



Farmer Field School

on

Integrated Soil Management

Facilitator's manual



Acknowledgement

This manual is based on the experience of the FARM Programme since 1996. Many people have contributed to it; soil specialists and other scientists in institutions in four member countries, site working group members and site technical officers, and all the farmer participants in the school whose experience and suggestions helped improve the curriculum and content of the learning sessions. The FARM Programme gratefully acknowledges the contribution of all those who helped in any way in the preparation of the manual.

Correct citation:

FARM Programme 1998. Farmer Field School on Integrated Soil Management, Facilitator's Manual.

Illustrations: Komgrit Gonthong, Format & Partners, Bangkok, Thailand

***Farmer Field School on
Integrated Soil Management***

Facilitator's manual



For additional copies, please contact:

**Land and Water Development Division
Food and Agriculture Organisation of the UN
E-mail: Land-and-Water@fao.org**

FFS Manual

Foreword

Farming communities of the FARM Programme field sites often indicated that they would like to receive more technical information particularly in relation to soil management, improving the efficiency of fertiliser use, increasing output and controlling costs.

In attempting to respond to this need the FARM Programme used the modality of the Farmer Field School (FFS) as a learning tool for natural resource management. The FFS approach has enjoyed remarkable success in the implementation of the Integrated Pest Management Intercountry Programme (IPM) in rice production in the region. The FFS approach in rice cultivation showed that farmers can become experts at ecosystem analysis and make informed decisions about necessary interventions, from both an ecological and an economic point of view. It seemed reasonable to assume that the FFS concept could be applied to enterprises and processes other than integrated pest management in rice production.

It was therefore decided to test the FFS approach in field sites in four participating countries (China, Philippines, Thailand and Vietnam) as a means of giving farmers access to learning about integrated soil management, starting in 1996. In fact, the initiative had already been taken by Infanta Integrated Community Development Assistance, Inc. (ICDAI), the NGO involved in the management of the FARM field site in Infanta, Philippines. A number of ICDAI officers had been trained as facilitators under the national IPM programme and ICDAI was working on its own ideas for broadening the concept into ecological pest management. Jaap van de Pol began to develop the first ideas for a farmer field school in integrated soil management in the receptive environment of Infanta, and by late 1996 the first curriculum had been prepared by him and a beginning made on this manual.

The first farmer field school in integrated soil management supported by the FARM Programme began in Infanta in February 1997. This was followed by Luc Ngan, Vietnam in early 1997, Wuhua and Deqing, China in mid-1997, Sakon Nakhon, Thailand, and Bac Lieu, Vietnam in mid-1998. This final version was tested in training of trainers activities in the Philippines and Vietnam in October 1998.

This facilitators' manual is based on the experience of the FARM Programme since 1996. Many people have contributed to it; soil specialists and other scientists in institutions in four member countries, site working group members and site technical officers, and all the farmer participants in the school whose experience and suggestions helped improve the curriculum and content of the learning sessions. Indeed the participants themselves decided on the broadening of the scope of the schools to encompass soil and tree crop management. The excellent manuals developed by the Integrated Pest Management Intercountry Programme served as an inspiration. In the FARM team, Marco Miagostovich and Jaap van de Pol were responsible for supporting

the field schools in the four countries. They deserve special thanks for their work in preparing this manual.

J. M. Stainburn
September 1998



Contents

- Chapter 1: Overview
- Chapter 2: Opening of the school and regular session exercises
- PART 1: EXERCISES - to be conducted before cropping season/cycle**
- Chapter 3: Soil physical characteristics
- Chapter 4: Soil chemical characteristics and soil fertility
- Chapter 5: Identification and prioritisation of soil management problems and solutions
- Chapter 6: Planning on-farm testing by farmers
- PART 2: EXERCISES - to be conducted during the cropping season/cycle**
- Chapter 7: Monitoring on-farm testing by farmers
- Chapter 8: Selection of special soil management topics
- Chapter 9: School evaluation
- Annex: Reference materials**

Chapter 1

OVERVIEW

Contents

- 1.1 How to use this manual
- 1.2 School learning steps
- 1.3 School structure
- 1.4 School preparatory meetings

1.1 HOW TO USE THIS MANUAL

Background to the Farmer Field School on Integrated Soil Management

The farmer field school (FFS) approach has been successfully trialled at field sites in four participating countries (China, Philippines, Thailand and Vietnam) as a means of giving farmers access to learning about integrated soil management (ISM). Based on the schools, this facilitators' manual was developed.

Purpose: The farmer field school aims to build each farmers' capacity to analyse their soil and other related crop management practices, to identify the main constraints, and to test possible solutions on their field, eventually identifying and adopting the practices most suitable to their farming system.

The purpose is to assist farmers in developing their ability of making critical and informed decisions that render their farming systems more productive, profitable and sustainable. Training helps farmers to make their own decisions, to organise themselves and their communities, and to create a strong working network with other farmers, extension workers and researchers. Through their participation in FFS activities farmers become experts in their own fields. Training methods become tools for continued inquiry and improvement by the community.

Training approach: The FFS uses "non-formal adult education" methods, particularly experiential learning techniques. Typically a group of 20 to 25 neighbouring farmers meets regularly (for a morning or an afternoon regularly, no less than once a month during an entire cropping season or cycle on one of the farmers' fields).

A facilitator, often an extension officer, facilitates the meetings. The topics of each meeting are related to the development stage of the crop at that particular time. The activities are highly practical, involving careful observations of factors affecting farm performance and joint examination of possible solutions: there is much sharing of experiences among the farmers and a minimum of lecturing.

A number of on-farm trials (studies) are normally conducted during the school by the farmers as well as some demonstrations of alternative technologies. The subjects of the on-farm trials and demonstrations will be selected by the farmers themselves. During the FFSs farmers will identify the underlying causes of their soil management problems and test possible solutions that fit their particular physical and socio-economic situation.

Through utilising the skills developed in local analysis farmers are enabled to adjust input recommendations or technical packages to suit local conditions.

The school is not meant to teach farmers new technologies developed outside their environment but to provide them with tools which will enable them to analyse their own production practices and identify possible solutions.

The role of the facilitator: The school is facilitated by a field officer, farmers' leader or knowledgeable farmer trained to facilitate group learning where lecturing is kept at a minimum giving priority to sharing experiences amongst participants and on-farm experimentation.

The role of scientists: The role of the scientist is to provide backstopping support to the school. The scientist role is that of a colleague and adviser who brings new ideas and /or unknown technologies to the communities.

How the manual was developed

The FARM Programme sees the development of the Farmer Field School in Integrated Soil Management (FFS-ISM) as a doing and learning process. This process began with the development of a draft FFS-ISM modality followed by a trial with a farming community at one of the FARM field sites. Learning from the successes and mistakes of this first trial, the FFS-ISM modality was further developed and tested again in the field.

During 1997 four different schools were started. In April, two schools were organised in the Philippines. Two months later, another school was initiated in Vietnam and a fourth in China. The schools dealt with different kinds of crops. Two schools focused on integrated soil management in annual crops such as rice, maize and vegetables. The others focussed on perennial crops such as litchi and pomelo and included, beside soil management topics, some topics on crop and pest management.

Based on this initial experience a first draft of the Facilitator's Manual was prepared and tested again in four new schools, one in Vietnam on rainfed rice, one in Thailand on mangoes and two on irrigated rice in the Philippines.

The information on the different school sessions has been collected and analysed since 1997. The results were used for the improvement of the FFS-ISM curriculum and the development of the present Facilitator's Manual for Farmer Field Schools on Integrated Soil Management.

The purpose of the manual

The overall objective of the manual is to assist facilitators in FFS-ISM by providing the basic framework and materials for the implementation of the school.

Who is this manual for?

This manual, when translated into the language of the country of use and adapted to local/field circumstances where needed, is intended to be used by:

- (a) field based extension officers, farmers' leaders and field-level development workers to facilitate the implementation of a FFS-ISM;
- (b) those people who would like to organise a FFS-ISM and need ideas and exercises on how to set up a school programme; and
- (c) trainers or coordinators who will be training field-level facilitators using these guidelines.

Function of the manual

This manual contains a large number of FFS-ISM exercises on a selected range of soil management topics and general FFS related topics. These examples of FFS-ISM exercises should be used by the facilitator in a creative and critical way. The facilitator may know of some other exercises which will achieve the same objectives as the exercises suggested in the manual but better suited to the local conditions of the school. The facilitator should not

hesitate to make use of those particular exercises. If the training is not customised for the facilitator or the farmers it will be stiff and less meaningful.

During the school the farmers will study soil management options selected by them. Depending on the farmers' interest and problems identified, exercises should be chosen and adapted for the specific options.

The user is encouraged to add materials or supplementary notes as the school progresses and to meet local circumstances.

How the manual is structured

The manual contains nine chapters and one annex with reference materials.

The first chapter provides information on the farmer field school approach, the use of the manual, the school learning steps, FFS-ISM structure/content and notes for the preparation of a FFS-ISM.

Chapters two through nine contain examples of FFS-ISM exercises. Each chapter deals with a specific topic and it contains an introduction and a number of exercises. In some cases two or more exercises have been included for the one topic. Each exercise is described in detail so as to provide sufficient guidance to the facilitator. It includes a brief introduction, learning outcome, time needed, and steps to be followed. Each exercise ends with suggestions for leading questions to facilitate group discussions.

Chapter two contains exercises related to the opening of the school and exercises which are regularly used during each half-day session of the school such as daily review, summary and daily feedbacks.

Chapters three through six are grouped together and include the exercises used during the initial phase of the FFS-ISM, which are scheduled before the cropping season/cycle. Chapter three contains exercises on soil physical characteristics, chapter four on soil chemical characteristics, chapter five on identification and prioritisation of soil management problems and solutions and chapter six on the planning of farmers' season-long studies.

Chapter seven, eight and nine are also grouped together and include the exercises used during the second phase of the FFS-ISM, which are scheduled during the cropping season/cycle. Chapter seven contains exercises related to the season long studies, chapter eight on a selection of special soil management topics and chapter nine on school evaluation.

All the reference materials related to the exercises are brought together in the Annex.

When and where to run the school

Time of the year: The school is scheduled to start with six half-day sessions before the planting season (annual crop) or just after harvest (for perennial crops). This will allow participants to go through the initial school assessment phase and to identify soil management practices that may be chosen for experimentation during the cropping season. After the initial assessment phase the school continues with regular half-day sessions during the cropping season (cycle).

