available, then the farmer's memory will have to suffice.

When the data is available, use appropriate tools to analyze the farm in terms of the key performance measures.

Step 4. Compare farm performance against the benchmark

This stage requires making comparisons of the performance of the farm with the benchmark, including such factors as:

Overall profitability of the farm
Gross margin performance of the enterprises
Yields and selling prices
Quantities of variable inputs used
Total fixed costs
Various physical and financial performance measures identified as relevant to the farm or to the group of farms

Step 5. Identify the cause and effects of the performance difference

Using tools like constraints analysis, you can assist farmers to identify what is causing the difference between their farms' performance and the benchmark.

Step 6. Develop and implement changes

Work should now be done to develop changes in the farm that can be implemented. This would include looking at all aspects of the farm in terms of the decision-making boundary.

Farmers should look at changes in input, production and marketing which are relevant to the root cause of the performance difference.

Example; performance analysis

Three farm situations show low productivity, low intensity and high fixed costs.

The farmers have 5 ha each on which they produce rice, coffee, beans and maize. They have recently learned that the benchmark whole farm gross income for a similar farm is $613.

Example; performance analysis

When they discussed this situation with their extension officer, the extension officer used the gross margin tool to analyse the performance of their farms.

The extension officer created a benchmark based on knowledge of the best performing farmers in similar situations. Then the three farms were compared to the benchmark.

Example; performance analysis

The results were as follows :

	Benchmark	Farmer 1	Farmer 2	Farmer 3
Profit	613	224	526	513
Cause		Low Productivity	Low Intensity	High Fixed Costs

Example; performance analysis

The details of the gross margin analysis

Enterprise	Benchmark	Low Productivity (Farmer 1)	Low Intensity (Farmer 2)	High Fixed Costs (Farmer 3)
Rice	2.5 ha x $220/ha = $550	2.5 ha x $110/ha = $275	3.0 ha x $180/ha =$540	2.5 ha x $220/ha =$550
Coffee	0.8 ha x $350/ha = $280	0.8 ha x $300/ha = $240	0.8 ha x $300/ha = $240	0.8 ha x $350/ha = $280
Bean	0.5 ha x $170/ha = $ 85	0.5 ha x $70/ha = $ 35	0.5 ha x $150/ha = $ 75	0.5 ha x $170/ha = $ 85
Maize	1.2 ha x $40/ha = $ 48	1.2 ha x 20/ha = $ 24	0.7 ha x $30/ha = $ 21	1.2 ha x $40/ha = $ 48
Gross Margin	5.0ha = $963	5.0 ha = $574	5.0 ha = $876	5.0 ha = $963
Fixed Costs	5.0 ha x $ 70/ha = $350	5.0 ha x $70/ha = $350	5.0 ha x 70/ha = $350	5.0 ha x $90/ha = $450
Profit	**= $613**	**= $224**	**= $526**	**= $513**

Example; performance analysis

The extension officer then did a constraints analysis which examined the root cause of low profits compared to the benchmark.

The results were as follows:

Example; performance analysis

Farmer 1:

Here it was found that the yields of rice, beans and maize (and to a lesser extent coffee) were lower than the benchmark. The cause of low yields; poor soil fertility, pests, etc.

This resulted in a low gross margin which resulted in low profits.

Example; performance analysis

Farmer 2:

Here it was also found that the yields of rice, beans and maize (and to a lesser extent coffee) were lower than the benchmark. The cause was more the farming system including technology choices, production systems, etc.

This resulted in a low gross margin which resulted in low profits.

Example; performance analysis

Farmer 3:

Here it was found that yields were comparable to the benchmark, but that fixed costs were much higher than the benchmark.

This resulted in the eroding of a sound gross margin resulting in low profits.

Example; performance analysis

The analysis gave a number of possible strategies;

Cause of low profits	**Possible action**
Low productivity (Farmer 1)	☐Increase crop yields by improving soil fertility, addressing problems of drainage, reducing the incidence of crop diseases ☐Try to get better market prices by using better harvest and post-harvest handling
Low intensity (Farmer 2)	☐Introduce new technologies and improved farm practices aimed at intensifying the farming system ☐Introduce new rural enterprises as part of a diversification process aimed at increasing on-farm income
High fixed costs (Farmer 3)	☐Reduce fixed costs through better management

Example; performance analysis

Very often the problems of a farm may have more than a single cause in which case a combination of solutions may be needed.

There should be a realistic relationship between the gross margin and fixed costs.

Example; performance analysis

High fixed costs associated with labour, machinery, rent of land should be matched by intensive farming (a high gross margin).

Farming with low intensity systems i.e. a low gross margin, can only increase their profits if they lower their fixed costs.

The results of the gross margin calculations of enterprises from different farms need to be compared very carefully; the gross margin only covers the variable costs from total costs.

Example; performance analysis

It should be noted that valid comparisons can only be made in terms of a production unit common to all of the farms or activities being compared.