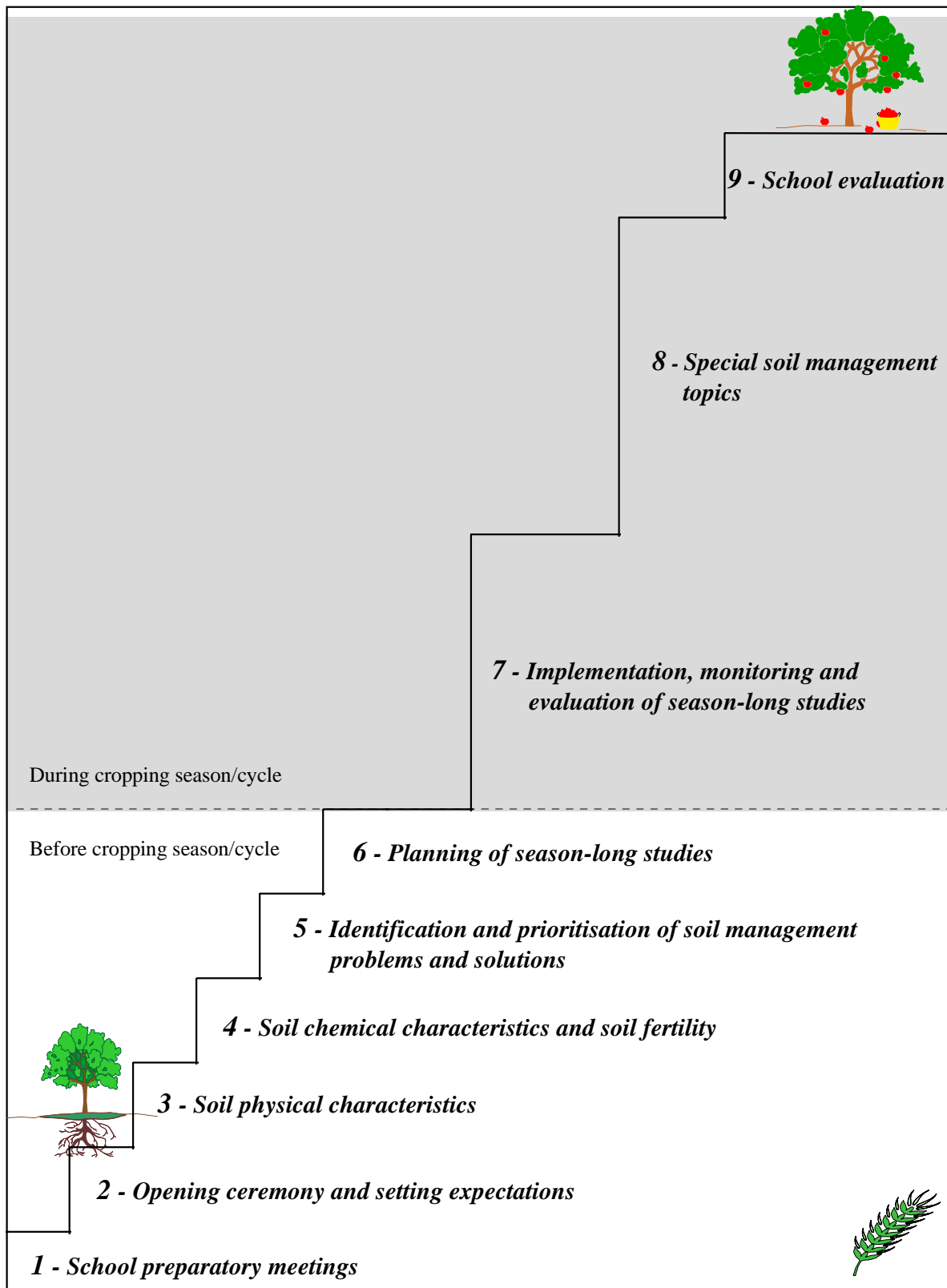
In scheduling the school the facilitator should be aware of farmers' availability and it is important to involve participants in setting the time and schedule of meetings. Women may not have the same availability as men. To guarantee that women can attend regularly suitable times need to be identified. Facilitators have an important role to play in this respect.

Duration: The school runs for one crop season. For annual crops the school will last for 4 to 5 months, and for perennial crops 12 months.

Length of each school meeting: Previous schools on integrated soil management have organised meetings every 2 or 3 weeks for one cropping season. There are no fixed rules on the duration of each meeting. This will depend on farmers' and facilitators' availability. In general it is not possible for farmers to spend a full day away from their farm or other commitments very often. Therefore it is suggested the school meetings take no more than half a day.

Venue: The school meets on one of the fields of the participating farmers.

1.2 SCHOOL LEARNING STEPS



1.3 SCHOOL STRUCTURE

Preparatory meetings

In preparation for a Farmer Field School on Integrated Soil Management it is important to:

- Consolidate secondary data
- Introduce the approach, structure and objective of the FFS-ISM to the men and women farmers
- Explain what farmers can expect from the FFS-ISM and what is expected from them
- Identify the group of farmers for the school and their main interests and problem(s)
- Select crop(s) to focus on during the school
- Decide with the participating farmers on the frequency and timing of school sessions
- Decide on the starting and ending dates of the school.

Two phases of the school

The school is divide into two main parts:

1. Sessions scheduled to be conducted before the beginning of the cropping season (or crop cycle). These sessions can be held once every week or concentrated in a two week period. It is important that these initial six half-day sessions are completed before the beginning of the cropping season.
2. Sessions scheduled to be conducted after the beginning of the cropping season. Participants will meet once every two weeks (annual crop) or up to once every month (perennial crop).

Initial phase of the FFS-ISM: half-day sessions before cropping season (cycle)

FIRST HALF-DAY SESSION		
TOPICS	EXERCISES	EXERCISE NO.
Opening of the school	• Official opening of the school by local authorities and farmer leaders	2.1
	• Introduction of the school - setting expectations	2.2, 2.3
Soil physical characteristics	• Describing soil samples	3.1
	• Soil types and their locations	3.2, 3.3
	• Daily feedback	2.6 - 2.10 ¹
	• Summary and closure	2.11

SECOND HALF-DAY SESSION		
TOPICS	EXERCISES	EXERCISE NO.
	• Review of the previous day	2.1
Soil physical characteristics	• Soil profile analysis (soil pits)	3.4
	• Summary of soil physical characteristics	3.5
	• Daily feedback	2.6 - 2.10
	• Summary and closure	2.11

¹ Facilitator should make a selection from this range of exercises.

THIRD HALF-DAY SESSION		
TOPICS	EXERCISES	EXERCISE NO.
	<ul style="list-style-type: none"> Review of the previous day 	2.4
Soil chemical characteristics	<ul style="list-style-type: none"> Fertilisation practices Soil sampling (optional) - soil analysis Development of fertilisation recommendations 	4.1, 4.2, 4.3 4.4, 4.5 4.6
	<ul style="list-style-type: none"> Daily feedback 	2.6 - 2.10 ¹
	<ul style="list-style-type: none"> Summary and closure 	2.11

FOURTH HALF-DAY SESSION		
TOPICS	EXERCISES	EXERCISE NO.
	<ul style="list-style-type: none"> Review of the previous day 	2.4
Identification of soil management problems and solutions	<ul style="list-style-type: none"> Field walk Problem prioritization 	5.1, 5.2 5.3 or 5.4
	<ul style="list-style-type: none"> Daily feedback 	2.6 - 2.10
	<ul style="list-style-type: none"> Summary and closure 	2.11

FIFTH HALF-DAY SESSION		
TOPICS	EXERCISES	EXERCISE NO.
	<ul style="list-style-type: none"> Review of the previous day 	2.4
Identification of soil management problems and solutions	<ul style="list-style-type: none"> Identification of solutions Assessment and selection of practices to be tested and selection of special topics 	5.5 or 5.6 5.7
On-farm farmers testing	<ul style="list-style-type: none"> Introducing on-farm testing by farmers Promoting farmers' confidence in experimentation 	6.1 6.2
	<ul style="list-style-type: none"> Daily feedback 	2.6 - 2.10
	<ul style="list-style-type: none"> Summary and closure 	2.11

SIXTH HALF-DAY SESSION		
TOPICS	EXERCISES	EXERCISE NO.
	<ul style="list-style-type: none"> Review of the previous day 	2.4
On-farm testing by farmers	<ul style="list-style-type: none"> Planning farmers' experimentation activities Selection of land or trees for field tests 	6.3 6.4, 6.5
Monitoring of field tests	<ul style="list-style-type: none"> Building awareness of the value of keeping records of farm activities, and on monitoring Selection of indicators 	7.1 - 7.3 7.4
	<ul style="list-style-type: none"> Daily feedback 	2.6 - 2.10
	<ul style="list-style-type: none"> Summary and closure 	2.11

¹ Facilitator should make a selection from this range of exercises.

FFS-ISM half-day sessions during the cropping season (cycle)

The activities/content of the half day sessions of the FFS-ISM during the cropping season depend on decisions made by the participating farmers during the initial phase of the school.

During the cropping season activities center on conducting, monitoring and evaluating the on-farm trials carried out by the farmers on those soil management practices they have selected for testing.

These activities will be undertaken during the first few hours of each half-day session. The last few hours of each half-day session will be based around a special topic, also selected by the participating farmers during the initial phase of the school.

The following framework can be used for the half-day sessions during the cropping season.

HALF-DAY SESSIONS DURING THE CROPPING SEASON		
TOPICS	EXERCISES	EXERCISE NO.
	<ul style="list-style-type: none"> Review of the previous day 	2.4
Field observations	<ul style="list-style-type: none"> Briefing on today's observations Observations in the research plots (fields) Discussion from the field observations 	2.5 7.5 7.6
Selected topic	<ul style="list-style-type: none"> Presentation and discussion on one selected topic related to soil management practices or other topics 	Chapter 8
	<ul style="list-style-type: none"> Daily feedback 	2.6 - 2.10 ¹
	<ul style="list-style-type: none"> Summary and closure 	2.11

The last half-day session of the school focuses on the evaluation of the school, follow-up activities and closing of the school.

LAST HALF-DAY SESSION OF THE SCHOOL		
TOPIC	EXERCISES	EXERCISE NO.
	<ul style="list-style-type: none"> Review of the previous day 	2.4
School evaluation	<ul style="list-style-type: none"> Evaluation of Practices and Technologies School evaluation Farmers' recommendations for future schools 	Chapter 9
Closing ceremony	<ul style="list-style-type: none"> Official speeches Hand-over of school attendance certificates 	

¹ Facilitator should make a selection from this range of exercises.

1.4 SCHOOL PREPARATORY MEETINGS

A very important element contributing to the success of a farmer field school is that participating farmers should have expressed their interest in the school subject (in this case integrated soil management), and that they are interested in actively participating in the identification of soil management problems and appropriate solutions.

Consequently, it is recommended that a series of formal or informal meetings be conducted with farmers and local government and non-governmental organisations before starting the FFS-ISM. Through these meetings it will be possible to confirm that soil management practices are one of the farmers' priority concerns, and that they are sufficiently interested to attend a season-long course organised on that subject.

Through the preparatory meetings the following matters, needed for the FFS-ISM, could to be concluded:

1. review of secondary information on farmers' expressed crop production constraints in relation to soil management;
2. review of existing data on soil types and soil fertility B this data can be made available again to farmers during the school sessions;
3. identification of a group of farmers with the same interests and/or problems;
4. farmers informed of the school approach and objectives, what they can expect from the school and what is expected from them during the school;
5. agreement on a season-long participation in the school;
6. selection of the crop that is of common interest and that will be considered during the school;
7. agreement on the length and frequency of each school session;
8. identification of the location of the school;
9. agreement on the starting and ending dates of the school.

For background and more detailed information see Reference No. 1 of this manual.

1. Review of secondary information on farmers' expressed crop production constraints in relation to soil management.

Many surveys, PRA's, PAPs, diagnostic surveys, benchmark studies, etc. have been conducted in the past in many areas and with many farming communities. The data collected during these activities can be important for use in the school.

- Review this information, and in particular that related to existing household farming systems, agricultural practices and technologies available within the community, and to farmers' identified agricultural production constraints.
- Summarise this information and discuss it with farmers. In doing so gradually develop the focus on soil management issues and start to identify farmers' interests.

2. Review of existing data on soil types and soil fertility.

Secondary data on topography, soil maps, fertility level and land suitability maps are most likely to be available with the district agricultural officer and with the soil research institutes.

- Collect such information for a general overview of the soils and soil management limitations and potentials.
- Prepare simple hand outs to be distributed to farmers during the school sessions.

3. Identify a group of farmers with the same interests and/or problems.

Identify a group of men and women farmers for whom the school approach and topics can be considered to be a response to their problems. A group should contain no more than 25 farmers, all from the same village.

- Make sure that everyone's interests are included. In particular pay attention to the different needs of men and women within the same village. The availability of women for attending school sessions may not be the same as that of the men.

4. Present the FFS approach and objectives to men and women farmers

During formal meetings or informal discussions introduce to farmers:

- The Farmer Field School approach, its objectives, and its structure.
- Explain and discuss with them what they can expect from the school

For most of the farmers the FFS approach will be new and will not be used to this learning method. It is important for the successful development of the FFS that the farmers know what they can expect from the FFS and also what is expected from them.

- to learn
- to exchange
- to identify
- to test
- to evaluate
- explain and discuss what is expected from them

Active participation is expected from all the participating farmers for one crop season.

5. Agreement on a season-long participation in the school.

Ensure that all prospective participants are committed to the full programme, now that they know what is expected of them.

6. Selection of crop

The school is based on identifying and studying different soil and nutrient management options for a selected crop. A common decision should be reached among farmers on the crop that they consider to be most relevant to their needs, and which they are most interested in , particularly in relation to soil management.

7. Length and frequency of each school meeting

In scheduling the school it is important to involve the participants in setting the time and schedule of meetings. The facilitator has an important role to play in this respect.

It is often not possible for farmers to spend a full day away from their farms and families. It is therefore important to discuss with them how long each school meeting should be. Remember that women may not have the same time availability as men, and suitable times should be identified to guarantee regular school attendance by women. Half a day (3-4 hours) seems to be a suitable length of time for the majority of farmers.

The six half-day sessions of the initial phase of the school should commence and be completed before the start of the cropping season/cycle. During the cropping season or cycle, sessions should be held regularly every two to four weeks, preferably on the same day of the week. Discuss this with the farmers.

8. Identification of the location of the school

Ensure that all participants' opinions regarding the proposed location are heard.

9. Decision on school starting and ending dates

Through group discussion a consensus should be reached on the school starting and ending dates. The initial six school days can be carried out before the start of the main crop season, when farmers are less busy with farm work. Of course if farmers are travelling outside the village during the off season to search for job opportunities a different time should be selected.

All the subsequent school days should be carried out during the cropping season.

Make use of previously collected secondary data (soil maps, farmers interview notes, reports). Discuss relevant factors with the farmers and adjust locations if necessary.

Preliminary collection

Before the first school day it is an advantage to survey the village area and to become familiar with the soil types, geographical characteristics, and soil management practices presently used by farmers. Just before the commencement of the school start to collect soil samples to be carried to the school.

Chapter 2

OPENING SESSION AND RECURRENT EXERCISES

This chapter outlines suitable activities to open the school and exercises which are used regularly during each half-day session of the school.

School opening: For the development of the school and to ensure community support of the school it is important to start the school with a proper opening ceremony. This will give the local authorities, including farmer leaders, the opportunity to express to the participants their support and interest in the implementation of the school.

School introduction: A very important part of the first school day is an effective introduction of the school to all participants. This exercise will help the participants to understand what they can expect from the school and what the school is expecting from them.

Recurrent exercises: In addition to the exercises with a specific learning content (chapters three through nine) there are a number of supporting exercises which are used regularly during most school day sessions. In general these are short exercises (10 - 30 min.) facilitating a review of the previous school day, a briefing on the day's programme, daily feedback and summary and closure of the school day.

Content Exercises

- 2.1 Official opening of the school
- 2.2 Introduction of the school
- 2.3 Introduction of the school: Mental map
- 2.4 Review of the previous school day
- 2.5 Briefing on the day's activities
- 2.6 Daily feedback: Words remembered
- 2.7 Daily feedback: Feedback cards
- 2.8 Daily feedback: Feedback fishbowl
- 2.9 Daily feedback: Resents and appreciates
- 2.10 Daily feedback: Likes and dislikes cards
- 2.11 Summary and closure

2.1 OFFICIAL OPENING OF THE SCHOOL

It is useful to invite officials for the opening of the school. One or two speeches are sufficient to make an impact while ensuring that efficiency and goodwill are not dissipated.

Possible speakers to consider for the opening ceremony could be: senior officers from government technical services concerned with the school topics, high administrative officials such as vice-governor, large farmers' organisation leader, or religious representative.

Learning outcomes

- ✓ Participants will have a clear understanding of the wider communities support for the implementation of the school;
- ✓ prestigious offices will have been sensitised to participatory learning approaches; (this will also help to create support for the replication of similar initiatives)
- ✓ farmers will have realised that to follow the school is a serious undertaking and be committed to participating during the full course;
- ✓ farmers will feel pride in recognition of their knowledge and experience as the centre of the farmer field school.

Time needed 0.5 - 1 hour

Materials

- ✓ Opening programme written on large piece of paper

Steps

1. Start preparations well in advance.
2. Agree on the date, time and venue both with the farmers and the officers you wish to invite.
3. Brief officers on the school approach and topics.
4. Include farmers' leaders in the opening speeches.

Your notes:

2.2 INTRODUCTION OF THE SCHOOL

FFSs can only become a success with active participation from the farmers. For most of the farmers the FFS approach is new and they are not used to the kind of learning methods used. It is important for the successful development of the school that the farmers know what they can expect from the FFS and what is expected from them during the FFS.

Learning outcomes

- ✓ Farmers will be able to explain the concept of the school;
- ✓ farmers will be able to list the objectives and the sessions of the school;
- ✓ farmers will have indicated their expectations and, together with the facilitator, agreed on the school programme content and schedule.

Time needed 1 hour

Materials

- ✓ large pieces of paper, cards, pencils, pens for each group, tape, pins

Steps

1. Explain the learning outcome and the procedure of this exercise to the participants.
2. Prepare wall charts labelled “We would like to learn more about” and “Skills we would like to learn”.
3. Ask the participants to form small groups of 4-5 persons each.
4. Ask each group to discuss what they are expecting (to learn) from the school as indicated in the wall chart headings.
5. Ask each group to write each expectation (divided by the 2 topics) on a separate card.
6. The participants then stick their cards on the appropriate chart, clustering all the cards to a specific item or idea.
7. One member of each group presents to the other groups the different topics and skills their group has come up with.
8. The facilitator will present the concepts, objectives and approach of the school, and what the participants can expect to learn. During this presentation show the school flow chart (previously prepared) and give farmers an overview, using the learning steps in a chronological order, of the school.
9. Facilitate a discussion comparing what farmers and the facilitator(s) are expected to learn. This provides an opportunity for you to respond to those expectations which are or are not likely to be met.
10. Wrap-up, summarising the main points discussed during this exercise.

Some suggestions to facilitate group discussion

- Are the expectations of the farmers different from those one presented by the facilitator(s)?
- Which topics and/or skills are missing in the facilitators' expected learnings?
- Which topics and/or skills are missing in the participants' expected learnings?
- Are all the participants and facilitator(s) willing to commit to the school?

Your notes:

2.3 INTRODUCTION OF THE SCHOOL: MENTAL MAP

The mental map exercise is suitable for introducing the school to farmers who feel uncomfortable in expressing themselves in writing.

Learning outcomes

- ✓ Farmer will be able to explain the concept of the school;
- ✓ farmers will be able to list the objectives and the topics of the school.

Time needed 1 hour

Materials

- ✓ large pieces of paper, pencils, pens and tape for each group

Steps

1. Explain the learning outcomes and the procedure of this exercise to the participants.
2. Ask the participants to split up in 5 working groups. Each group will work together to make a 'mental map' of any ideas that they have about what a FFS-ISM is. They can write words, draw pictures, or use diagrams to show any ideas that they have about the FFS-ISM. At the same time the facilitators make a 'mental map' of the FFS-ISM concept and approach.
3. Each group makes a presentation to explain their mental map. The facilitators are the last group to present.
4. Facilitate a discussion comparing farmers' ideas about the FFS-ISM with the FFS-ISM concept and approach.

Some suggestions to facilitate group discussion

- Are the expectations of the farmers different from the one presented by the facilitator(s)?
- Which topics and/or skills are missing in the facilitators' expected learnings?
- Which topics and/or skills are missing in the participants' expected learnings?
- Are all the participants and facilitator(s) willing to commit to the school?

2.4 REVIEW OF THE PREVIOUS SCHOOL DAY

Each meeting of the school participants starts with a summary of what occurred the previous school day. This will help to bring attention back to the school topics, and to refresh memories on what has been discussed, achieved, and agreed during the previous school meeting.

Learning outcome

- ✓ Participants will refresh their memories of what has been discussed, achieved, and agreed during the previous school meeting.

Time needed 15 minutes

Steps

1. Ask a selected farmer to summarise for the participants what was achieved and discussed during the previous session.
2. Extend and explain the summary when needed.
3. Before the end of the day's session identify the farmer who will summarise findings at the next school session so that they can prepare notes.

Some suggestions to facilitate group discussion

- Where did each group go?
- Which soil management practice was observed and discussed?
- What were the participants' main observations/comments on test or plant performance?
- Which indicators were measured and recorded?
- What were the participants' main observations/comments on the indicators/measurements ?
- Did the group reach any significant conclusion or agreement?
- Which other farming practice or topic of special interest was observed, demonstrated and discussed?