This unit can be land area, if the land used by each enterprise is equally suitable.

It could also be per unit of labour per $100 of capital invested, or per head of livestock.

Session 6.3
Planning for the market

Learning outcomes:

Understand that the farmer can plan for the market

Understand how to develop a market strategy/plan

Understand how to identify opportunities for enterprise diversification

Planning for the market

In this session you will work on developing a realistic marketing plan. This will entail a visit to the market and relative development of a marketing plan.

Planning for the market

Marketing is the key to successful farm profit making.

Farmers can improve their skills in marketing by understanding how the market functions, collecting market information, formulating a marketing strategy and preparing a market plan.

Planning for the market

Marketing can be quite complex for the individual farmer and it is often more useful if farmers market their produce as a group.

Likewise, it is often more useful for farmers to prepare a market plan as a group.

You can be useful in assisting farmers in formulating strategies and preparing a marketing plan and in facilitating group and individual farmer marketing.

The essential principals of marketing

Farmers producing for the market should be in the position to answer six questions that marketing specialists pose that all begin with the letter "**P**";

People
Plan
Product
Price
Place
Promotion

People

People need the farmer to be friendly, efficient and knowledgeable about the product.

Who are the people we market to?

Who buys the product?

What are their wants and needs?

Who are the people marketing the product?

Plan

What is the plan for marketing?

What are the steps that need to be taken to market the product?

In what way will the farmer market the product to customers?

Product

What is the nature of the product that will be sold in the market? (This includes the taste of the product and other characteristics that consumers prefer)

Is the product what the customer wants?

Are the quantity, packaging and size what the consumer wants?

Is the appearance of the product appealing? Are the products labeled?

Product

Are the labels clear?

Can they be seen?

Are they attractive?

Does the product have a brand name?

Place

Where is the marketplace?

How far is it from the farm?

How should the produce be sold?

What form of transport is proposed?

What are the benefits of working with different types of distributors?

Place

How can distributors be supplied?

What are the requirements of the different distributors in terms of quantity, delivery and price?

What are the costs involved in the different distribution options?

Price

What price or how much is the farmer going to charge for their products?

Is the farmer a 'price taker' or a price maker?

Who are the main competitors?

What are the prices that they sell for?

Price

How are competitors likely to respond with respect to price if a new product is introduced to the market?

What are the price variations that exist between consumers in different locations?

How can I take advantage of these differences?

Promotion

How can I promote my product?

How can I inform people about my product?

Do I need to advertise?

Can I afford to do so by myself?

Promotion

What other ways can I promote the product?

How much will it cost me if I promote them?

How should I set my price?

What do most customers really want?

- Quality
- Low price
- Uniformity of produce
- Sufficient quantity
- Consistency
- Freshness
- Nutritious food
- Health promoting food
- Attractive products
- Good taste
- No pest damage
- Good packaging
- A wide selection
- Good labeling
- Knowledge of who produced it
- Receiving the produce on time
- Clean produce
- Accessible produce
- A list of ingredients
- Instructions on how to prepare it.

The marketing plan

The purpose of the marketing plan is to identify customers and competitors and outline a strategy for attracting and keeping customers.

This takes careful planning and a good understanding of the market in order to develop a strategy that ensures success.

The marketing plan

A marketing plan for a product or group of similar type products should answer the following questions:

Who is the customer?

What does the customer want?

Is this product in demand?

How many competitors are providing the same product?

How can demand for the product be created?

Can the farmer effectively compete in price, quality and delivery?

The marketing plan

A good marketing plan begins with thorough knowledge of the products to be produced and of potential customers.

Knowing who buys and why, are the first steps in understanding how best to sell.

A marketing plan should cover the following topics:

The current market situation

The general background on the market in which the product will be sold.

It begins with a general idea of who the buyers are and what they want followed by anything else that describes the market in which the products would be sold (e.g. existing supplies, packaging preferences, etc.).

Constraints and opportunities analysis

Based on an assessment of the market opportunities, the farmer identifies the opportunities and constraints that the farmer faces and realistically evaluates the farm's internal strengths and weaknesses of dealing with the market situation.

The marketing strategy

Based on the analysis carried out above, the farmer draws up a plan to address the marketing objectives of the farm.

The strategy should include a clear definition of consumers, customer needs and the prices attained for produce sold.

The marketing strategy

The next slide shows a constraints, solutions, opportunities and actions matrix.

It is one way of assisting the farmer in analysing what possible strategies to formulate.

This enables the farmer, with your help, to appraise rapidly whether it is worthwhile producing a farm enterprise, provide possible solutions to problems, and identify opportunities to enter a market and make profits.

Example; constraints, opportunities , solutions and actions matrix

Constraints	**Opportunities**
No Local market Poor transport services	Potential exists for early crop production when supplies are short
Solutions	**Actions**
Organize a local farmers' market Encourage buyers to use their own transport	Encourage growing early crops and develop appropriate production techniques

Analysis of constraints and opportunities

Solutions to marketing problems are often relatively simple and should not require major changes to be made in production or new technologies to be introduced.