Your notes:

2.5 BRIEFING ON THE DAY'S ACTIVITIES

Before moving to the field it is important for farmers to know which activities that they are going to undertake both in the field and in the classroom (meeting place). This helps understanding and a smooth allocation of tasks.

Learning outcomes

- ✓ Farmers will know the programme, activities and allocation of tasks for today's meeting.

Time needed 15 minutes

Steps

1. Present to the participants the activities that have been planned for today.
2. Discuss, if relevant, which observations will be conducted in the experiment plots, measurements to be made, monitoring data to be collected.
3. Indicate to farmers the special topics the school will focus on today.
4. Organise the field visit, if relevant:
 - agree on group composition (three or four smaller groups is suggested);
 - agree on where each sub-group will go for the visit B sub-groups may visit plots alternately during the month;
 - assign tasks to the group;
 - establish who will keep the records.
5. Reach a consensus before moving to the field/plots.
6. Wrap-up, summarising the main points discussed.

Some suggestions for leading question

- Which research plot will be visited by each group?
- What soil management practices will be observed?
- What other farming practice will be observed?
- What data will be collected?
- Who will keep the records of the observation and monitoring data?

2.6 DAILY FEEDBACK: WORDS REMEMBERED

The use of feedback exercises and summaries informs the facilitator and participants on how the school is progressing, from the point of view of the participants. The summary of the feedback informs as to how participants are reacting to the school. It enables the facilitator to stay abreast of participants' feelings as well as their learning. Future plans for the school can be adjusted in line with the responses to the participants' feedback. Daily feedback strengthens school design and increases feelings of ownership.

In this manual five daily feedback exercises are given. More information on daily feedback is given in the Annex.

Learning outcome

- ✔ farmers are able to give accurate feedback on a school session or day;
- ✔ farmers are showing evidence of reflecting on the feedback given.

Time needed 20 minutes

Materials

- ✔ cards, markers, pencils

Steps

1. Explain the learning outcomes and the procedure of this exercise to the participants.
2. Ask participants to write down words which, for example:
 - best describe what you have learned today, or
 - represent the school experience you had today.
3. Promote discussion by asking questions about these words, for example:
 - Why did you choose these words?
 - Can you say more about the words you have chosen?
4. Keep record's of the words and comments for possible future use.

Your notes:

2.7 DAILY FEEDBACK: FEEDBACK CARDS

The use of feedback exercises and summaries informs the facilitator and participants on how the school is progressing, from the point of view of the participants. The summary of the feedback informs as to how participants are reacting to the school. It enables the facilitator to stay abreast of participants' feelings as well as their learning. Future plans for the school can be adjusted in line with the responses to the participants' feedback. Daily feedback strengthens school design and increases feelings of ownership.

In this manual five daily feedback exercises are given. More information on daily feedback is given in the Annex.

Learning outcome

- ✓ farmers are able to give accurate feedback on a school session or day;
- ✓ farmers are showing evidence of reflecting on the feedback given.

Time needed 20 minutes

Materials

- ✓ cards, markers, pencils, pins, tape

Steps

1. Explain the learning outcomes and the procedure of this exercise to the participants;
2. Distribute note cards (two colours);
3. Ask participants to write a brief answer to each of the following questions on one of the coloured cards:
Either:
 - *What was the most helpful today?* followed by *Why?* or *What was most useful, interesting?* followed by *Why?*
4. Ask participants to write a brief answer to the following questions on a second coloured card:
 - *What was least helpful, less useful?* followed by either *What could have been improved? or why?*
5. Collect cards.
6. Summarise the responses before the next meeting (overnight). Count the number of responses related to each aspects of the day mentioned then summarise the responses. The count, or number of responses, tell facilitators and participants which aspects were of great interest to participants and the summary of comments tells what the participants were saying.
7. Discuss the feedback with the participants.

Alternatively

1. Ask a couple of participants to collect the comments/cards, then cluster and post them on the board for all to see.
2. Discuss the posted and clustered cards.
3. Keep records of the words and comments for your use.

Alternatively

4. If there is time, redistribute and have one person read aloud all the cards with one colour. Discuss.
5. Have another person read the cards of the other colour. Discuss.
6. Keep records of the words and comments for your use.

Some suggestions to facilitate group discussion

- What was most helpful today?/ Why?
- What was most useful today?/ Why?
- What was most interesting today?/ Why?
- What did you like most?/Why?
- What was most difficult today?/Why?
- What was least helpful today?/Why?
- What did you not like?/Why?
- What could have been improved?

2.8 DAILY FEEDBACK: FEEDBACK FISHBOWL

The use of feedback exercises and summaries informs the facilitator and participants on how the school is progressing, from the point of view of the participants. The summary of the feedback informs as to how participants are reacting to the school. It enables the facilitator to stay abreast of participants' feelings as well as their learning. Future plans for the school can be adjusted in line with the responses to the participants' feedback. Daily feedback strengthens school design and increases feelings of ownership.

In this manual five daily feedback exercises are given. More information on daily feedback is given in the Annex.

Learning outcome

- ✓ farmers are able to give accurate feedback on a school session or day;
- ✓ farmers' showing evidence of reflecting on the feedback given.

Time needed 30 minutes

Materials none

Steps

1. Explain the learning outcomes and the procedure of this exercise to the participants.
2. Ask participants to divide into two groups.
3. One group sits in an inner circle facing each other and the second group is on the outside.
4. Give them a question related to learning from the day's session to discuss. For example:
 - What were the most helpful parts of the school today ?
 - Why?
5. Only those in the inner circle can speak. Those on the outer circle listen.
6. After a few minutes, have them change places (inner go to the outer and the outer to the inner).
7. Ask the inner group the same questions (you may also change questions being asked).
8. Keep records of the answers and comments.
9. Discuss the answers and comments with the participants.

2.9 DAILY FEEDBACK: LIKES AND DISLIKES - STATEMENTS¹

The use of feedback exercises and summaries informs the facilitator and participants on how the school is progressing, from the point of view of the participants. The summary of the feedback informs as to how participants are reacting to the school. It enables the facilitator to stay abreast of participants' feelings as well as learning. Future plans for the school can be adjusted in line with the responses to the participants' feedback. Daily feedback strengthens school design and increases feelings of ownership.

In this manual five daily feedback exercises are given. More information on daily feedback is given in the Annex.

Learning outcome

- ✓ farmers are able to give accurate feedback on a school session or day;
- ✓ farmers' show evidence of reflecting on the feedback given.

Time: 10-20 minutes

Materials none

Steps

1. Explain the learning outcomes and the procedure of this exercise to the participants.
2. There are two parts to this exercise. Arrange participants in a circle or hollow U, so that all have eye contact with each other. In turn each participant completes the sentence:

"I didn't like it when because....."

This may refer to anything that happened during the session or day. Each person may choose to say nothing or complete the sentence as many times as necessary. No one should pass judgement on what others say.

3. After everybody has answered this question, the procedure is repeated for what they appreciated. This time complete the sentence:

"I liked it when..... because....."

4. Keep records of the answers and comments and discuss with the farmers.

Note

- The exercise finishes with what was liked, so participants finish on a positive note.
- You can also end by asking participants to mention one good thing they feel they have personally contributed to the group. This help to build self-esteem.
- You can also end by asking for "suggestions". Participants comment on what they would like to see changed.

¹ Source: PLA - A Trainer's Guide

2.10 DAILY FEEDBACK: LIKES AND DISLIKES B CARDS¹

The use of feedback exercises and summaries informs the facilitator and participants on how the school is progressing, from the point of view of the participants. The summary of the feedback informs as to how participants are reacting to the school. It enables the facilitator to stay abreast of participants' feelings as well as their learning. Future plans for the school can be adjusted in line with the responses to the participants' feedback. Daily feedback strengthens school design and increases feelings of ownership.

In this manual five daily feedback exercises are given. More information on daily feedback is given in the Annex.

Learning outcome

- ✓ farmers are able to give accurate feedback on a school session or day;
- ✓ farmers' showing evidence of reflecting on the feedback given.

Materials

- ✓ cards, markers, pencils, pins, tape

Time 20 minutes

Steps:

1. Distribute coloured cards, one to each person.
2. Ask each participant to write on one card "*what they did not like*" during the session or day (each card one comments only). This may refer to anything that happened. Each person may choose to write nothing or to write on as many cards as necessary.
3. The cards are pinned to a board or stuck to a piece of paper for all to see. The authors should remain anonymous.
4. After everybody has written the answers to the first question, ask each participant to write on a second card "*what they did like*" during the session or day.

This may refer to anything that happened. Each person may choose to write nothing or to write on as many cards as necessary.

5. After everybody has written the answers to the second question, ask a participant to collect all the cards and pin them to a board or stuck to a piece of paper for all to see. The authors should remain anonymous.
6. Discuss the feedback with the participants.

Suggestion

- A third card can be distributed for "suggestions" and participants asked to comment on what they would like to see happen in future sessions.

¹ Source: PLA - A Trainer's Guide.

2.11 SUMMARY AND CLOSURE

Each school meeting ends with a summary of what has occurred during the day. This will help participants to recall and remembers what has been discussed, achieved, and agreed during the day's meeting.

Learning outcome

- ✓ farmers will recall and remember what they have discussed, achieved, and agreed during the day's meeting.

Time needed 15 minutes

Steps

1. Summarise the topics discussed and the main findings of the day's session. Remind farmers of the assignment given for the week (*if any*).
2. Remind a selected farmer that at the beginning of the next school day they will summarise the topics discussed and the main findings of day's session;
3. Close the session reminding farmers of the next school date.

Your notes:

Part 1

Exercises

**to be conducted
before the cropping season/cycle**

Chapter 3

SOIL PHYSICAL CHARACTERISTICS

This chapter contains exercises which deal with soil physical characteristics. To manage soils well farmers need to deepen their knowledge of soil characteristics and in particular their effects on crop growth. Through a series of exercises the participants will pool their knowledge on soils and they will have the opportunity to discuss and learn more about the relations that exist between soil characteristics and crop growth.

This knowledge and increased assessment capacity will help farmers to make specific farm-level diagnoses of soil fertility and it will help them to make appropriate soil management decisions.

Contents

- 3.1 Describing a soil sample
- 3.2 Soil types and their location - soil mapping
- 3.3 Soil types and location - field visit
- 3.4 Soil profile analyses
- 3.5 Summary of soil physical characteristics



3.1 DESCRIBING A SOIL SAMPLE

Through this exercise farmers' knowledge is widened through recalling and pooling their present ability to describe soils, and exposing them to new information and skills on how to recognise soil characteristics, and their effects on crop growth.

Learning outcomes

- ✓ Farmers will be able to critically examine samples of top soil and subsoil taken from their farms;
- ✓ farmers will be able to identify and to describe in their own words 5 main characteristics of a topsoil sample taken from their farms;
- ✓ farmers will have shown/explained the main physical characteristics of a soil sample and how they can be observed and described;
- ✓ farmers will have discussed soil characteristics and their effects on crop growth.

Time needed 1 to 2 hours

Materials

- ✓ 2 or 3 samples (1 kg each) of different types of soils taken in the area
- ✓ a glass of water
- ✓ paper, cards, pencils

Steps

1. Explain the learning outcomes and the procedure of this exercise to the participants.
2. Ask the participants to split up into groups of 4-5 persons. Each group receives one soil sample (collected the previous day).
3. Ask each group to discuss and describe the soil sample in their own way, in their own words. Assist the groups during their work.
4. Ask each group to list on a large piece of paper(or card) their descriptions of the soil sample.
5. One member of each group presents to the other groups the descriptions their group has come up with.
6. During this presentation promote discussion by asking questions; discuss the relation between the soil characteristics and plant growth.
7. As facilitator explain the main physical characteristics of a soil sample and how they can be observed and described.
8. Facilitate a discussion comparing the farmers' descriptions and the more scientific one.
9. Wrap-up, summarising the main points discussed during this exercise.

Some suggestions to facilitate group discussion

- What are the implications of these characteristics for soil management?
- What effect does a certain characteristic have on plant growth?
- Have farming practices changed, affected soil physical characteristics?
- What are the implications of these characteristics for crop growth (root development, nutrient availability, etc.)?
- What effect do such characteristics have on water management and erosion?
- Are there basic differences in the way the groups and facilitators describe soil characteristics?
- What were the differences and the resemblances in the descriptions?
- Suggestions for soil characteristics: colour, texture, structure, consistency, organic matter content, porosity, water holding capacity, workability, resistance to root development, visible mineral content.

Your notes:



3.2 SOIL TYPES AND THEIR LOCATION - SOIL MAPPING

The characteristics of any soil are the result of the parent material it developed from and external conditions such as weather, slope, vegetation and farming practices. Parent materials and external conditions are often location specific and may differ within a short distance in the same community farming area.

Learning outcomes

- ✓ Farmers will be able to identify the position of their farms on the map;
- ✓ farmers will be able to distinguish different soil types and their location;
- ✓ farmers will be able to differentiate soil types present in their village;
- ✓ farmers will have exchanged information about the physical characteristics of the soils in relation to their location.

Time needed 1 to 1.5 hour

Materials

- ✓ Large piece of paper,
- ✓ marker, pencils or pens, tape

Steps

1. Explain the learning outcomes and the procedure of this exercise to the participants.
2. Before starting the exercise, draw a simple map of the area on a large piece of paper indicating roads, rivers, settlements. In case of a mountain area you may choose to draw a vertical map (area profile) indicating the slopes as well.
3. Ask the participants to mark the location of their farm on the map with a marker; help farmers to locate their farms if some have difficulties.
4. Ask participants to form smaller sub-groups according to the location of their farms (neighbours, farmers which have their fields close by).
5. Ask the different groups:
 - to discuss and describe at least 5 main physical characteristics of their soils,
 - to report their description on a piece of paper, and
 - to identify the soil types boundaries on the map.

(allow 15 minutes for this step)

6. Place each group's description on or close to the map.
7. Promote plenary group discussion on the characteristics of each identified soil type in relation to its location, and in particular the relation/effect on crop growth and soil management.
8. Present additional information available to you.
9. Wrap-up, summarising the main points discussed during this exercise.

Some suggestions to facilitate the group discussion

- Are there differences in soil characteristics which can be related to location?
- What kind of soils can be found close to a river, or on a slope, or under a forest?
- How may soil type and its location influence the selection of the crop to be planted and soil/water management practices?
- Are farmers using different soil management practices according to soil type and location? Why?

Your notes:

3.3 SOIL TYPES AND THEIR LOCATION - FIELD VISIT

Soils have been developed over time. The characteristics of a soil are the result of the mother material it developed from (which often still can be found in the subsoil or deposits made by wind or water) and external conditions which have been influencing the development process such as weather, vegetation, animal and human influences as well as time of development. The mother material and external conditions are often location - specific and therefore soil types are too. Certain soil types are found close to a river, others on slopes, etc.

Learning outcomes

- ✓ Farmers will know more about the characteristics of a soil in relation to its location in the area.

How long this exercise will take

1/2 hour for preparation, 1- 1 1/2 hour in the field and 1/2 hour evaluation/discussion.

Materials

Large piece of paper, note books, marker, pencils or pens, tape

Steps

1. Explain the learning outcomes and the procedure of this exercise to the participants.
2. Before starting the exercise, the facilitators draw a simple map of the area on a large piece of paper indicating roads, rivers, settlements. In case of a mountain area it is better to draw a vertical map (area profile) indicating the slopes as well.
3. Guide the participants through the map and ask, for each part on the map:
 - which of the participants has their fields in that area
 - what are the main crops they are growing on their fields and
 - how they would describe their soils.
4. Make notes of the reported crops and type of soils on the respective areas on the map.
5. Based on the map decide with the participants' farms/plots are on the "best" transect line for a walkthrough which will show representative soils of the community.
6. Assign tasks to the participants who will take notes of; agricultural land uses (crops), soil types, topography (shape of the land B flat, rolling, undulating, mountainous).
7. Start walking till you reach one of the areas indicated on the map and discuss the characteristics of the soil type and collect a soil sample.
8. Demonstrate an analysis of the soil texture (sandy, clay, etc.)
9. Discuss the agricultural land uses (crops).

10. Continue the walk till you reach another area indicated on the map and discuss the soil, land uses and topographic characteristics.
11. Continue till you are back at your starting point.
12. Ask the notetakers to report on their observations and complete the descriptions of the soil types and agricultural land uses on the map of the area.
13. Discuss the characteristics of the different soil types in relation to the location of the soil types on the map.
14. Wrap-up, summarising the main points discussed during this exercise.

Some suggestions to facilitate the group discussion

- Are there differences in soil characteristics which can be related to location?
- What kind of soils can be found close to a river, on a slope or under a forest?
- What does such a relationship between soil type and location mean for the selection of crop type and soil management?

Your notes:



3.4 SOIL PROFILE ANALYSIS

Knowledge of the subsoil and topsoil is necessary for good soil management. An appropriate way to observe and describe different soil horizons, and to discuss subsoil and topsoil characteristics is through an analysis of soil profiles.

Learning outcomes

- ✓ Farmers will be able to recognise and describe different soil profiles of their farms;
- ✓ farmers will realise the importance of knowing the characteristics of the subsoil for an optimal crop growth and proper soil management;
- ✓ farmers will be able to diagnose possible soil nutrient content based on the recognition of soil physical characteristics;
- ✓ farmers will be able to identify and to explain the effect of present farming practices on soil physical characteristics;
- ✓ farmers will share their experience and knowledge on the physical characteristics of the soils of their farms.

Time needed 2-3 hours

Materials

- ✓ digging materials,
- ✓ knife, bottle of water, measuring tape,
- ✓ small plastic bags, waterproof marker

Steps

1. Before the beginning of this exercise:
 - identify where to dig the soil pits (2 to 3 pits) so that different soil types could be described. You may use the secondary information available to you, and the soil map prepared by farmers during the school. The soil pits should be 1m deep, and all the pits should preferably be on participating farmers' fields;
 - make arrangement for the preparation of the soil pits a day in advance.
2. Explain the learning outcomes and the procedure of this exercise to the participants.
3. All the participants are to come together at the first soil pit. Enter the pit and start showing to the participants the different layers in the soil profile describing colour, texture, presence of stones, parent material, etc.
4. Take soil samples from the different layers, pass them around amongst the participants and discuss with them the characteristics. Ask questions to promote group discussion and to promote farmer-to-farmer exchange of information.
5. During your explanation/observation make reference to :
 - crop development, also indicating the rooting depth in the soil profile
 - soil management practices,
 - possible indicators of soil nutrient content (fertility level) organic matter content
 - erosion hazard (if any).

6. Go to the next soil pit and ask one of the participants (assisted by other farmers) to identify the different soil layers, to describe characteristics of the different soil layers and to indicate the rooting depth.
7. Go to the third soil pit. Same as step 5.
8. Take soil samples of each horizon from each soil pit and take them back to the meeting place.
9. At the meeting place, ask 2 or 3 farmers to summarise the observations made at the soil pits. You may ask them to draw each soil profile on a large piece of paper or to make a “mini” soil profile with the samples collected.
10. Promote group discussion and focus on soil and water management practices that farmers feel need to be applied according to soil characteristics and position of the land (sloping, low land, waterlogged).
11. Wrap-up, summarising the main points discussed during this exercise.

Some suggestions to facilitate the group discussion

- What were the differences in soil characteristics between the soil layers in one profile and between the profiles (colour, texture, thickness of the layer, presents of stones, hardness, resistance to water infiltration, etc.)?
- What are the implications of the different soil layer characteristics for crop growth?
- What are the implications of the different soil layer characteristics for soil management?

Your notes:



3.5 SUMMARY OF SOIL PHYSICAL CHARACTERISTICS

After having introduced the physical soil characteristics through the soil sample, soil type and location and soil profile analysis exercises, it is appropriate to summarise the main physical soil characteristics observed and their implications for crop growth, fertilisation practices and soil management.

Learning outcomes

- ✓ Farmers will be able to produce an updated soil map of the area;
- ✓ farmers will be able to explain the characteristics of each soil type identified;
- ✓ farmers will have an overview of the soil types present in the area and their implications for crop growth, fertilisation practices and soil management.

Time needed 0.5 - 1 hour

Materials

- ✓ Soil map previously prepared.
- ✓ Large pieces of paper, markers, tape

Steps

1. Explain the learning outcomes and the procedure of this exercise to the participants.
2. Based on the previous exercise(s) list the different soil types present in the area.
3. Divide the participants into as many groups as the number of soil types identified, and preferably according to the location of their farms.
4. Each group lists on a piece of paper the characteristics of one of the soil types identified, their implications for crop growth and current soil management practices.
5. Each group presents the description of their soil type.
6. Add these to the soil map for future reference.
7. Wrap-up, summarising the main points discussed during this exercise.

Some suggestions to facilitate the group discussion

- What are the characteristics of the soil type(s) observed during the previous exercises?
- Are different types of soil management practices needed for the different soil types?
- How can current soil management be further improved so as to stimulate increased crop production?

Chapter 4

SOIL CHEMICAL CHARACTERISTICS AND SOIL FERTILITY

This chapter contains exercises which deal with soil chemical characteristics and soil fertility assessments. Farmers often express concern on soil degradation, and in particular decreasing soil fertility which leads to having to use an increased amount of fertiliser to grow a crop.

Soil fertility is determined and influenced by several factors related to both soil type and past and present management practices. During this session, the participants will pool their knowledge of soil fertility, they will discuss and learn more about undertaking simple soil fertility assessments and improving fertiliser management on their farms, and will have the opportunity to discover how fertiliser recommendations are formulated.