When the marketing plans become complex they are more likely to fail.

Analysis of constraints and opportunities

In the marketing plan, the farmer looks for the right combination of factors that will satisfy the needs of consumers and increase farm profits.

The plan, once prepared, should be assessed, to see whether it is realistic and likely to improve the overall competitiveness of the farm.

Usefulness of the marketing plan

The marketing plan directs the farmer towards trying to understand what the customer wants.

Why are consumers so important?

The answer is simple. They are, ultimately the source of income for the farm to cover the cost of daily operations, to repay debts and to make a profit.

Usefulness of the marketing plan

A marketing plan is necessary for any successful farming activity.

Marketing offers the farmer the information that, if applied correctly, will allow them to generate greater profit.

A good marketing plan may boost sales and increase profit margins.

Usefulness of the marketing plan

The farmer must be able to convince customers that they have the best product for them at the lowest possible price.

If the farmer cannot convince potential customers of this, then they will be wasting time and money.

This is where the marketing plan comes into play and why it is useful.

The market plan should help the farmer:

Know how much produce can be sold

Plan production and have enough to sell

Do what is needed to make a profit

Identify competitors and what they are good at by comparison to other farmers

The market plan should help the farmer:

Identify new crops to grow

Identify new and/or potential customers

Identify weaknesses in the farmer's management skills

Identify weaknesses in the overall business plan

What does a marketing plan contain?

Product information

Input supply and financing

Local marketing system

Product requirement by market

Under-utilized local resources

The farming community

Session 6.4
The farm plan

Learning outcomes:

Understand how to prepare a farm plan

Understand the changes on the farm (before and after) and implications on resource allocation

Understand the enterprise combination and implications that lead to higher farm income

Understand the iterative process of planning and the need to satisfy more than a single objective

The farm plan

This session is the melting pot of the entire programme; here you have to develop a farm plan through a step-by –step process integrating the key skills and tools learned in this programme.

The farm plan

Objective

To develop a farm plan which generates the greatest profits within the constraints of such factors as labour, land, access to credit, mechanization.

The farm plan

Step 1. Resource capital analysis
Step 2. Food production
Step 3. Choosing your cash crops
Step 4. Choosing your livestock enterprise
Step 5. Testing labour availability
Step 6. Sustainability check
Step 7. Farm map
Step 8. Estimate whole farm gross income
Step 9. Estimate the whole farm net income or profit
Step 10. Household cash flow
Step 11. Written report of your farm

Module 6:Review

- Do you believe that the overall purpose of the module has been achieved ?
- You should have a good understanding of the planning process, farm performance analysis, planning for market and the farm plan

Module 7
REVIEW, EVALUATION, EXAMINATION

Session 7 A Changes in perception
Session 7 B Reflection, consultation and action
Session 7 C If I were facilitator
Session 7 D Training evaluation
Session 7 E Training examination

Review, evaluation, examination

This is the final module of the training programme and it is time to evaluate what has been archived. It is also time to consider ways to implement in practice what has been learnt.
A number of specially designed test sequences are provided here. Each includes a pre-test review dealing with certain aspects of the programme followed by a test form to be completed by you.

Session 7 A
Changes in perception

Changes in perception

Now that the programme is coming to a close, it is important that you verify how your perceptions have changed regarding farming, farm management and market-oriented farm management.

Has there been a change?

If, yes, what has changed and why?

If to the contrary, why not?

Session 7 B

Reflection, consultation and action

Reflection, consultation and action

1. What is the most important thing you have learned in this course?

2. How has this influenced your understanding of your work ?

3. Which part of this course do you want to implement when you return to work ?Explain why ?

Reflection, consultation and action

4. Implementation plan
   To develop an implementation plan you will need to think about the following:

Goal: What will you achieve by implementing your plan? What is the result you are after?

Action: What are you going to do? What is it you are going to implement?

Reflection, consultation and action

Measuring: How will you know you have achieved your goal?

Steps: What steps do you have to take to implement your plan? What resources do you need? Who might be your partners in this plan? When can you complete each step?

Reflection

Session 7 C

If I were facilitator

If I were facilitator

A number of days have been spent in this training programme.

You have a unique perspective to give on the training.

What would you have done differently?

Farm team humour!

Humour Interval

Not all evaluations need to be based on serious aspects of the course. One of the richest forms of reflection is storytelling.

Teams; tell a story about the training course.

Session 7 D

Training evaluation

Training evaluation

Evaluate and comment freely regarding all aspects of the course and then record the results for future use.

Session 7 E
Training examination

Training examination

This training programme has been based on the study of the concepts and tools required and the practice of skills relevant for market-oriented farm management.

Now you will test your ability to apply the principles that have been covered.