The knowledge and capacity to identify the relations that exist amongst soil types, farming practices, soil fertility, and fertiliser nutrient content will help farmers to make better decisions on farm-level soil management, in particular fertiliser use.

Contents

- 4.1 Fertilisation practices
- 4.2 Plant nutrient deficiency symptoms
- 4.3 Fertilisers and their use
- 4.4 Soil sampling
- 4.5 Soil analysis
- 4.6 Development of fertiliser recommendations

4.1 FERTILISATION PRACTICES – CURRENT

Most farmers are making use of a number of soil fertility management practices, including use of organic and inorganic fertilisers, crop rotations, intercropping, soil and water conservation measures and others. Before discussing possible changes in soil fertility management, it is important to discuss first the current fertiliser practices used by farmers, in order to understand the reasons why the local farmers have adopted these practices.

Learning outcomes

- ✓ Farmers will have exchanged information and experiences concerning their present fertilisation practises and will be able to explain why these practices have been adopted.

Time needed 1 hour

Materials

- ✓ Large piece of paper, markers

Steps

1. Explain the learning outcomes and the procedure of this exercise to the participants.
2. Go on a short field walk, just long enough to visit a few fields owned by the participants, choosing fields, if possible, with different soil types.
3. Make stops at selected plants and fields, and ask the owner to indicate what type of soil fertility practices have been applied. Promote group discussion, and share with farmers your observations on soil fertility practices in that particular field.
4. Continue the visit making stops at other farms. Promote discussion, asking:
 - What kinds of fertilisers or other practices are being using and how are they being applied?
 - How did you decide which type of fertiliser to use and the amount to use?
5. Return to the meeting point and ask farmers to divide into small groups. Ask each group to discuss and summarise the different soil fertilisation methods used and the reasons for choosing these practices. Note them down on a large piece of paper to be kept at the school for future reference.
6. Ask each group to present their summary. Promote group discussing and exchange of information and contribute when the need arise.
7. Wrap-up, summarising the main points discussed during this exercise.

Some suggestions to facilitate the group discussion

- Are organic fertilisers being used or mainly inorganic fertilisers?
- What are the main fertilisers used?
- What are the quantities used?
- What is this choice based upon?

4.2 NUTRIENT DEFICIENCIES OF CROPS

Plants develop an abnormal appearance or show signs of abnormal growth when they receive an inadequate supply of a particular plant nutrient. Recognising the symptoms of a particular nutrient deficiency can provide the farmer with some valuable basic information upon which to plan further action. It is a preliminary diagnosis technique and, as soil testing, also has its limitations. It is part of the diagnosis of nutrient deficiencies, but does not, in itself, give the whole story, nor does it necessarily supply a solution to the problem. But, for the farmer, who has often no access to other diagnosis techniques, it can provide some indicators for soil fertility management.

The symptoms of nutrient deficiencies and of pest infestations often look the same. But, if the symptoms have been observed over a long period of time and are universal to a large area related to one soil type or type of soil management, they are probably due to a nutritional disorder. Further, plant nutrients differ in mobility within the plant and therefore deficiency symptoms appear in different parts of the plant for different nutrients.

- * Nutrients such as potassium and magnesium, which are highly mobile in the plant, show deficiency symptoms in the older leaves.
- * Nutrients such as calcium and boron, which have a low mobility in the plant, show deficiency symptoms in the younger leaves.
- * Nutrients such as nitrogen, phosphorus and sulphur, which have a medium mobility in the plant, show deficiency symptoms evenly spread over the plants.

Learning outcomes

- ✓ Farmers have diagnosed abnormal appearance or signs of abnormal growth as a result of nutrient deficiencies.

Time needed Two hours

Materials

- ✓ Brown paper, crayon , pencil, tape

Steps

1. Explain the learning outcomes and the procedure of this exercise to the participants.
2. Ask the farmers if they have ever observed an abnormal appearance or signs of abnormal growth in their crop.
3. Go into the field to a place indicated by the farmers where they have observed an abnormal appearance or signs of abnormal growth of the crop.
4. Ask the farmers, to form small groups to observe the plants with abnormalities and to discuss in their groups:
 - if the abnormal symptoms have appeared just recently or if they have been present for a longer period.
 - if the symptoms are present on only a few plants/trees/small area or on a large number of plants/trees/large area.

- if the area infected resembles a soil type unit and/or an area which has received equal/unequal soil management treatments.
5. Ask each group, to take one specimen of an abnormal and one of a healthy plant and to identify where the symptoms appear: mainly on the older (lower) or on the younger (upper) leaves or almost equally on both old and new leaves.
 6. Ask each group to draw and report their observations on their specimens.
 7. Ask the farmers what they think the following characteristics indicate about the causes of the symptoms:
 - the length of time the abnormal symptoms have been present on the plants,
 - the shape of the area covered with plants with the same symptoms,
 - the area covered with plants with the same symptoms resembles an area with the same soil type and/or received the same soil management,
 - the distribution of the symptoms on the plant.
 8. If available, compare the identified symptoms with the descriptions in Annex: “Nutrient deficiencies of crops”.
 9. Ask the farmers what can be concluded about the cause of the abnormal symptoms based on the observations made.
 10. Repeat with the farmers all the steps they have gone through during “the nutrient deficiency diagnosis process” which they just practised.
 11. Repeat the process if the farmers would like to do this at another location.

Some leading questions for the processing discussions

- Does the symptom occur during the wet or dry season or both?
- On what type of soil did you observe the symptom?
- What can you say about the symptoms (relate them to the functions of nutrients)?
- What part of the plants have the symptoms; upper/middle or any portion of the plants?
- Can you identify what causes the symptoms?
- Is it a nutrient deficiency or a pest?
- What about the root system of the plants?
- Can you describe the root of the healthy and the abnormal plants? Is there a difference?

4.3 FERTILISERS AND THEIR USE

A variety of organic and inorganic fertilisers are available to farmers. Their use in terms of type, time and quantity and modality of application may differ from farmer to farmer.

Learning outcomes

- ✓ Farmers will be able to distinguish the nutrient content of each type of fertiliser available in the area, (organic and inorganic) and can explain the information written on the fertiliser bags;
- ✓ farmers will be able to estimate the amount, timing, and modality of fertilisers needed to grow a healthy crop on their farms;
- ✓ farmers will have shared their experience with and knowledge of fertilisers available in their area and their use.

Time needed 1 hour

Materials

- ✓ Farmers' samples of different types of organic and inorganic fertilisers that they use
- ✓ Bags of chemical fertilisers and samples of other types of fertilisers available in the area

Steps

1. Explain the learning outcomes and the procedure of this exercise to the participants.
2. Identify participants that have brought fertiliser samples to the meeting and ask each of them in turn (*you may also choose to form sub-groups*) to present their fertiliser indicating:
 - what nutrient elements are provided by the fertiliser?
 - why is the fertiliser used?
 - how much is used and how is the amount to be used decided?
 - what is the time and modality of application?

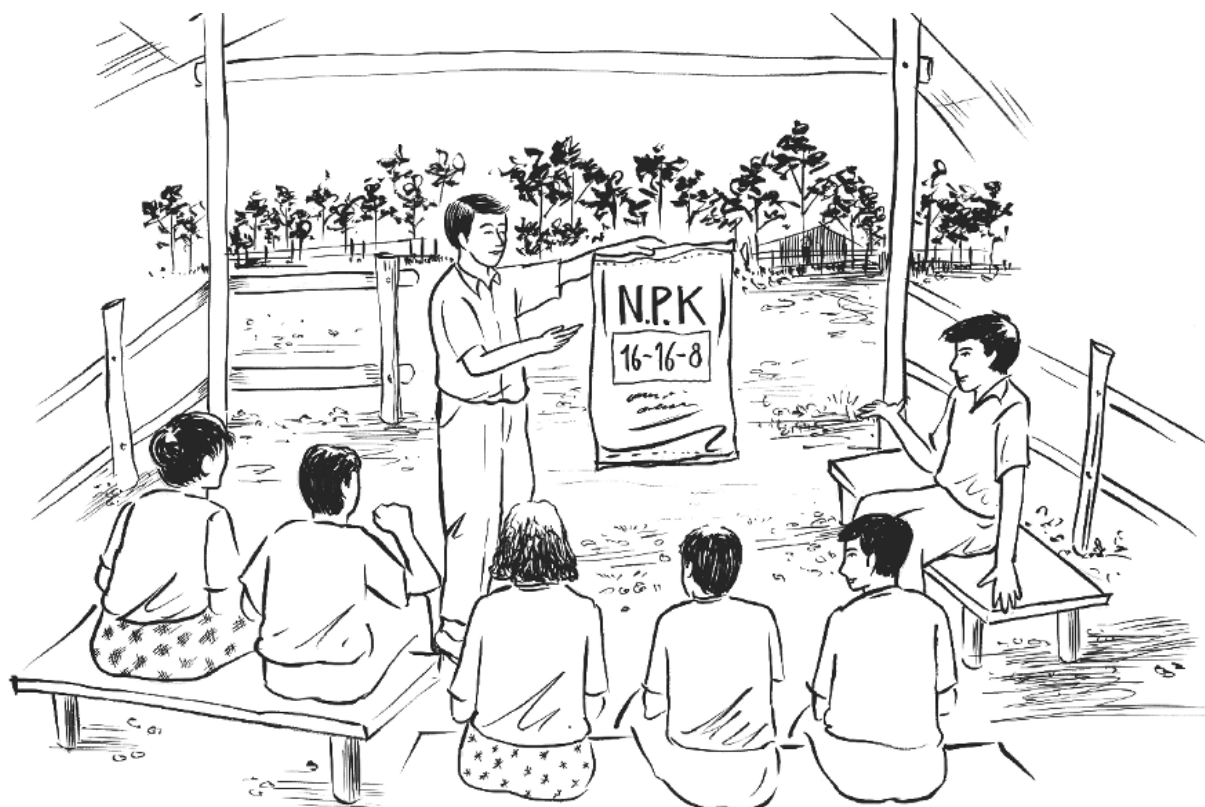
Complete the farmer presentations with additional information if required and promote group discussion and farmer-to-farmer exchange of information.

3. Repeat until all the fertilisers brought to the meeting have been presented.
4. Share with farmers your knowledge on fertilisers showing other types of fertilisers (*prepared in advance*), in particular organic fertilisers, along with information on integrated soil nutrient management, soil fertility improving crops, and other farming practices that improve soil fertility.
5. Wrap-up, summarising the main points discussed during this exercise.

Some suggestions to facilitate the group discussion

- What are the differences between the natural (organic) and the chemical (inorganic) fertilisers?
- What are the different types of fertilisers available in the area?
- Where do the farmers usually obtain the fertilisers?
- What nutrient element do you get from each kind of fertiliser?
- What are the quantities farmers use of each of the fertiliser types per hectare?
- Why are the farmers using the amounts of fertilisers they are using now?
- How do the farmers apply the different types of fertiliser to the crop(s)?
- What things did you look for to assess the fertility of the soil?
- Which of the soils that we have seen today is the most fertile?

Your notes:



4.4 SOIL SAMPLING (OPTIONAL)

Correct soil sampling and accurate soil analysis would help in ascertaining the right amount of fertiliser to be applied in order to have a good yield. However, this is not usually done by farmers because of its complexity. Hence, this exercise would let farmers acquire the skills for proper soil sampling.

Learning outcomes

- ✓ farmers have acquired knowledge, skills and experience on how to collect soil samples for testing.

How long will this exercise take

1 hour

Materials

- ✓ Shovel or other digging tools, plastic bags, marker, paper

Steps

1. Explain the learning outcomes and the procedure of this exercise to the participants.
2. Ask farmers how they would collect soil samples for an analysis.
3. Go to the field and demonstrate how to take a soil sample (See Reference Material: "How to tke a soil sample").
4. Ask farmers to take (sub) samples for further analysis.
5. Discuss the important steps of soil sampling.
6. Wrap-up, summarising the main points discussed during this exercise.

Some suggestions to facilitate the group discussion

- What are the steps in collecting soil samples?
- What are the materials needed?
- What is the importance of collecting soil samples?
- What are the do's and don'ts in collecting soil samples?
- How will you get good samples in areas having steeper or less steep slopes?

Your notes:

4.5 SOIL ANALYSIS (IF KIT IS AVAILABLE)

Fertiliser recommendations are based on soil analysis and crop requirements. The development of these recommendations takes place in laboratories and research stations. Most farmers are not aware of how fertiliser recommendations are formulated and therefore their trust in fertiliser recommendations, often given by extension services, is low.

Learning outcomes

- ✓ Farmers will have experienced the process of analysing soil fertility and acidity (using the soil test kit);
- ✓ farmers have built an awareness that different fields may have different fertility or acidity and therefore need different amounts of fertilisers or lime;
- ✓ farmers have learnt more about the process of identifying fertiliser requirements.

Time needed 1.5 hour

Materials

- ✓ Soil test kit (1 to 5 kits)
- Soil samples (4 or 5) taken from various farmers' fields during the soil sampling exercise or collected by the facilitator
- ✓ Large sheet of paper, marker

Steps

1. Explain the learning outcomes and the procedure of this exercise to the participants.
2. Ask the participants to form small groups (4 to 5 to a group) and distribute to each of the groups one soil sample.
3. Copy the steps for the analysis onto a large piece of paper to make a class poster; (see *instruction leaflet of the Soil Test Kit*).
4. Distribute the soil test kit(s) among the groups. If not enough kits are available, give the bottles with the chemicals needed to analyse one element (N,P,K or pH) to one group and one for each of the other elements to each of the other groups. After having analysed the first element the bottles can be rotated to another group.
5. Guide and assist the groups to undertake the soil analysis by carefully following the steps indicated on the class poster (or the STK instruction leaflet).
6. Each group writes their results on a large sheet of paper to share their results with the other groups.
7. Wrap-up, summarising the main points discussed during this exercise.

Some suggestions to facilitate the group discussion

- Do the results of the analysis conform to the expectations of the farmers?
- Are there differences in results between the different soil samples analysed?

4.6 DEVELOPMENT OF FERTILISER RECOMMENDATIONS

Based on the soil analysis (with the Soil Test Kit) fertiliser recommendations can be formulated.

Learning outcomes

- ✓ Farmers will be able to formulate fertiliser recommendations based on the results of a soil sample analysis.

Time needed 50 minutes

Materials

- ✓ Instruction book(s) of the Soil Test Kit(s), large sheet of paper, marker

Steps

1. Explain the learning outcomes and the procedure of this exercise to the participants.
2. Recall the results of the soil analysis exercise.
3. Demonstrate, with the results of the first soil sample analysis, how a fertiliser recommendation can be obtained for a certain crop using the tables in the instruction book of the Soil Test Kit.
4. Divide the participants into groups of 4 or 5 farmers.
5. Ask each group to develop fertiliser recommendations based on the results of the other soil sample analysis by using the tables in the instruction book of the Soil Test Kit.
6. Report all the fertiliser recommendations on a large sheet of paper.
7. Translate the fertiliser recommendations (element/hectare or tree) into amounts of the chemical fertilisers available in the area (kg Urea, TSP, etc./hectare or tree)
8. Repeat step 6 also for available organic fertilisers in the area.
9. Report the recommended amounts of chemical and organic fertilisers on a large sheet of paper and discuss them.
10. Wrap-up, summarising the main points discussed during this exercise.

Some suggestions to facilitate the group discussion

- Compare the results with the extension fertiliser recommendations. Are there differences? If so, why?
- Compare the results with present farmer practices. Are there differences?
- Are the fertiliser recommendations soil specific?
- Are the fertiliser recommendations crop specific?
- If the soil is acidic or alkaline, what cultural or amelioration practices can be undertaken? What are the farmers' experiences in addressing soil acidity and alkalinity problems?
- What are the differences between the organic fertilisers and chemical fertilisers?

Chapter 5

IDENTIFICATION AND PRIORITISATION OF SOIL MANAGEMENT PROBLEMS AND SOLUTIONS

This chapter contains exercises which deals with the participatory identification and prioritisation of soil management problems and their possible solutions.

Through direct field observation and group discussion farmers will have the opportunity to share their concerns and problems in the production of the crop under study, and as a result, to finalise a list of crop production problems. This exchange of information will also lead farmers to prioritise the identified problems and to initiate an analysis of the possible farming practices and technologies that may help them to overcome the problems.

The farmers' identified problems and their possible solutions indicate the farmers' interest in knowing more about specific soil management or related crop management needs topics. These topics will form the base from which the school will select the field trials to be conducted by farmers on their own farms during the cropping season school days.

Since not all the farmers' identified problems can usually be addressed by field trials during one cropping season, the remaining identified problems and farmers' interests as expressed during the "setting of expectations" at the beginning of the school, will be included in the school programme as "special topics" that will be prepared and discussed during the regular school meetings.

Contents

- 5.1 Identifying present soil management practices and problems – field walk
- 5.2 Identifying soil management problems
- 5.3 Problem prioritisation through "individual voting"
- 5.4 Problem prioritisation through "pairwise ranking"
- 5.5 Identification of solutions: group workshop
- 5.6 Identification of solutions: plenary discussion
- 5.7 Assessment and selection of practices to be tested

5.1 IDENTIFYING PRESENT SOIL MANAGEMENT PRACTICES AND PROBLEMS – FIELD WALK

This exercise is divided into two parts: (5.1) Observing present soil management practices and (5.2) identifying soil management related crop production problems.

Before starting to discuss possible changes to the existing soil management practices, it is important for farmers to first share and assess the farming practices used in the area, and the problems and solutions they have already identified and, often, tried. An effective way to do this is through undertaking a field walk and directly observing and discussing soil management practices and production constraints.

The field walk ends with farmers summarising the information gathered during the walk, in particular the present soil management practices, and related crop production problems.

In addition, a map could be produced (*or the new information be added to the soil map prepared during the previous school session*) which may highlight the presence of different soil types, erosion, drainage problems, possible locations for test and research plots, and thus provide a clear picture of the village land at a glance.

When used as a point of discussion this map gives school participants a common orientation toward the resources within the village/watershed area.

Learning outcomes

- ✓ Farmers, through direct field observation and exchange of information, will be able to summarise the different soil management practices used in the areas for the production of the crop under study;
- ✓ farmers will be able to identify existing the main soil management-related production problems.

Time needed 2 to 3 hours

Materials

- ✓ Writing pads and pencils

Steps

1. Explain the learning outcomes and the procedure of this exercise to the participants.
2. Prepare the transect walk.
 - Decide on the size and composition of the group(s). You may undertake the walk in one group or you may decide to divide the participants into two groups. Groups of 7/8 separated by gender are recommended.

- Decide on the route to be followed. Discuss with the participants which parts of the village lands will be visited; these should be areas of interest to them. The route should pass fields of participating farmers with different soil types, and/or soil management practices. You may use the soil map previously prepared as reference to decide the route to follow;
 - Discuss and agree on the different aspects to be noted (e.g., soil types, soil management practices, crop performance, problems related to crop production, etc.).
 - Assign tasks to the participants who will take notes of the different aspects.
3. Start the walk as early as possible in the day.
 4. Stop at interesting places and ask the participants what they observe in relation to soil management and crop performance.
 5. Promote group discussion on the present farming practices and the problems farmers experience.
 6. At the end of the field walk (*at the meeting place*) prepare with the farmers a simple map or make use of the soil map previously prepared.
 7. Following on the map the route taken during the walk ask the participants to report their observations at each point where a stop was made. Note those observations on the map.
 8. Ask participants to form small groups (3 or 4 groups) to discuss and to write on a large sheet of paper the farming/soil management practices used in the area to grow the crop under study.
 9. Ask each groups' representative to present their observations on farming practices. Fix the charts on the board for all to see.
 10. During the presentation promote group discussion; share with farmers your knowledge and observation of soil management practices, adding your comments and ideas.
 11. Wrap-up, summarising the main points discussed during this exercise.

Some suggestions to facilitate the group discussion

- What cultural practices did you observed that improve soil fertility?
- Where do you see erosion?
- What practices did you observe that can minimise erosion?
- Do you observe the presence of different soil types?
- Do you observe differences in crop performance? What do you think are the reasons?
- Do you observe any problems in crop production? What do you think are the reasons?
- Do you observe any farming practices you did not know before?

5.2 IDENTIFYING CROP PRODUCTION PROBLEMS

This exercise follows the (5.1) field walk. During this exercise farmer will discuss and finalise their main crop production problems.

Learning outcomes

- ✓ Farmers will have identified the existing main crop production problems, and their causes.

Time needed 1 hour

Materials

- ✓ Cards, markers

Steps

1. Explain the learning outcomes and the procedure of this exercise to the participants.
2. Ask participants to form small groups (3 or 4 groups) to discuss and to write on cards the main production problems they have identified (*one card problem*);
3. Ask each groups' representative to present their pooled information and to fix their cards on the board or flip chart for all to see; facilitate discussion during these presentations.
4. At the end of the farmers' presentations cluster/regroup the problems according to major categories so that a total of 6-10 problems are listed. Major categories could be related to the position of the farmers' fields on the slope, or according to sloping and level land, or according to soil types, etc. Ask all participants to confirm the final list of problems.
5. Wrap-up, summarising the main points discussed during this exercise.

Some suggestions to facilitate the group discussion

- Are the problems observed related to soil management or other crop management activities?
- Are these constraints or not?

Your notes:

5.3 PROBLEM PRIORITISATION THROUGH “INDIVIDUAL VOTING”

During the previous school exercises farmers have observed and discussed their soil management practices and have produced an initial list of present farming practices, soil management practices, and their soil management and crop production problems.

In order to identify what farmers see as their most relevant soil management related problems and what they would like to learn more about during the school sessions the identified problems need to be summarised and prioritised according to the farmers' assessments.

Through this exercise an average preference list can be obtained based on the individual ranking preferences of the participants.

Learning outcomes

- ✓ Farmers will be able to prioritise crop production problems.

Time needed 1 hour

Material

- ✓ White board or large sheet of paper, markers

Steps

1. Explain the learning outcomes and the procedure of this exercise to the participants.
2. Write on the board or large sheet of paper the list of identified problems (by major categories).
3. Ask farmers if they wish to include additional problems. Add them to the list.
4. Prepare a matrix on the large paper or board. Indicate the problems on the left of the matrix.
5. Ask the participants individually to go to the chart and write their priority for each problem (1 low priority, 2, 3, 4, 5 etc. high priority).
6. Make a summary of the preferences and rank the problems accordingly.
7. Ask participants if they agree with the results of the prioritisation and finalise the list.
8. Discuss with participants if these problems represent the topics they would like to know more about during the Farmer Field School.
9. Wrap-up, summarising the main points discussed during this exercise.

Some suggestions to facilitate the group discussion

- Have we listed all the problems identified during the previous exercises?
- Are there still some problems missing on the list?
- Are there problems on the list which are closely related to each other or can even be considered to be the same?
- Are there problems which can be considered as specific for a certain area or group of farmers (for example: on a slope, or on a specific type of soil)?
- Which problem do you think is more serious?
- What are the reasons for your choices made during the prioritisation process?
- Do you agree with the final prioritisation list of problems?

Your notes:



5.4 PROBLEM PRIORITISATION THROUGH “PAIRWISE RANKING”

This exercise can be used as an alternative to the “*problem prioritisation through individual voting*”, and it is best used when the number of problems to be ranked is not more than 4 or 5.

During the previous exercises farmers have observed and discussed their soil management practices and have produced an initial list of present soil management practices, and their soil management and related crop production problems.

In order to identify what farmers see as their most relevant soil management related problems and what they would like to learn more about during the school sessions the identified problems need to be summarised and prioritised according to the farmers’ assessments.

Through this exercise the prioritisation of problems takes place in a structured way which compares problems one with each other.

Learning outcomes

- ✓ Farmers will have prioritised crop production problems.

Time needed 1 hour

Materials

- ✓ White board or large sheet of paper, markers

Steps

1. Explain the learning outcomes and the procedure of this exercise to the participants.
2. Write on the board or large sheet of paper the list of identified problems (by major categories).
3. Ask farmers if they wish to include additional problems. Add them to the list.
4. Prepare a matrix on the large paper or board. Write the problems across the top and down the left of the matrix.
5. To get the participants’ preferences, ask the farmers to compare the problems with one another. The first problem listed on the left side of the matrix shall be compared with all the problems listed on the top. The participants ranking of the problems can be assessed by a simple raising of hands. Repeat the process until all the problems have been covered.
6. Note the number of times each problem was assessed as being the most important. Make a summary of the preferences and rank them accordingly.
7. Ask participants if they agree with the results of the prioritisation and finalise the list.

8. Discuss with participants if these problems represent the topics they would like to know more about the Farmer Field School.
9. Wrap-up, summarising the main points discussed during this exercise.

Some suggestions to facilitate the group discussion

- Have we listed all the problems identified during the previous exercises?
- Are there still some problems missing from the list?
- Are there problems on the list which are closely related to each other or may even be considered to be the same?
- Are there problems which can be considered as specific for a certain area or group of farmers (for example: on a slope, or on a specific type of soil)?
- Which problem do you think is more serious?
- What are the reasons for your choices made during the prioritisation process?
- Do you agree with the final prioritisation list of problems?

Your notes:

5.5 IDENTIFICATION OF SOLUTIONS: GROUP WORKSHOP

Crop production problems related to soil condition and management practices have been identified and prioritised during the previous exercises. Now possible solutions to these problems need to be identified.

Farmers and specialists working together should identify which, if any, solutions are already being used locally. New practices or technologies based on specialist knowledge may be available from the school facilitator. Similarly, the appropriate solutions may be found in the farmers' indigenous knowledge either within the community or in near by communities. During this exercise all these possible solutions will be listed and discussed, first in small groups and later in a plenary session.

Learning outcomes

- ✓ Farmers will have identified possible solutions to prioritised crop production problems.

Time needed 1.5 hours

Materials

- ✓ White board or large sheet of paper
- ✓ coloured cards, markers, pins, tape, paper clips

Steps

1. Explain the learning outcomes and the procedure of this exercise to the participants.
2. On the board or a large sheet of paper show the prioritised list of problems.
3. Ask the participants to divide into groups 4 or 5 to a group.
4. Ask each group to discuss "What are the possible solutions to the problems you have identified?" *More than one solution may be found for each problem.*
5. Assist the participants to recall solutions that have been mentioned during previous exercises.
6. Ask each group to write each solution on a card.
7. Ask the groups to select a presenter to present their findings to all. During the presentations promote discussion, ask clarifications, allow everybody to express their views.
8. After presentation, note similarities and differences in the solutions and cluster/regroup the solutions according to major categories, removing duplication so that a total of 3-4 solutions are listed for each problem. Discuss and ask all participants to confirm the final solutions list.
9. Wrap-up, summarising the main points discussed during this exercise.

Some suggestions to facilitate the group discussion

- What were the soil management problems identified during the previous exercises?
- Are these the only soil management problems you experience?
- What possible solutions for the problems listed were mentioned during the previous exercises?
- Were all the solutions identified during the previous exercises listed?
- Are these the only solutions possible, as far as we know, for those problems listed?
- Are these solutions realistic in the present farmers' situation?
- What is needed to implement this solution considering the present farmers' situation?
- Which of these possible solutions can we test in the field?
- Which of these possible solutions would you like to test in the field?

Your notes:

5.6 IDENTIFICATION OF SOLUTIONS: PLENARY DISCUSSION

This exercise can be used as an alternative to the solution identification “*group workshop*” (5.5).

Crop production problems related to soil condition and management practices have been identified and prioritised during previous exercises. Possible solutions to these problems need to be identified.

Farmers and specialists working together should identify which solutions, if any, are being used locally. New practices or technologies based on specialist knowledge may be available from the school facilitator. Similarly, the appropriate solutions may be found in the farmers’ indigenous knowledge either within the community or in near by communities. During this exercise all these possible solutions will be listed and discussed first in small groups and later in a plenary session.

Learning outcomes

- ✓ Farmers will have identified possible solutions to prioritised crop production problems.

Time needed 1 hour

Materials

- ✓ White board or large sheet of paper, markers, pins, tape

Steps

1. Explain the learning outcomes and the procedure of this exercise to the participants.
2. On the board or on a large sheet of paper show the prioritised list of problems.
3. Promote discussion by asking participants “What are the possible solutions to the problems you have identified?” Start with the first problem indicated on the list, then the second, and so on.
4. Assist in the discussion recalling solutions that have been mentioned during previous exercises. Ask for clarifications, allow everybody to express their views. More than one solution may be found for each problem.
5. Share your knowledge on possible solutions, and guide the discussion so that it stays on the topic. Ask all participants to confirm the final list of solutions; (*refer to management practices, technologies, inputs, technical assistance*).
6. Write the final list of solutions on a large sheet of paper for all to see.
7. Wrap-up, summarising the main points discussed during this exercise.

Some suggestions to facilitate the group discussion

- What were the soil management problems identified during the previous exercises?
- Are these the only soil management problems you experience?
- What possible solutions for the problems listed were mentioned during the previous exercises?
- Were all the solutions identified during the previous exercises listed?
- Are these the only solutions possible, as far as we know, for those problems listed?
- Are these solutions realistic in the present farmers' situation?
- What is needed to implement this solution considering the present farmers' situation?
- Which of these possible solutions can we test in the field?
- Which of these possible solutions would you like to test in the field?

Your notes

5.7 ASSESSMENT AND SELECTION OF PRACTICES TO BE TESTED AND SELECTION OF SPECIAL TOPICS

Farmers use agricultural practices that are suitable to their household farming system, influenced heavily by the resources available. To be able to choose appropriate solutions/practices to be tested, it is important for the school participants to assess correctly whether an identified soil management practices (solution) is appropriate for the problem they experience within their farming system.

A simple assessment of the resources needed (labor, cash, material etc.) and their availability should be carried out. This exercise will help the farmers to identify from amongst the several possible solutions, the most promising practices to be experimented with during the school and to identify what changes to the present household farming system may be required in order to adopt a particular practice or technology.

This exercise aims to assist farmers with making realistic assessment of the suitability and practicality of the identified solutions and selection of the most promising for farmer-led field tests.

Learning outcomes

- ✓ farmers will have assessed the suitability of the proposed solutions;
- ✓ farmers will be able to select practices and technologies that they wish to experiment on by testing in their own fields;
- ✓ farmers will have selected and finalised additional topics, practices and technologies, that they wish to be included in the school programme.

Time needed 1 hour

Materials

- ✓ Large sheet of paper and markers

Steps

1. Explain the learning outcomes and the procedure of this exercise to the participants.
2. This exercise can be conducted with sub-groups (4-5 farmers in each) or through a plenary session.
3. On the board or a large sheet of paper write the solutions (practices) that have been previously identified for all participants to see.
4. Promote discussion and exchange of opinion and information by asking farmers to indicate all possible limitations and difficulties they foresee in testing and using such proposed practices (*labor, availability of material, cost, land access, risks*). Allow everyone to express their view.

5. In a plenary session, using input from the group, re-write the list of solutions starting with the most promising (of most interest to farmers) and ending with the least promising. Be careful not to introduce your own criteria.
6. Since only 2 or 3 solutions (practices) can be tested during one cropping season ask participants to select the practices that they wish to test in the fields and the special topics that they would like to know more about.
7. You may force a final choice by asking the farmers, "If you were to choose only one of these, which would you choose?" "Which would you choose next?"
8. Finalise the list of suitable solutions to be tested in the farmers' fields and the special topics that farmers would like to learn more about.
9. Wrap-up, summarising the main points discussed during this exercise.

Some suggestions to facilitate the group discussion

- What impact will the new practice have on family labor? (*NB: The men may have different opinions from the women*).
- Is the necessary organic material available (*if more use of organic fertiliser has been identified as a solution*)?
- What changes may be needed in the farming system to produce more organic fertiliser and what effect it will have on the present system?
- What will be the labor requirement in order to adopt such a practice?
- Is it available?

Your notes: