

# Milk Producer Group Resource Book

a practical guide to assist milk producer groups



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by Jurjen Draaijer



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## introducing the book

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This “Milk Producer Group Resource Book” is part of a series of practical field guides for people working in small-scale dairying in developing countries. These field guides are produced by the Animal Production and Health Division of the Food and Agriculture Organization (FAO) of the United Nations.

Milk producers can increase their income and utilise their skills and resources better if they are working in groups. This book aims to promote the organization of small-scale milk collection and processing as a sustainable, income-generating activity for household food security. It also tries to be a means to improving the safety, quantity and quality of milk and milk products available for consumers in developing countries.

The intended readers are (future) leaders of milk producer groups, extension workers, project staff and group promoters who are working to set up milk producer groups, and those developing already existing groups at village level in rural areas.

Some excellent FAO booklets exist on working with small groups (see information sources and references). They complement this book which has been written specifically for milk producer groups.

This Milk producer group resource book aims to play a role in poverty alleviation in developing countries in a gender sensitive and sustainable way. Participation is a key pillar of the strategies promoted throughout the book without gender, age, race, social class or any other bias (see also chapter 6, page 65).

Please send your comments to [jeanclaude.lambert@fao.org](mailto:jeanclaude.lambert@fao.org) at FAO.

Samuel Jutzi

Director, Animal Production and Health Division

FAO Rome

## how to use this book?

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This book is meant to be a resource book for milk producer groups and people working with these groups. It is a basket full of resources from which you can select the parts you feel are helpful to your group. The book is definitely not a 'blueprint' manual, because standard formulae for working with milk producer groups do not exist. Every group is different because the group members are different, as well as the group environment, cultural setting, government rules and regulations, etc.

The language used in this book is kept simple. Examples and illustrations are included for easy reference, the following symbols are used:

**32**

→ indicates a cross-reference to another page of the book;



→ indicates an introduction to the chapter;



→ indicates information sources at the end of the book;



→ indicates a 'real life' example;



→ indicates a participatory tool in chapter 6;



→ indicates that steps are described to complete a task.

The methods and tools described in this book are rough guidelines. It is hoped that it will support innovation and the adaptation of all methods and tools to your own situation. It is not necessary to read the book from the beginning to the end before you start. It intends to give suggestions which are grouped in chapters to facilitate access. Box 1 gives you a brief summary of each chapter.

Please feel free to contribute anything that you think is useful when working with milk producer groups!

**BOX 1: A BRIEF EXPLANATION OF THE CHAPTERS**

**chapter one: read this first!**

Here the background information for the book is given.

**chapter two: forming groups**

Here the steps are described for setting up new milk producer groups. Other topics in this chapter include leadership, elections, planning, monitoring and evaluation and management of groups.

**chapter three: developing groups**

Chapter three focuses on the development of existing groups. If you are working with existing groups, you can directly go to this chapter, but you have to make sure that your group has not forgotten any basic steps mentioned in chapter two.

**chapter four: milk collection, processing and marketing**

This chapter describes possible group activities in milk collection, processing and marketing. Topics include hygienic collection of milk, record keeping, preservation, transport, sampling, testing, payments, processing of milk and marketing of milk products.

**chapter five: other group activities**

Chapter five describes possible activities other than milk collection, processing and marketing. These activities include: input supply, financial information, animal breeding and animal health care services that the group can provide to their members.

**chapter six: participatory tools**

In this chapter some participatory tools are given that will assist you in working with milk producer groups. Tools include mapping, ranking, an assessment checklist, analysis of strengths and weaknesses, and tools to explore possible collaboration with other organizations.

**information sources and references**

The information sources will provide you with ideas on books, websites and addresses for more information on the specific subjects.

**glossary and index**

Here you will find an explanation of all the key words used in this book, with a reference to the page numbers.



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This resource book is a result of the efforts of many people. The key people who collaborated in the development of the ideas and tools in this book are:

OP Sinha (India), Ram Milan Upadhyay (Nepal) and Sudhir Chandra Das (Bangladesh), who all prepared a background document on the situation of milk producer groups in their respective countries; Joe Phelan who compiled these documents into a draft document on milk producer groups; Pat Francis, (Guyana) who greatly assisted during field trials of the participatory tools and the people at Milkvita and the Community Livestock and Dairy Development Project for their hospitality during field visits to Bangladesh.

Further thanks to Daniela Scicchigno, who produced the manuscript in desktop publishing and designed the layout, to Petra Röhr-Rouendaal for all the drawings in this book and to Tim Chamen for editing the text.

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# chapter 1. read this first!



*This chapter is an introduction to what is going to come: the reasons for starting milk producer groups are described in 1.1, principles of a group in 1.2. and the importance of an enabling environment for the success of a group in 1.3. Chapter two will focus on forming groups, chapter three on developing groups, chapter four and five on group activities and chapter six on participatory tools.*

## 1.1. why form milk producer groups?

Milk is often produced daily in small amounts by a large number of producers, and markets for milk products are often found in distant urban centres. Combining forces in a group to reach these markets provides a direct and clear benefit to the members of a group. This is the main reason that milk producer groups are particularly suited to increasing household income.

A milk producer group can carry out a range of activities: milk collection, milk processing, marketing of milk products, organizing the supply of inputs like animal feed, fodder and credit and organizing livestock services like animal health, breeding, information and financial services. The more activities milk producers undertake themselves, the more their income can rise.

Carrying out activities in a group has many benefits (see Box 2: “Reasons to start a milk producer group”). In general, group formation is encouraged when:

- ▶ potential members are willing to join a group;
- ▶ potential members are living near to each other;
- ▶ there is trust between the potential members;
- ▶ potential members have the same social and economic background;
- ▶ men and women have the same rights.

### Box 2: Reasons to start a milk producer group

- **more income** through direct market access;
- **ability to pool resources** to carry out activities that otherwise might not be possible: e.g. pooling of savings to start credit schemes, pooling of labour to carry out labour-demanding jobs;
- **economies of scale**: investments and inputs are cheaper, credit and marketing costs are lower;
- **better access to outside support services**: groups can be easy contact points for other organizations providing support services, e.g. breeding services, savings and credit, information and advisory services, training;
- **risks are shared** e.g. in relation to investment and credit;
- milk producers can **learn from each other** and exchange useful information;
- milk producers have **more status and power** as a group;
- **development and enforcement of rules** is easier in case of conflicts, e.g. grazing rights;
- the group can provide **social support** to the members in times of crisis;
- **saving time** when carrying out activities in a group.

### limitations and dangers of a group

There is a possibility that the group could be dominated by only a few members and that there is no democratic decision-making. To prevent this, one has to look particularly at potential political and cultural conflicts, religious groups, different castes, socio-economic differences, gender etc. Small groups facilitate dialogue between members; they have greater economic flexibility and are less likely to be dominated.

Formation of a successful group requires patience. It might take up to six months to form a stable group. Formation which is too rapid should be avoided, but equally, long delays may lower the interest of potential group members.

## 1.2. International Cooperative Alliance group principles



→ *The ICA homepage, page 83, [www.coop.org/ica/](http://www.coop.org/ica/)*

The seven international co-operative principles, as stated by the International Co-operative Alliance (ICA), are listed below. These guiding principles form the basis of what is considered a milk producer group in this book.

**Voluntary and Open Membership:** Anyone willing to accept the responsibilities of membership should be able to become a member of the group without gender, social, racial, political or religious discrimination.

**Democratic Member Control:** Groups are democratic, owned and controlled by their members, regular elections are held and all members have equal voting rights (one member, one vote).

**Member Economic Participation:** All members contribute and democratically control the capital of their group. At least part of that capital is usually the common property of the group. Surpluses are allocated for developing the group, benefiting members in proportion to their contribution and supporting other activities approved by the members.

**Autonomy and Independence:** Groups are autonomous and controlled by their members. Any agreement with other organizations does not interfere with the autonomy of the group.

**Education, Training and Information:** Groups provide education and training for all members and employees which encourages them to contribute effectively to the group development.

**Co-operation among milk producer groups:** Groups are working together through local, national, regional and international structures.

**Concern for Community:** The activities of the milk producer group benefit the sustainable development of their communities.

### 1.3. enabling environment

To establish and develop a successful milk producer group, it is essential that there is an enabling environment in the area. An enabling environment means that external factors are beneficial for the setting up of a milk producer group. The group has no control over external factors and examples of these are:

- ▶ laws regarding milk producer groups
- ▶ government policies
- ▶ milk price in the area
- ▶ total market supply of milk products in the area
- ▶ consumer demand for milk products
- ▶ availability of support services
- ▶ economic trends
- ▶ situations like war/conflicts/natural disasters

In developing countries, there is a change towards empowering community groups. Many governments are reducing their direct agricultural assistance and people are being given more responsibility for their own development. In the near future, there will be greater emphasis on community groups and a participatory approach. This environment greatly assists the formation of milk producer groups, but it is important that appropriate laws and support organizations are in place.

If you want the milk producer group to be effective, the legal aspects and policies of the area have to be supportive of groups that are owned and operated by milk producers themselves. There should be laws that define in what legal format milk producer groups can exist.

Co-operation with other organizations is important for the group, since most milk producer organizations are dependent on outsiders for inputs and services like veterinary assistance, feed supply and information services.



## chapter 2. forming groups

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After having described the background to this book in chapter one, chapter two describes how to form new milk producer groups, and may also be of interest to existing groups: 2.1 describes the steps for forming milk producer groups. The steps don't necessarily have to be followed in the described order. Other topics are leadership and elections (2.2), keeping records (2.3) and calling meetings (2.4). Chapter three continues with developing already existing groups, chapter four and five with group activities and chapter six with participatory tools.



→ *FAO group promoter's resource book, page 83*

→ *FAO group enterprise book, page 83*

### 2.1. forming groups step by step

An overview of the steps to take when forming milk producer groups is given below, and is followed by a detailed description of each step.

**STEP 1: INITIAL MEETINGS**

**STEP 2: DETAILED PROPOSAL**

**STEP 3: PUBLIC MEETING**

**STEP 4: FORMING A MANAGEMENT COMMITTEE**

**STEP 5: DEVELOPING A CONSTITUTION**

**STEP 6: FORMAL REGISTRATION**

**STEP 7: INAUGURAL MEETING**

**STEP 8: PLAN ACTIVITIES**



## STEP 1: INITIAL MEETINGS

Every new group initiative starts with an idea or a vision, which is shared with others. These may be friends, neighbours, or a group that shares a common concern - in this case milk producers who want to increase their income from milk. The best starting point is an informal meeting with a small group (5 to 10 people, the 'core group'). This will give everybody the chance to express his or her views.

When this 'core group' has decided to form a milk producer group, it is time to organize a meeting with other milk producers from the area. At this meeting, the core group presents a general summary of its proposal to form a milk producer group. It is important that this meeting is well organized. At the same time, the meeting should be informal enough to allow full participation and open expression of ideas.

This core group will play a central role in the meeting but others should be actively encouraged to assist the group. An outside facilitator or resource person may be useful to guide the meeting, to encourage participation, to prevent domination by some and to outline the main issues to be discussed. The proposal made by the core group is discussed and should include the following issues:

- ▶ **Why form a group?**
- ▶ **Who will be the members of the group?**
- ▶ **What will be the activities of the group?**
- ▶ **What is the plan to set up the group?**
  - What type of organization?
  - What resources are needed (labour, land, capital)?
  - Where do these resources come from?
  - What facilities are needed?
- ▶ **When is the group going to be set up?**

If there is an agreement to set up a milk producer group during this second meeting, an advisory sub-group should be set up. The advisory sub-group should be elected (see section 2.2: "leadership and elections), and preferably consist of a maximum of seven committed people. The meeting may name the chairperson, secretary, and treasurer, or leave that to the newly formed sub-group. This advisory sub-group will gather all relevant information needed for

setting up a milk producer group (step 2) and present this at another meeting of potential members (step 3).



## STEP 2: DETAILED PROPOSAL

The advisory sub-group will develop a detailed proposal for establishing a milk producer group, and will inform the potential members of the advantages and obligations involved. The sub-group may find outside assistance helpful when writing the proposal. The steps needed for developing a proposal are described below:

### 1. describe the detailed purpose of the group

For example: The group aims to increase the financial returns of its members from milk production through the collection, processing and marketing of milk and by providing inputs as well as training and advice.

### 2. propose a name, base and physical operating area for the group

The name should indicate the purpose of the group. Each group should have a base, i.e. a place where it meets regularly. The physical operating area of the group should also be clearly defined.



*An example from Guyana:*

*The full name of the milk producer group is:*

*“Mahaica-Mahaicony Milk Producers  
Co-operative Society Limited”*

*The physical operating area of the group is:*

*“the Mahaica and Mahaicony area  
including all areas on both banks of  
the Mahaica and Mahaicony  
creeks”*



### 3. investigate what type of organization is best

Examples of types of organizations are a co-operative, a self-help group, an association, society, etc. You have to ask yourself:

- what are the advantages and obligations of the different types?
- what are government regulations?

### 4. describe the requirements for becoming a member

- who can become members of the group?
- do members have to pay membership fees, and if so, how much?
- what other requirements? (e.g. supplying milk, attending meetings, providing labour)

### 5. propose a plan of activities in detail

See chapter 4 and 5 for ideas on possible group activities. Make a proper plan for what is going to be done by whom and when (see section 2.5, planning of activities).

### 6. specify the source of funds

To run a group successfully funds are needed and this is the most common constraint in setting up a milk producer group. Although a one-off grant or loan to cover the start-up costs can help a group to take off, financing a group by members' funds is one of the major cornerstones for a sustainable group. The different forms of capital include:

- ▶ **fixed capital** for equipment, buildings etc
- ▶ **working capital** to meet the operating expenses
- ▶ **reserve capital** to meet unexpected expenses

Sources of finance for a milk producer group can come from:

- ▶ **members**, in the form of fees, share capital, savings, fund-raising activities or interest from bank accounts.
- ▶ **outsiders**, in the form of grants or short- or long-term loans

Loans should be considered carefully, because it might not always be possible to repay in time. If a group wants to apply for a loan, interest rates need to be discussed, including how long it will take to recover the loan. It is the responsibility of the group to make agreements with lending institutions.

## 7. specify other resources needed

- are electricity, water or other facilities needed?
- what buildings are required?
- what materials and equipment are needed?
- what kind of transport is necessary?
- what will be the source of personnel?
- if members are providing labour, who will do what?
- is training needed to develop additional skills?

## 8. carry out a participatory dairy survey

If you are an outside advisor and assisting milk producers in setting up a group, a participatory appraisal of the dairy situation of the area can give you useful information. If you are a member of a milk producer group, a similar survey can help you to reflect on your situation and make the right decisions. The participatory tools given in chapter six can greatly assist you in carrying out the survey. The list below gives an overview of the items in the survey:



- ▶ **proposed area of the project**
- ▶ **number of milk producers in the area**
- ▶ **education level of the milk producers**
- ▶ **number of dairy animals in the area**
- ▶ **existing village groups**
- ▶ **existing dairy enterprises in the neighbourhood**
- ▶ **marketing opportunities for products**
- ▶ **existing livestock support services**
- ▶ **current market prices of milk and milk products**
- ▶ **current milk prices paid to farmers**
- ▶ **ways in which the milk is used**

Very often women are involved in dairying, but are often not represented in milk producer groups. It is therefore important to find out what activities women undertake in all aspects of milk production, to assess women's special knowledge of the nutrition, health and breeding of dairy animals and their skills in processing and marketing dairy products. From this you will learn that women can play a very important role in groups.

### **9. define contacts with outsiders**

It will be a good idea to find out who has an interest in milk production in the area, whether these are individuals or organizations. If you have this information, you can decide if contacts with these people would be helpful or not. See also section 3.4: 'developing links with other organizations' and section 6.3: 'dairy institutional diagram'.



→ *dairy institutional diagram, section 6.3, page 67*

### **10. carry out a feasibility study**

If a group decides to market products themselves, a feasibility study has to be carried out. For a detailed description of such a study, see section 4.4: 'milk and milk product marketing'.

### **11. discuss the risks**

There are certain risks when starting a group: members may not co-operate, or have the skills necessary to carry out the activities, there might be changes in demand, costs, prices of milk products

and weather as well as disease and theft risks. The group should discuss the risks and find out how they can be reduced (e.g. through training), and whether it is worthwhile taking the risks.



### STEP 3: PUBLIC MEETING

At the public meeting the advisory sub-group will present its findings in the form of a proposal. The purpose of this meeting is to find out whether there is sufficient demand to start the group, to make sure that everybody fully understands the implications of setting up a group and to ensure that the type of organization proposed is appropriate. The chairperson of the sub-group presents the report and guides the meeting through a thorough discussion. When the meeting has discussed the report fully and all questions and concerns raised have been addressed, it can continue with the formal procedure.

The chairperson should now call for a vote to find out how many people are prepared to start a milk producer group, accepting the responsibilities that membership would involve. If those present at the meeting decide democratically to set up a milk producer group, the meeting should elect a provisional management committee in the same way as the advisory sub-group was elected in step 1 (see also section 2.2.: leadership and elections). This also means that the advisory sub-group has ended its activities.



### STEP 4: FORMING A MANAGEMENT COMMITTEE

The provisional management committee may or may not include members of the advisory sub-group. The main task of this committee is to set up the milk producer group and make it a legal entity. The committee must carry out a final review of the whole proposal and agree on objectives, policies, finances, organization and management of the milk producer group.

The provisional management committee must choose the appropriate form of legal organization before starting any activity. The form of organization chosen by the group depends on the group activities, the options available and the legislation in the country.



### STEP 5: DEVELOPING A CONSTITUTION

This is probably the longest and most difficult step of forming a milk producer group. A constitution is a set of written rules made

by the members of a group, and it is a legal document. The constitution sets out what is expected from the group members and what they can expect from the group. The constitution is meant only for the benefit and use of the members and can only be changed by the members.

Every group needs a set of rules to regulate its activities and avoid problems and misunderstandings. The rules include the objectives and activities, internal regulation of the organization, and ways to change any or all of the rules. Information from the detailed proposal developed in step 2 can be used for the constitution.

National milk producer unions will have a “model” constitution, which can be adopted to suit the particular needs of the group. You should also consult other milk producer groups in the area to learn from their constitutions.

There is no blueprint for a group constitution. It should be made step by step, through discussion between (potential) group members. You can discuss the following items when developing a group constitution in a meeting with all the members:

Full official **name, objectives, activities** and location of the group;

**Definition of membership** of the group: duration of membership, duties and responsibilities, how to become a member, including a non-discrimination clause;

**Leadership and election procedures:** types of leadership position, duties of the committee members, how long elected for (see also section 2.2.: leadership and elections);

**Contributions:** when to pay and how much; joining fee and regular contributions.; who to pay; purpose of contributions; what to do if the money is lost?

**Disciplinary action** against members: What to do if duties of committee members are not carried out? What will happen in the case of absences and late arrivals. Amount of fines, when to pay and what to do in case of non-payment? What to do if contributions are not paid?

**Meetings:** Which place, time (make sure all members, including women, can attend), day; number of members needed for decisions, unanimous or majority decision making, reporting absence, is representation for absentees allowed? Can representatives vote? (see section 2.4.: calling meetings)

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**Record keeping:** what and by whom (see section 2.3: 'keeping records')

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**Savings:** purpose; where to be kept; how to save; record keeping (see section 5.2: 'financial services')

**Loans:** Rules for re-lending of group savings to members; interest rate; terms of repayment; penalties for non-repayment.

**Profit:** Use of profits; sharing; when and who; what to do in case of death, drop out, absence and negligent work.

What happens if the group decides to **stop the activities**?



#### **STEP 6: FORMAL REGISTRATION**

Once the draft rules have been agreed, the formal registration process can start. The details will vary according to the country and type of organization, but there are common basic steps. These might involve sending a completed application form to a national authority, together with copies of the constitution, registration forms for founder members, evidence of funds and payment of a prescribed fee. This is followed by formal approval and acknowledgement by the registrar. The national milk producer organizations usually provide the model rules and assist in registration. Sometimes there is a trial period for the group of for example three months. If the group is functioning satisfactorily at the end of this period, the official registration takes place.



#### **STEP 7: INAUGURAL MEETING**

When the group has been registered and the required number of completed membership application forms have been received, the group can proceed with the inaugural meeting. At this meeting, the provisional management committee must report on the tasks carried out and resign as provisional committee. The meeting should appoint a management committee as set out in the rules (see also section 2.2: "leadership and elections"). The following is an example of an inaugural meeting agenda:

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**AGENDA FOR AN INAUGURAL MEETING:**

- ▶ appointment of chairperson for the meeting
- ▶ minutes of previous meetings of the group
- ▶ report of provisional management committee on tasks carried out
- ▶ report on application for membership and shareholding
- ▶ approval of draft constitution of the group
- ▶ election of management committee
- ▶ appointment of external auditor(s) (see section 2.3, 'keeping records')
- ▶ setting of borrowing limits and nomination of a bank

Details will vary according to the constitution but these central issues must be addressed.



**STEP 8: PLAN ACTIVITIES**

After the inaugural meeting, the newly elected managing committee meets to make a proposal for the group activities. Initially the emphasis will be on:

- ▶ agreeing the milk pricing and payment procedures
- ▶ planning and organization of milk collection routes
- ▶ planning and establishment of possible cooling and/or processing centres
- ▶ planning and organizing milk distribution and marketing
- ▶ planning any other services to be provided to members
- ▶ making financial arrangement for the capital requirements

These issues will be dealt with in more detail in section 2.5: 'planning of activities'), and in chapters four and five where ideas are given for activities that can be carried out by milk producer groups.

## 2.2. leadership and elections

### **what is “leadership”?**

Leaders play an important role in a group. A simple structured group needs at least a chairperson, secretary and treasurer to function properly. Gradual rotation of leadership positions among **all** members (women and men) can help to develop leadership skills within the group.

Leadership involves overseeing and monitoring the activities of the group. A few people who are recognised and accepted by all members carry out these tasks. Participatory leadership means that all members are equally informed and have an equal opportunity to participate in group activities.

### **leadership qualities and duties**

It is difficult to be a secretary if you cannot write, a chairperson without being able to read, or a treasurer that cannot be trusted with money. Leaders may need certain qualities, e.g. being able to read and write, being active, energetic, good at motivating others, respectful, brave, honest, patient, and able to work and communicate with others. Listing the desired qualities for a certain position can help to choose the right people. Choice of leaders should be based on the skills and not on the position or status of people. The duties of the leaders should be discussed and listed, for example:

#### **the duties of a chairperson are to:**

- schedule meetings and prepare agendas in co-operation with the secretary;
- chair meetings and summarise them at the end;
- encourage fair and equal participation by all members in discussions, decision making and group activities;
- ensure the group constitution and work plan is followed;
- ensure that the secretary and treasurer do their jobs;
- ensure members pay their contributions as agreed;
- delegate work and assignments;
- maintain harmony in the group;
- make suggestions and give advice to the group;



- represent the group and contact resource persons, groups, and institutions.

**the duties of the secretary are to:**

- write the agenda, minutes and attendance record of meetings;
- read aloud the minutes of meetings;
- maintain all group records;
- deal with letters to and from the group;
- report on progress of the group;
- assist the chairperson where needed.

**the duties of a treasurer are to:**

- keep the financial records of the group;
- safeguard and manage the money;
- inform members about expenditure and receipts and the available cash or bank balance as required;
- give receipts for money received;
- keep the cash book and the receipts;
- manage the group fund.

**how to conduct elections?**

Electing group leaders should be carried out at a meeting of all the members. The constitution will determine the percentage of members required to be present for elections (e.g. 70%). Apart from having decided on the qualities and duties of the leaders (see above), a decision should have been made on what leadership positions are needed and their term of office.

A common method for electing is by show of hands. If you think this method is too sensitive, you can consider other methods like a secret ballot (writing a name on a piece of paper, folding it, and collecting all the votes in a basket). An external election supervisor who is independent of and respected by the group members should be present during elections.

### **how often should you have elections?**

Changing leaders frequently can be unsettling and make long-term planning difficult, but rotating leadership frequently within the group provides all members with the chance to develop organizational and leadership skills. A balanced approach is therefore needed and depending on the particular group activities, elections should be held at least once a year.



### **bank account signatories**

When the leaders have been elected, signatories for the bank account of the group and other official papers must be selected. Usually three signatories are selected, with the condition that at least two signatures are required for any transaction.

### **2.3. keeping records**

In this section, we will deal with keeping general and financial records. Keeping records for milk collection purposes is dealt with in 4.1.3: milk collection records.

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#### **why keep records?**

The group can check whether plans are being followed if all records of the group's activities, decisions, finance and other factors have been properly kept. Records help the group to remember what has happened, to monitor progress and to evaluate activ-

ities. If there is some kind of mistrust from members or outsiders, the records will show what the group is doing, how money is spent, etc. Keeping proper records can be the key to the success of the group. Group leaders should be responsible for keeping records, in co-operation with other members. Keeping group records is generally the task of the secretary while the treasurer deals with the financial records.

**which records to keep?**

The group members should discuss which records are important to keep. A group can begin with noting down minutes of meetings, incoming money, and the names and other information about the members (e.g. group member identity card, see figure 1). Records that can be kept include:

- ▶ official membership list of the group;
- ▶ the group constitution (see section 2.1);
- ▶ information about the group members;
- ▶ certificate of registration;
- ▶ minutes of meetings (see section 2.4);
- ▶ correspondence/letters;
- ▶ records on milk collection (see 4.1.3);
- ▶ breeding and artificial insemination records (see section 5.4);
- ▶ milk processing and marketing records;
- ▶ financial records (see below);
- ▶ animal health, treatments and vaccination records.

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**figure 1: example of group membership card**

<b>GROUP MEMBERSHIP CARD</b>	
<i>Name of member:</i>	<i>Name of group:</i>
<i>National Identification no:</i>	<i>Membership no:</i>
<i>Date of enrolment:</i>	<i>Membership fee paid:</i>
<i>Address:</i> <i>Village:</i>	<i>District:</i>
<i>Specimen signature of member</i>	<i>Signature of chairman</i>
<i>Serial no. of card:</i>	<i>Date of issue:</i>

### **how to keep records?**

Records should be kept simple so that all group members can understand them. If some members cannot read, symbols can be used for keeping records. Record keeping should be carried out on a regular basis (daily, weekly or monthly), or whenever meetings are held or activities take place. Information should be kept in record books, not on loose sheets of paper.

### **evaluation**

Records can be used for evaluation purposes. Evaluation is an in-depth analysis of the group's activities and records, and is used to assess whether the group is making progress according to the work plan. A participatory approach to evaluation creates a greater sense of ownership and control by members (see section 6).

### **financial records**



→ *Cammack, John, Basic accounting for small groups, page 83*

The keeping of proper financial records is essential for a milk producer group, and can be the key to the success or failure of the group. It is important to show members and others how the group earns and spends money. Keeping financial records is often a requirement by law to provide information to lending institutions or to government agencies.

Keeping financial records is generally the task of the treasurer. All transactions must have some verification (e.g. a signature). You can normally buy account books in a stationery shop or you can have them specially printed with the name of the group.



**"Clear accounting  
maintains friendship  
(Nicaraguan proverb)"**

### **cash book**

A cashbook shows all the money that is coming in and going out. Each time money is transferred, there should be evidence of payment (a receipt). These receipts should be numbered, and the num-

bers of the receipts should be noted in the cashbook next to the transfer. Always make sure there is a receipt! You can buy receipt books in a stationery shop, or use other written statements with some kind of proof (signature or stamp). Figure 2 is an example of some cashbook entries.

**figure 2: example of cashbook entries**

date	detail	money in	money out	balance	receipt
10.01.01	balance brought forward	532.32			
10.01.01	1 milk can 50 litres		200.00	332.32	00345
10.01.01	contribution T. Thapa	220.00		552.32	00346
10.01.01	total	752.32	200.00		
	new balance			552.32	

'Balance brought forward' is the amount of money available when you start recording in your book, when you start on a new page, or when you start a new financial period, e.g. every week or month.

**inventory list of equipment, buildings, etc;**

All belongings of the group should be recorded in the inventory list. They belong to all members, so it is important to know at all times what is owned by the group. The inventory list could, for example, look like figure 3.

**figure 3: example of an inventory list**

item	date bought	price	receipt no.:
5 milk cans of 50 litre	25-02-2002	1,000/=	003475
breeding bull	28-02-2002	30,000/=	003478

**bank statements**

All bank statements must be kept in a separate book.

## **auditing**

Auditing may be described as checking. The auditor however, is not only looking for faults or irregularities. She or he has to verify whether the cashbook and other financial records are maintained properly. He or she is responsible for checking whether the final accounts show a true picture of the financial state of a group. Audits are generally done annually. An audit is sometimes required under the constitution or if the group is a public or charitable trust. Auditing can be done internally, for example by the chairman or by a trusted and capable member, but it is best done by an independent and competent outsider.

## **2.4. calling meetings**

In a milk producer group, you can differentiate between meetings of leaders and meetings of members. Meetings should be regular, and preferably be held at the same time and on the same day. In the beginning you can have a member meeting every week, later you might want to have a meeting every 2 or 4 weeks, and have more regular meetings for the management committee. The weekly meetings are important events where members share experiences, learn from each other and receive education and training. The following items should be remembered when calling meetings:

- Consult as many members as possible to identify the most **convenient venue and start and finish time**, and make sure it is convenient for all members. Pay special attention to a suitable timing for **women**; at certain times they are often not available because of other tasks they have to fulfil;
- **Minutes of meetings** should be kept by the secretary in simple language to remind the group of activities and discussions at previous meetings, (see box 3 for an example).

Agenda items should be listed in writing and circulated prior to the meeting. Reports from the treasurer, sub committees, members or others who have been given assignments at previous meetings can be included and circulated prior to the meeting. Copies of the minutes can be made available at milk collection centres, for example.

**Box 3: EXAMPLE OF MEETING NOTES**

Date of meeting \_\_\_\_\_;

Meeting chaired by \_\_\_\_\_;

List of members present/absent/late;

Agenda (Can be modified as needed):

- Agreement on the agenda;
- Communication from the chairperson;
- Approval of previous minutes, and matters arising;
- Business of the day;
- Any other business (AOB).

## 2.5. planning of activities

The proper planning of the activities of the group is very important. Too many activities in the beginning will not help the group. It is better to do a few things right than a lot of things half-right! The planning of activities should be done with all group members. When making a plan, the following questions should be asked:

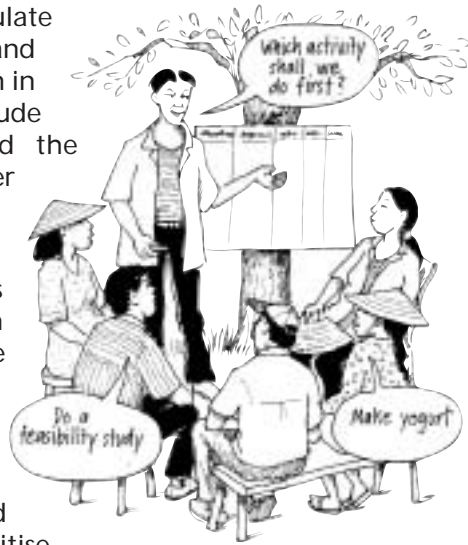
- can the group carry out the plan?
- does the plan include everything that has to be done?
- does the plan explain exactly in detail what has to be done?
- do all members agree with the plan?

If all these questions can be answered with 'yes', then you have a good chance that the plan will succeed. The plan should be written down to remind everyone what should be done. Table 1 gives an example of such a plan. A detailed plan will include the following items:

- what will be done (in detail)?
- who will do it?
- when will it be done?
- what will be needed to be able to do it?
- where and how will it be done?
- what will it cost?

It is important to try to calculate what the activity will cost, and to write these estimates down in a budget. A budget will include the money coming in and the money going out (e.g. member fees that you want to use for this specific activity).

In planning activities, it is good to have a long-term strategy for the group. The group should ask itself how it thinks it should look in a few years time, and not simply what it is going to do next week. The group should also have a strategy to prioritise activities: if you have only limited resources, which activity should be first? You will find some ideas on how to prioritise in section 6.5: 'brainstorming and ranking'.



→ *brainstorming and ranking, page 72*



**Table 1: example format for a plan of activities**

ACTIVITY	INPUTS NEEDED	STARTING DATE	DATE OF COMPLETION	ESTIMATED COST	NAME OF PEOPLE RESPONSIBLE



## chapter 3. developing groups



*The focus of the previous chapter was on setting up new groups; in this chapter it is on developing existing groups. As the group develops, employees might have to be recruited (3.1), you may want to work on the motivation of the group members (3.2), you may have to resolve a conflict between several group members (3.3), or you may want to develop links with other organizations (3.4). If there are several milk producer groups in the area, the groups might want to think about setting up a milk producer group association (3.5). Other issues on developing groups have already been dealt with in chapter two, technical dairy issues will be dealt with in chapter four, other possible group activities in chapter five, and participatory tools in chapter six.*



- *FAO group promoter's resource book, page 83*
- *FAO group enterprise book, page 83*
- *FAO inter-group resource book, page 83*

### 3.1. staff recruitment

As the group grows, a management team can be formed, which includes the leaders of the group and paid professional management staff. Members should keep the ownership of the group, but they can leave the controlling work in the hands of the elected leaders. The leaders in turn can leave the day-to-day management in the hands of an appointed manager.

The role of the manager is very important and it is crucial to select the right candidate. Managers must have management, leadership and organizational skills. The function of the manager must be clearly defined. When the manager is selected he/she must be given the right on-the-job training to get to know the group members, the management committee and the activities of the group. A trial period of three to six months should be given in order to find out whether the right candidate is selected.

The group has to decide on procedures and techniques to select, appoint, evaluate and reward performance. Each position should have a job description and the candidate must have the necessary technical skills and personal qualities. Training on the job must also be provided where needed.

### 3.2. group motivation

Motivation of the members (especially in the long-term) is important for the sustainability and success of the group, and you might want to organize specific activities to keep and increase the motivation of the members.

#### **participation**

One of the first steps in trying to increase motivation of the members, will be to increase participation. Participation of all members in decision-making and group activities is very important (see chapter six 'participatory tools').

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#### **increasing activities**

Increasing the activities of the group can help to motivate members (see chapter four and five). You might want to find out from the group members in which activities they would have the most interest.

#### **training**

Training and learning tours can also assist in motivating members; this will be dealt with in section 5.3: 'information and advice services'.

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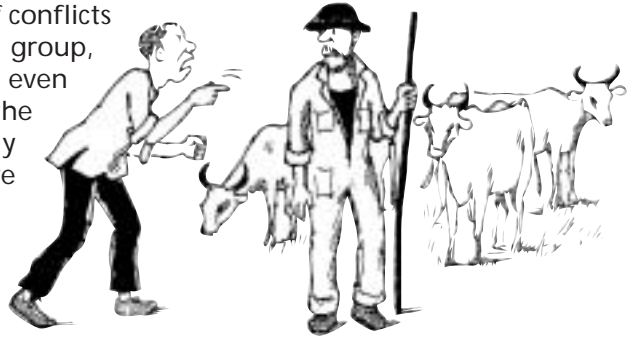
#### **other**

Some examples of activities to increase group motivation and ownership, which are not dealt with in chapter four and five are:

- ▶ Milk competitions (e.g. bonus for best quality milk)
- ▶ Dairy animal shows
- ▶ Group profit sharing
- ▶ Social activities (outings, parties, dinners, barbecues)
- ▶ Fund-raising activities
- ▶ Discussion groups on technical issues

### 3.3. conflicts

Focus in this section will be on the management of internal group conflicts. In every group there are different people who have different interests. It is therefore not surprising that conflicts arise. If conflicts disturb the activities of a group, they can, in the long run, even threaten the existence of the group. In this case, timely action is needed to resolve these conflicts.



#### why do conflicts arise?

Before doing something about a conflict, it is very important to find its root cause. You will need to know the group members well in order to do this. There are several reasons why conflicts arise:

##### 1. communication problems

Communication problems can arise for example due to different languages, dialects or jargon that some don't understand.

##### 2. lack of information or transparency

Many conflicts arise because people are not informed e.g. if the leaders don't provide transparency on the financial records, mistrust from other group members might cause a conflict.

##### 3. ignorance of members' needs and interests

For example if the leaders are only concerned about their own interests.

#### 4. social power differences

Conflicts can also arise if there are differences in social status, for example a “superior” clan within the group makes all the decisions.

#### 5. different laws are conflicting

Conflict arising for example from laws in the constitution which clash with local customs or other laws.

#### how to prevent conflicts?

Participation of all group members in the decision-making process right from the start can largely prevent conflicts. All the interests of all group members should be acknowledged, and all-important decisions should be taken by voting. Participation and participatory tools are dealt with in chapter six. Proper record keeping (see section 2.3 ‘keeping records’) and the sharing of important information with all members are other factors you should consider if you want to prevent future conflicts.

#### how to deal with conflicts?

The group leaders or group promoters can deal with the conflict in several ways:

- **Ignore the conflict**, in time it may *resolve itself*.
- If the cause is a lack of communication or transparency, **as much information** as possible should be given. Proper records should be kept in order to avoid conflicts due to transparency problems (see section 2.3 ‘keeping records’).
- If the conflict is caused by social power differences, try to have an **equal representation** of all sub groups in the group/management team.
- **Organize talks** between all parties and try to come to an agreement/compromise between the conflicting members.
- **Invite an outside advisor** to facilitate the discussion and try to come to an agreement.
- **Remove the conflicting member(s)**, although this could lead to other conflicts with other members.

### 3.4. developing links with other organizations

Links with other organizations and programmes are very important because they can assist and complement the activities of the group. Strong links with other organizations can give the group financial or political benefits and can facilitate the access to information. It is important to know which milk production related activities there are in the area. To improve links, you can:

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- Make sure a proper survey of all milk production related activities is carried out as described in step 2 of section 2.1, and find out what other organizations are doing in the area.
- Involve other organizations in the planning stages of the group.
- Set up an “advisory board” with outside advisors who have a wide knowledge of milk production related activities in the area.
- Invite outsiders to the annual meetings and training courses.
- Try to work with other organizations as much as possible.



→ *dairy institutional diagram, page 67*

A dairy institutional diagram (see section 6.3) can help in exploring possible links with other organizations. A collaboration matrix (see section 6.8) can assist in working out in more detail the specific collaboration activities between the group and another organization.



→ *collaboration matrix, page 78*

### 3.5. milk producer group associations

As mentioned before, one of the advantages of a group is in economies of scale, and this is even more significant for “a group of groups”, which we will call ‘group associations’. In an association of groups, a number of groups can pool their resources. Below it is explained what an association is, what it can do, and how to proceed when starting one. If you want to know more about how to start a group association, an excellent reference is the FAO Inter-group resource book.



→ *FAO inter-group resource book, page 83*

## What is a group association?

A group association is a self-governing association of milk producer groups at, for example, a district or regional level. At a higher level, the association may be linked to a national milk producer union. The association provides services and benefits to improve the economic and social conditions of the group.

The advantages of forming a group association include:

- ▶ Better opportunities for **sharing ideas and information** and **exchanging experiences**
- ▶ Better bargaining power in **bulk purchasing** of inputs
- ▶ Better access to and larger loans for individual groups through the establishment of **milk producer group association savings funds**
- ▶ Assistance in **preparation and negotiation of bank loans** for individual groups
- ▶ Better **access** to distant markets through **joint marketing** of goods
- ▶ Assistance in developing programmes to improve **quality and packaging**
- ▶ More effective **representation** of groups to governments and service organizations
- ▶ Better **training** through **courses** for bigger groups or better access to training run by **government** or **development** agencies
- ▶ More effective **public relations** and **advertising** campaigns.

It is important to clearly establish the functions and responsibilities of the associations at district, regional and national levels to avoid overlap and a waste of resources. As in the case of individual groups, a set of objectives must be agreed and bylaws established to facilitate the smooth functioning of the association.



*"After democracy was restored in 1990 in Nepal, milk producer groups were converted into Milk Producers Co-operative Societies under the Co-operative Act. At district level, the Societies formed Milk Producers Co-operative Unions. All the Societies and Unions are linked to a national Central Milk Producers Co-operative Union.*

*Not all Societies are members of a Union. The tasks of the Unions are: encouraging milk producers to form Co-operative Societies, provide dairy support services, data collection, training, extension and needs assessments. The Central Union is a great lobbying force for the interests of the milk producers, especially regarding the milk price, as this is controlled by the Nepalese government."*



## chapter 4. milk collection, processing and marketing

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*So far we have dealt with the issues related to forming and developing groups. This chapter describes milk collection, processing and marketing activities. In the context of this book we cannot go into the detail of every activity, but information sources will be given whenever appropriate. Other activities will be dealt with in chapter five and participatory tools in chapter six.*



→ *FAO dairy information page, page 82*

### 4.1. milk collection and transport

#### 4.1.1. milk collection

Milk collection is often one of the first activities of milk producer groups. Once the milk from several group members is collected in a central location, the milk can be processed or transported to processing centres or markets. Milk should be collected within four hours of milking.

#### **starting a milk collection centre**

A decision should be made on the number and sites of collection centres that are needed in the area covered by the group. Many factors influence this decision:

- ▶ number of milk producers;
- ▶ milk volume of each producer;
- ▶ total volume of milk;
- ▶ time to transport the milk;
- ▶ distance from members to the collection centre;
- ▶ distance from the collection centre to the processing centre or market;
- ▶ whether milk collection is once or twice per day.



A participatory tool to decide on the numbers and the sites of the collection centres is given in section 6.2: 'milk production map'. By discussing this map with the group members, you can decide on the best areas for starting a collection centre.



→ *milk production map, page 66*

### **selecting a site for a collection centre**

In selecting the ideal site for a collection centre, consider the following points:

- reliable supply of **clean water**;
- **close to the road**;
- **accessible** for all milk transport vehicles;
- **close to other buildings/activities**;
- **good drainage**;
- **easy to construct** a building or a shade;
- the area should **not be dusty**;
- preferably, there should be **electricity**.

If the group plans to process the milk in the future, you might want to select a site that can also be used as a site for a processing centre. In this case it is essential that electricity is available.

### **constructing a collection centre**

Whether you are going to construct a building or a shade depends on the funds available. An open shade is often sufficient for collecting the milk, simple testing and transporting to the processing centre. If you want to construct a building, it is best if the floor is a hard washable surface. If the group plans to expand its activities in the future and wants to include milk processing, it might want to construct a building that can also be used for this purpose.



#### 4.1.2. hygienic milk collection

Hygiene at all stages of milk collection and processing is very important for the quality and shelf life of dairy products. The farmer could provide containers or the group may provide and clean standard milk churns to improve hygiene. Important points for good hygiene are:

- use clean containers and equipment;
- use containers that are easy to clean with a wide opening;
- keep the milk covered and in the shade;
- transport the milk as quickly as possible after milking;
- cool as quickly and whenever you can (4°C or below);
- try to avoid any delays in milk collection.

**"Remember: you can never make good quality dairy products from poor quality raw milk!"**



If some group members have refrigerated storage facilities, it may be necessary to provide separate collection for this pre-cooled milk.

#### cleaning and disinfection

There is a difference between cleaning and disinfection. Cleaning removes materials such as dirt and any residues of milk, disinfection kills most harmful bacteria. Clean the containers as follows: Rinse with cold water first, then scrub with a brush and warm water containing detergent and rinse again with cold water. Sterilise with boiling water (or use disinfecting solutions like hypochlorite), dry the cans on a drying rack (preferably in the sun).





→ *hygienic milk handling and processing, milk processing guide series, volume 1, on FAO dairy information page, page 82*

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### 4.1.3. milk collection records

Keeping records of all milk that is collected is important for all the reasons specified in section 2.3: 'keeping records'. Table 2 shows an example sheet of weekly milk collection records. This includes results of milk testing, in this case the lactometer reading (density) and the fat percentage (see 4.2.2: milk testing).

**Table 2: example sheet of weekly milk collection records**

DATE	DAY	KG MILK	DENSITY READING	FAT%	RATE PER KG	TOTAL AMOUNT
	Sunday morning					
	Sunday evening					
	Monday morning					
	Monday evening					
	Tuesday morning					
	Tuesday evening					
	Wednesday morning					
	Wednesday evening					
	Thursday morning					
	Thursday evening					
	Friday morning					
	Friday evening					
	Saturday morning					
	Saturday evening					
WEEK TOTAL:						
PAYMENTS MADE ON:						
REMARKS:						

#### 4.1.4. milk preservation

Milk should be cooled immediately after milking, and be kept as cold as possible before processing. The best temperature to keep the milk is 4 degrees Celsius (or below), but in most developing countries this requires some kind of cooling equipment. The most important preservation methods are given below:

##### cooling methods

1. keep the milk in the **shade** not in the sun;
2. keep the milk in a **well-ventilated** place;
3. use cold water to cool the milk (*You can for example put the milk in a water bath, or in a stream*);
4. use ice to cool the milk;
5. use the following **cooling equipment**:

- conventional refrigerator for small amounts of milk;
- evaporative charcoal lined cooler;
- surface coolers;
- a bulk (direct expansion) milk cooling tank;
- an in-can rotary cooler.



##### Lactoperoxidase System of milk preservation

The Lactoperoxidase System is a safe milk preservation method that can be used in situations where milk transportation from farm to processing unit takes a long time and where no cooling facility is available or affordable. It is intended for use by trained people at the level of collection points, not by individual farmers. Lactoperoxidase is an enzyme that exists naturally in milk and slows the growth of spoiling bacteria. The effect of Lactoperoxidase depends on the temperature, but even at 30-degrees Celsius, it can prevent souring of the milk for 7-8 hrs (if the initial hygienic quality of the milk is reasonably good).

The Codex Alimentarius Commission has approved the use of the Lactoperoxidase system of milk preservation. Whether this system can be adopted is dependent upon your country's regulations. The Lactoperoxidase system is not an alternative for clean milk production but it delays bacterial growth and helps to maintain the

milk in as healthy a condition as it was when drawn from udder. This system is only applicable if refrigeration is not available or practical.



→ *FAO Lactoperoxidase website, on FAO dairy information page, page 82*

#### 4.1.5. milk transport

Group transport can be arranged for individual supplies of milk. There are many ways to transport the milk; this could be by truck, rail, boat, bicycle, animal or foot. The group has to decide on the most appropriate way to transport milk in order to keep the transport costs as low as possible. The advantage of transporting milk in small containers is that poor quality milk is not mixed with good. Milk transport from the farm to the collection centre, processing centre or factory should always be as quick as possible to prevent spoilage of the milk.

Hygienic milk transport is also important. Clean the containers used for transport every time: rinse with cold water first, then scrub with a brush and warm water containing detergent and rinse again with cold water. Sterilise with boiling water (or use disinfecting solutions like hypochlorite) and dry the containers (preferably in the sun).



#### 4.2. milk testing and payment systems



→ *ILRI Rural Dairy Technology Manual, page 82*

When milk arrives at the collection centre, information on the milk is needed. This information could be quantity, quality, hygiene, composition, whether water has been added, etc. This is needed to determine the amount of money that milk producers will get. The level of information required depends on many factors.

#### 4.2.1. milk sampling

It is expensive to analyse all milk supplies on a daily basis for all parameters. To avoid this, you can sample the milk and place it in sample bottles with preservatives added. Potassium dichromate can be added to keep the samples (for fat testing) in a good condition. Testing can be done on a mix of these samples.



Alternatively, milk can be sampled and tested on a random basis. Always try to keep milk samples cool (close to freezing point), but make sure the milk is heated to 40°C and then cooled to 20°C and mixed before testing. Milk must be thoroughly mixed before sampling to make sure that the fat is dispersed

throughout the container. Make sure the samples are labelled and carefully recorded to avoid confusion.

#### 4.2.2. milk testing

The methods used for milk testing are usually related to the payment system adopted. The different methods for milk testing are briefly described below, with an emphasis on simple and cost-effective methods. These focus on milk reception tests that can be carried out at collection centres. For a more detailed description of the tests and for other tests see technical books in the information sources at the end of this book.

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#### quality testing

Milk testing for quality can be divided into testing for hygiene and for composition. You always have to balance between the costs and benefits of the tests, because testing regularly can become very expensive! Make sure you always clean milk testing equipment thoroughly after use: you can use boiling water for at least one minute, 70% alcohol, or keep the equipment in a flame. Some examples of tests, in order of cost and simplicity are described below:

##### 1. taste, smell, visual observation and temperature

This should always be the first screening of the milk, since it is cheap, quick and does not require any equipment. These tests are also called 'organoleptic tests'. It is also reliable if the person carrying out the tests is experienced. The tester smells the milk,

observes the appearance, tastes if necessary, checks the can for cleanliness, looks for sediment, and filters the milk to check its cleanliness. If doubts arise after the examination about the quality of the milk, other tests can be done to determine the quality.

## 2. density meter or lactometer test

With a lactometer the specific density of milk is measured. At 15 degrees Celsius, the normal density of the milk ranges from 1.028 to 1.033 g/ml, whereas water has a density of 1.0 g/ml. So when you read the lactometer, you can determine whether water has been added to the milk. It is best to combine the lactometer reading with the fat test: if the results of the fat test are low and the density is high (e.g. 1.035), then the milk might have been skimmed.

If the results of the fat test are low and the density is low (e.g. 1.027), then water might have been added to the milk.

You can use the lactometer reading together with the fat percentage to estimate the Solids Non Fat (SNF) content of the milk (see milk payment systems, method 3).



Always read the temperature of the milk first: the lactometer reading varies according to the temperature. Make sure you adjust readings as indicated in table 3 below.

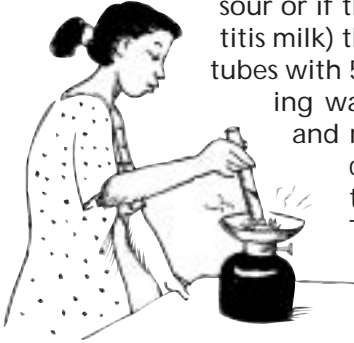
indicated in table 3 below.

**Table 3: temperature adjustments for lactometer readings**

Temp (°C)	17	18	19	20	21	22	23	24
Correction:	-0.007	-0.005	-0.003	0.000	+0.003	+0.005	+0.008	+0.011

### 3. clot-on-boiling

The clot-on-boiling test is simple, quick and cheap. If the milk is sour or if the milk is abnormal (colostrum or mastitis milk) the milk will not pass this test. Place test tubes with 5 ml of milk for up to 4 minutes in boiling water or in a flame. Examine the tubes



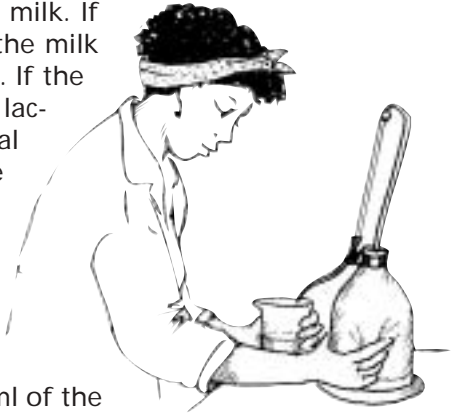
and reject the milk if you can see the milk clotting. Please note that at high altitude milk boils at a lower temperature. This test is not very sensitive to slightly sour milk and an alternative is the alcohol test.

### 4. alcohol test

If the milk is sour or if the milk is abnormal (colostrum or mastitis milk) the milk will not pass the alcohol test. You carry out the test by mixing equal amounts (2 ml) of milk and a 68% ethanol solution (made by mixing 68 ml of 96% alcohol with 28 ml distilled water). Milk that contains more than 0.21% acid will coagulate when alcohol is added.

### 5. acidity test

This test measures the lactic acid in the milk. If the acidity is higher than 0.19%, then the milk quality is poor and cannot be processed. If the acidity is lower than normal (e.g. 0.10% lactic acid) then the milk is of poor bacterial quality or sodium hydroxide/bicarbonate might have been added. For this test you will need a white porcelain dish, a 10 ml pipette, a 1 ml pipette, a burette (0.1 ml graduations), a glass rod for stirring, a phenophtalein indicator solution (0.5% in 50% alcohol) and a 0.1 N Sodium Hydroxide solution. Measure 9 ml of the milk into the dish, add 1 ml of phenophtalein and from the burette, slowly add the 0.1 N sodium hydroxide solution while mixing continuously, until a faint pink colour appears. The more Sodium Hydroxide you have to add before it turns pink, the more acid the milk.





## 6. Gerber test for fat

This test is used to determine the fat content of the milk. 10.94 ml. of milk at 20 degrees Celsius is added to a butyrometer together with sulphuric acid and amyl alcohol. After centrifugation, the sample is put in a 65 degrees Celsius water bath and read after 3 minutes. The fat content from this reading should not be less than 3%.



### 4.2.3. milk payment systems

The first thing to do before setting a price for the milk is an inventory of prices and payment systems existing in the region. Check whether the milk price has to be approved by a milk board or governmental department. Milk can be priced according to:

- quantity
- composition
- hygiene
- a combination of these criteria.

When the group is just starting collection, it may be possible to confine milk screening to the visual method and pay on a volume or weight basis (see Payment Method 1 below). This has the disadvantage that milk of a better quality is not rewarded and that there is no incentive to improve milk quality. Since most payment systems are based on solid contents, it is more appropriate to measure the weight of the milk (1 litre of milk averages 1.031 kg). The yield of milk products will depend on the amount of total solids present. The greater the amount of fat and protein in milk the greater the yield of cheese, and milk with a high fat content gives more butter than milk with a low fat content.



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In the interests of equity and in order to promote quality improvement, it is desirable that a payment scheme with bonuses for quality is introduced at an early stage. You will have to make sure the cost of such a payment and

testing system is not higher than the advantages gained (see payment method 2 and 3 below).

There are many other, more complex payment systems based on protein, cell count or other parameters, but in the context of this book these will not be described. For the examples below, the following background information is used:

### payment method 1. Based on volume or weight

**Background information for examples: (@ is a money unit)**

Base milk price: 5 @/kg

Milk Producer 1 : 20 kg milk with 4.2 % fat, density 1.036

Milk Producer 2: 20 kg milk with 3.5 % fat, density 1.032

Milk Producer 3: 20 kg milk with 2.8 % fat, density 1.028

This is the simplest method and it is easy to calculate. You can use a weighing machine or a spring balance. Be aware that a spring balance easily gives inaccurate readings and you might have to adjust the balance frequently.

#### example method 1:

Producer No.	Kg milk	@/kg	Total price
1	20	5	100
2	20	5	100
3	20	5	100
<b>Total</b>	<b>60</b>		<b>300</b>

@ is a money unit we use in this book

#### advantages of method 1:

- ▶ simple to calculate the milk price
- ▶ no expensive testing equipment is needed

#### disadvantages of method 1:

- ▶ has no incentive to improve quality of milk.



*"If you don't have special measuring instruments, you can use the dipstick method to measure the volume e.g. in a standard 40 litre can.*

*To make a dipstick, put a stick in the standard can and pour exactly half a litre of water into it. Mark the dipstick at the water level with a knife or waterproof marker and repeat this procedure until the can is full. Write the numbers at each mark (e.g. 0.5, 1, 1.5 etc) and your dipstick is ready! Make sure you always use the same can each time you use your dipstick, because the same stick cannot be used for measuring the content of other types of containers.*



To make this method more sophisticated, you can refuse any milk below a certain density to deter milk producers from adding water to it. You can also think of a penalty for low fat (see below):

#### Penalty for low fat

You could introduce a penalty for milk delivered with a fat percentage below 3.0 %, for example with a 2.8 % fat content:

Penalty below 3.0 % fat =  $-2.0 @ \times (3.0 - \text{fat } \%) \times \text{kg milk}$

The milk producer number 3 will now get less money for his / her milk:

His / her penalty will be:  $-2.0 @ \times (3.0 - 2.8) \times 20 \text{ kg} = -8.0 @$

Price =  $20 \text{ kg milk} \times 5 @ = 100 @ - \text{penalty} = 100 - 8 = 92 @$

#### payment method 2. Based on fat amount

This payment method is based on the amount of fat a producer delivers. In this example we use the amount of fat (in kg) rather than fat percentage, because this will discourage farmers from adding water. If you use fat percentages, this means that a farmer would get more money if he or she adds water to the milk. For example:

To prevent this from happening, it is better to use a payment system based on kilograms of fat. For example:

Milk price for 3.2% fat is 5.0 @ per kg

Milk price for 4.0 % fat is 5.2 @ per kg

A farmer with 20 kg milk with 4% fat (total amount of fat is 0.8 kg) will get  $(20 \times 5.2 @ =) 104 @$ . If this farmer adds 5 kg of water to his milk, his fat percentage will go down to 3.2 % (0.8 kg fat/25 kg), but he will get more money for his milk despite the lower price per kg  $(25 \times 5.0 @ =) 125 @ !!!$

### example method 2:

Milk price is 142.90 @ per kg of fat

Producer No.	Kg milk	fat %	total kg fat	Total price
1	20	4.2	0.84	120
2	20	3.5	0.70	100
3	20	2.8	0.56	80
<b>Total</b>	<b>60</b>			<b>300</b>

@ is a money unit we use in this book

### advantages of method 2:

- ▶ fairly simple to calculate the milk price
- ▶ no benefits for milk producers adding water to the milk

### disadvantages of method 2:

- ▶ you will need to buy fat testing equipment

### payment method 3. fat and solids non fat (SNF)

This method is based on the fat and SNF content of milk. The yield of milk products will depend on the amount of total solids (TS) present. The greater the amount of fat and protein in milk the greater the yield of cheese, and milk with a high fat content gives more butter than milk with a low fat content.

### calculation of TS and SNF

Total Solids can be estimated from the corrected lactometer reading (L).

$$TS = \frac{(L-1) \times 1000}{4} + (1.22 \times \text{fat \%}) + 0.72$$

Once you have the TS, you can estimate SNF as follows:

$$SNF = TS - \text{fat \%}$$

### example of SNF calculations:

Producer No.	fat %	density	TS %	SNF %
1	4.2	1.036	14.84	10.64
2	3.5	1.032	12.99	9.49
3	2.8	1.028	11.14	8.34

### payment system

The payment system is based on a price for fat and a price for SNF. The price of the milk can be calculated according to the formula:

$$\text{milk price} = \text{litres of milk} \times \left\{ \frac{(\text{fat \%} \times \text{fat price})}{100} + \frac{(\text{SNF \%} \times \text{SNF price})}{100} \right\}$$

### example method 3:

Milk price for fat is 50.9 @ and for SNF is 33.9 @ per kg.

Producer No.	Kg milk	fat %	SNF %	Total price
1	20	4.2	10.64	114.9
2	20	3.5	9.49	100.0
3	20	2.8	8.34	85.1
<b>Total</b>	<b>60</b>			<b>300.0</b>

@ is a money unit we use in this book

### advantages of method 3:

- ▶ provides an incentive to increase fat and SNF

### disadvantages of method 3:

- ▶ complicated to calculate the milk price
- ▶ you will need to buy fat testing equipment and a density meter

*"An example from India of a milk payment system is the following: The payment system is based on fat and SNF, which is called the "two-axis basis" (see method 3 above).*

*The price of SNF is 2/3 of the price of fat: The fat price is 40 Rupees per kg and the price for SNF (2/3 x 40) is 26.7 Rupees per kilogram.  
Milk in India is often processed into Ghee (see page 48)"*



### frequency of milk payments to members

Frequency of milk payments can be daily, weekly, once every two weeks or on a monthly basis. Where the milk price is based on average composition for a period of two weeks or monthly averages, the interval between payments is normally two weeks (4 to 6 weeks after first delivery). Intervals longer than 6 weeks should be

avoided. On the other hand, daily payment for very small quantities of milk increases administration work and raises costs.

### **seasonal variations in price**

In all countries, whether in temperate or tropical zones, there are strong seasonal variations in the milk volume produced and often there are two prices for milk; low and high seasonal prices.

### **how to calculate the base producer milk price?**

You will first have to calculate all the costs for the group. Consider the following:

- milk transport costs (including vehicle insurance, drivers' wages, petrol, etc)
- milk collection costs
- milk testing costs
- milk preservation costs
- milk processing costs
- milk marketing costs
- stationary, rent of buildings, salaries etc.
- costs of electricity and water
- costs of other activities of the milk producer group (for example dairy support services, see below).

From these data you will have to determine the market price for milk or milk products. If all the milk goes to the factory and quantities are substantial, you may be able to negotiate the price. If the group wishes to sell the milk themselves you will have to know the market price of milk in the area, and decide on the price at which you want to sell the milk. You may already have some information on milk prices from the participatory dairy survey (see step 2 of section 2.1: forming groups step by step). You will have to increase the milk price if you want to establish a fund for the group or if you want to make a profit. More information can be found in the description of the feasibility study in section 4.4.

### **cost of dairy support services**

You should think of how to pay for the dairy support services the group is going to introduce. You could for example start a 'dairy development fund' whereby you lower the milk price by 10% for

milk producers. These funds can then be used for training, to buy animal feed, to set up an artificial insemination service or any other dairy support service.

### 4.3. milk processing



→ *ILRI Rural Dairy Technology Manual, page 82*

Milk processing converts liquid milk into dairy products like pasteurised liquid milk, yoghurt, butter, cheese, ghee and so on. Reasons for processing are:

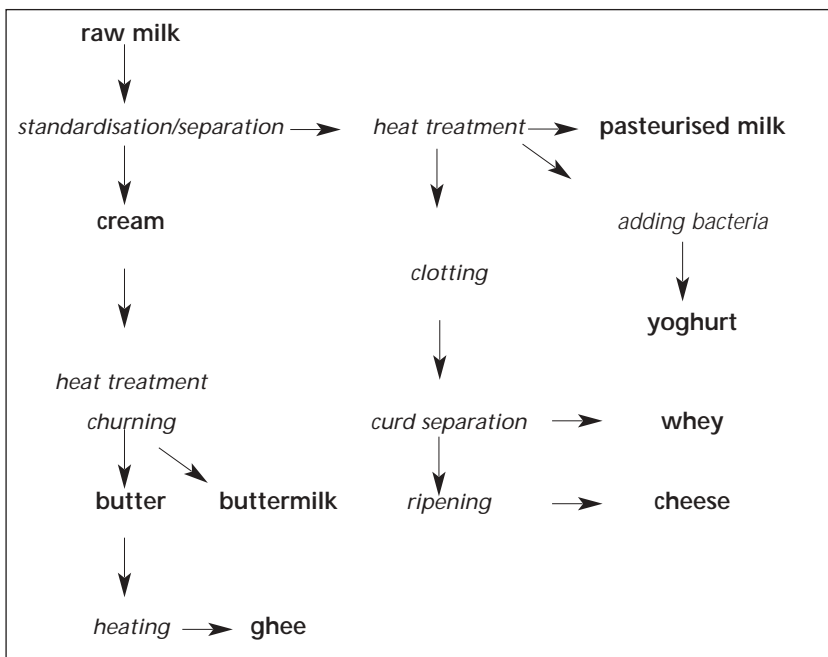
- processed products attract a higher price;
- **increased keeping time** of the product;
- **more distant markets** can be accessed;
- processed products are generally **easier to transport** (lighter/less bulky);
- **increased quality and hygienic safety**;
- **more flexibility in satisfying consumer demands**, (make more or less liquid milk, more cheese, etc.);
- **it creates employment**.

Small-scale processors can produce a wide range of dairy products. In deciding which dairy products the group is going to make, it is best to carry out a detailed market/feasibility study (see section 4.4). Milk products can be processed as illustrated in figure 4.

#### **pasteurised milk**

Pasteurisation is the most commonly used heat treatment for milk. Before processing, the milk should preferably be tested for bacterial quality. You then filter the milk to remove particles. Pasteurisation is the process of heating milk just enough to kill harmful micro-organisms without destroying flavour and nutritional qualities. Milk is heated to either 63-65°C for 20-30 minutes or 72-75°C for 15-30 seconds. The simplest equipment required is an open boiling pan over a fire. A steam jacketed pan (or pressure cooker) would improve the heating process and can be fitted with a stirrer to improve the efficiency of heating. Pasteurised milk has a shelf life of 2-3 days, and up to 12 days if kept at 4°C.

**figure 4: milk processing options**



**STANDARDISATION:** making milk with constant butterfat through partial skimming.

**HEAT TREATMENT:** destroying any potential pathogenic germs by heating to a minimum of 63°C for 30 minutes.

**CLOTTING:** changing from liquid to (semi-) solid by adding starters and rennet;

**CURD SEPARATION:** after coagulation the milk is separated into whey and cheese curd;

**RIPENING:** cheese texture becomes homogeneous and develops aroma;

**CHURNING:** cream is churned to produce a semi-solid product that becomes butter;

### **cream**

When milk is left to stand for some time, fat globules rise to the surface forming a layer of fat (or cream). This can be separated leaving behind skimmed milk as a by-product. There are different types of cream each with different fat concentrations: single (or light) cream contains 18 per cent milk fat whereas double (or heavy) cream normally contains 48 per cent milk fat. Cream is a luxury item and may be used in coffee, as a filling in cakes, or as an ingredient in ice cream. Separation can be very simply achieved by removing the cream with a spoon, but this is a slow process during which the cream may spoil. For this reason it is more usual to use a manual or powered centrifuge separator.



### **butter**

Butter is a semi-solid mass, which contains approximately 80-85 per cent milk-fat, 15-16 percent water and 2 percent solid-non-fat. It is yellow/white in colour, with a bland flavour and a slightly salty taste. Butter is a valuable product that has a high demand for domestic use in some countries and as an ingredient in other food processing (e.g. for confectionery and bakery uses).

### **ghee**

Ghee is almost entirely butterfat and contains practically no water or SNF. Milk or cream is churned and then the water is evaporated at a constant rate of boiling. Ghee is a more convenient product than butter in the tropics because it keeps better under warm conditions. It has low moisture and SNF contents, which inhibits bacterial growth.

### **fermented milk**

In various countries, milk is fermented with a mixture of bacteria (and sometimes yeast). The acidity (and alcohol) prevents the growth of micro-organisms, and the fermentation preserves the milk for a time. As an example, yoghurt is produced by adding a mixed culture of *Lactobacillus bulgaricus* and *Streptococcus thermophilus* (in a ratio of 1:1), to convert lactose (milk sugar) to lactic acid. Milk is normally heated to 70°C for 15-20 minutes, using an open boiling pan, or a steam jacketed pan. The milk is cooled to 30-40°C and then the culture is added. The product is left at a temperature of 32-47°C for approximately five hours for the fermentation process to be completed, and then immediately cooled to 4°C.

### **cheese**

Cheese is made from milk by the combined action of lactic acid bacteria and the enzyme rennin (known as rennet). Cheese is a concentrated form of milk-fat and milk-protein. Hard cheeses have most of the whey drained out and are pressed. Soft cheeses contain some of the whey and are not pressed. In making cheese, pasteurised milk is heated in an aluminium or stainless steel vessel, then starter-culture is added at the rate of approximately 2 per cent of the weight of milk. Rennet is added to facilitate curd forming and should be added at the rate of 1 per cent of the weight of



milk. The milk is allowed to stand until it sets to a firm curd. The curd is cut into cubes to separate the whey from the curd. The curd is then cooked at 40°C for a period of twenty minutes to firm it. After cooling, the whey is drained off. The curd is pressed to ensure that most of the whey has been removed, and is then placed in cheese-moulds, and finally pressed with weights. Next, ripening allows the development of texture and flavour. Ripening usually takes place in ripening rooms, where the temperature and humidity are controlled for the optimum development of the cheese. There are many types of cheese, often specific to particular areas of the world.

### **selecting a processing site**

When selecting a site for a processing centre, you should consider the same things that were mentioned for selecting a site for a collection centre (section 4.1): reliable supply of clean water (on average 5 litres of water are used when producing one litre of processed milk); close to the road; good drainage; accessible, close to other buildings, easy to construct a building, no dust, electricity supply. In addition, a site for a processing centre should preferably be close to a market to reduce transport costs; the site should be cool and well ventilated. The collection centre can also be used as a processing centre.

### **cleaning milk processing plants**

When selecting a site for a processing centre, you have to consider the following points. It is best if the floor is a hard washable surface and there is water and electricity available. Walls should be smooth and washable, windows should have mosquito proof netting and doors must be self-shutting.

All equipment you use for liquid milk must be cleaned immediately after use and at least once a day. Equipment you use for butter and cheese must be cleaned as required and not less than once a week. Rinse with hot water first (40-80°C), then wash with a detergent until the surfaces are clean, and rinse again with potable water to remove the detergent. To disinfect the equipment you can use hot water (80°C), steam, or detergents/disinfectants (water temperature 45-60°C).

## 4.4. milk and milk product marketing

In order to generate more income from milk production, the group can decide to market the products themselves, as it is easier to access markets as a group. Knowledge of the markets is essential if you want to make profit, and you should gather as much information as possible.

### **feasibility Study**

Before deciding which products to make, you need to know whether there is a market for the products and whether or not they are likely to make money for the group. It can be harmful for the group, if a product is chosen that does not make any profit. To know whether there is a market, you need to do a feasibility study. You will be able to use some information from the participatory survey (see 2.1, forming groups step by step).

Choose a product that seems to offer the most potential for meeting consumer demands. Please note that the feasibility study will usually take at least a month, but the information collected will be essential for choosing the activities. It will help you avoid investing money, time and energy in an activity that will not make any profit. These are the steps to take:



### **STEP 1. STUDY THE POTENTIAL CUSTOMERS WHO BUY THE PRODUCT**

You first need to know the customers. Finding out what the consumer wants is the key to successful marketing as well as the key building block for a successful milk producer group. You need to be able to answer the following questions:

- ▶ Who are the customers?
  - Men, women, children?
  - What is their age, education?
- ▶ What (new) products do they want?
- ▶ Where do they live?
- ▶ How much can they afford to pay?
- ▶ When do they need the product?
  - Are there any seasonal consumption changes?
  - Do people need more/other products at the weekend?

- ▶ What do they expect from the product?
  - Does it have to be attractively packed?
  - Does it need to be the best quality?
  - Does it have to be the cheapest?
- ▶ What are the expected changes in the market?



## STEP 2. STUDY THE COMPETITION

Secondly, you need to know who is competing with the group for the same customers. You need to be able to answer the questions below:

- ▶ Who are the competitors?
- ▶ What products do they sell?
- ▶ What type of packaging do they use?
- ▶ How many of their products are sold?
- ▶ Where do they sell their products?
- ▶ Who are their customers?
- ▶ Are the customers satisfied with the products, do they want to change products?
- ▶ What price do they ask?
- ▶ What conditions of payment do they offer (cash or credit)?
- ▶ When do they sell?



Some of the information may be available in reports and official statistics, but other information will have to be gathered by talking to or watching customers, sellers and producers. See also section 6.4 on “semi-structured interviewing”.



### STEP 3. DETERMINE WHAT IS REQUIRED

The next step is to determine what is required to make the product. You have to consider all the costs involved, the labour and financial resources needed, materials and equipment, skills (is training needed?), time, buildings or land (does the group want to start a shop?), transport, licenses, is other support needed? Make a list of **all** the requirements; it is easy to forget things! Then you need to know where these things come from, and make an estimate of all the costs involved.



### STEP 4. ANALYSE ALL THE INFORMATION

When all the information is gathered, it must be analysed. Before making a decision, you have to consider the following opportunities for competing with other products already in the market. Can the group have:

- ▶ lower prices?
- ▶ lower production costs?
- ▶ better quality?
- ▶ a wider product range?
- ▶ more attractive packaging?
- ▶ a product that is not yet available?
- ▶ better promotion?
- ▶ improved availability to customers (e.g. more shops, always in stock)?
- ▶ consumer trust and loyalty so they always buy products from the group?

Normally a combination of these methods will be used in order to compete effectively.



### STEP 5. MAKE A DECISION!

Once you have considered all aspects of the previous steps, you have to make a last but crucial assessment before deciding to go ahead. You have to discuss the risks involved with all members, and you need to make sure you can make a profit on each product.



## chapter 5. other group activities



*Chapters two and three have given us insights into how to form and develop a milk producer group. In chapter four we started describing group activities with more information on milk collection, processing and marketing. In this chapter we continue describing other possible group activities: input supply (5.1), financial (5.2), information and advice services (5.3), animal breeding (5.4), animal health (5.5) and other possible activities (5.6). Participatory tools are dealt with in chapter six.*

### 5.1. input supply services

Reducing the cost of milk production is an important way of increasing the income of milk producers. The bulk purchase of inputs can reduce the cost considerably. Some inputs that could be purchased through the group are:

- animal feed (concentrates, etc)
- (grass) seeds
- fertilisers
- veterinary drugs and medicines
- farm equipment like barbed wire, etc.
- cleaning agents (to be used at farm level)
- standard milk cans.

Confidence will be built in the group if all members are participating in purchasing inputs. It creates an atmosphere of co-operation, which has social and economic advantages. Sharing experiences will be easier and members are more likely to use other services offered by the group. Individual supplies of inputs can be subtracted from the milk bill or purchased on credit. More information is given below, as an example on the provision of animal feed.

#### **animal feed**

The cost for animal feed can be as much as 70% of the cost of milk production and the lack of good quality feed is often a major constraint on milk production. This is an area where the milk producer group can assist members, but remember that feed can be cost-

ly. Feeding programmes should be based on optimum rather than maximum yields. The group can provide low cost balanced feeds together with technical information on the use of feed. These feeds can be:

- ▶ balanced concentrate feed for calf rearing and milk production;
- ▶ suitable varieties of forage and legumes for the climate;
- ▶ supplementary feed like molasses, urea, mineral blocks, molasses-urea -blocks.

Many milk producer groups also set up feed mills, purchase grains from suppliers, and sell concentrates to members.

## 5.2. financial services

The focus in this section will be on savings rather than credit, because it is better for the sustainability of the group to build up their own funds first. With regular milk payments, it is relatively easy to build up some savings by deducting a certain amount of the milk price (see also 'cost of dairy support services', page 46). Below you will find an introduction to informal saving activities, an informal loan system within the group, group credit with formal financial institutions, and a group insurance scheme. The conditions for all forms of savings, credit and insurance must be specified in the constitution of the group (see section 2.1: forming groups step by step).

### **group savings**

Group saving should be the starting point for group development. Savings (as compared to outside credit) promote the long-term group sustainability, because group savings:

- ▶ increase resources for potential group or individual activities;
- ▶ reduce dependency on outsiders;
- ▶ serve as a form of "insurance against risk";
- ▶ improve a sense of group ownership;
- ▶ promote group repayment discipline;
- ▶ facilitate access to outside loans (banks are more willing to give loans to groups that save);

- ▶ can lower the costs of banking;
- ▶ can be used to give bigger loans to members of the group;
- ▶ can be used as emergency loans to members in times of need.

There are many ways to save. Here are some options for groups:



1. **Cash contributions:** Every member brings to a group meeting an equal amount of cash that is added to the group savings fund. Milk producer groups can deduct a certain amount of money from their milk payments into the group saving fund.
2. **Saving in-kind:** Instead of cash other things are saved, for example grain, and sold by the group.
3. **Rotating savings:** Everyone brings an equal amount of grain, cash or something else in kind to a meeting that is given to one of the group members who will be able to use the savings for small investments. At a next meeting, another member receives the money or savings in-kind.

### **lending of group savings**

Once the group saving fund becomes large enough, the group may decide to lend part of their funds to individual members to help them meet their short-term emergency credit needs. These loans should be small and should be repaid in a short time, (e.g. in one to two months) so that other members can also use the fund. The criteria for a proposal should be clearly defined and could include for example, a specific minimum training or a 6 month membership period with the group.



### credit with formal institutions

The advantages of getting group credit from formal institutions are:

- ▶ a group can get more credit;
- ▶ members can assist each other in preparing loan applications;
- ▶ a group is in a better position to discuss credit with the organization or bank;
- ▶ the group can provide evidence of profitability of milk production in the area;

Group loans are usually granted with **group liability**. This means that each member is individually responsible for repaying his or her part of the group loan. If any member fails to repay his or her part, the other group members must repay it. This rule ensures that all group members repay their part of the loan - otherwise, the group will not be able to borrow from the bank again.

You should carefully assess hidden dangers and risks associated with taking loans from certain people: for example, some politicians may lend money to influence voting at election time.

### insurance schemes



→ *FAO, Livestock insurance in Asia, page 83*

Insurance programmes could be an important activity of the group, because group members might not be able to afford the risk of losing expensive animals. Milk producer groups in many countries arrange insurance schemes for members through established insurance companies, but it is also possible to start this as a group activity. The insurance policy should be well documented in the constitution. You will need help from outside to make a proper policy; here we will only mention a few important items in relation to insurances.

Before starting an insurance scheme, a proper survey should be carried out to determine the major dangers, diseases, mortality rates, etc. of the dairy cattle. You could charge a certain percentage per year of the cost of each animal. Setting such a percentage is difficult, because the insurance scheme should not be a loss making activity. Somebody independent, like a government veterinarian will have to assess the cost of the animal. This will be based on

age, health, lactation and vaccination record, etc. Identification of animals is important in relation to insurance schemes.

A post-mortem examination report, death certificate (issued by a qualified veterinarian or perhaps by two named village officials) and ear tag where applicable, should be a requirement for payment of claims. Special arrangements should be made for death due to diseases against which the animal could have been vaccinated, floods, famine, earthquakes, theft, intentional slaughter, disability and poor productivity. In some cases full repayment may not be appropriate.

### 5.3. information and advice services

Group members who have learned more about the activities in which they are involved will often develop greater confidence and self-esteem. They will carry out the activities better, and this will improve the quality of the group and the products. Giving the right information and advice at the right time is therefore important for the success of the group. Information and advice services, including training courses, video presentations and learning tours, are described below.

#### training courses

Every time you organize training you will have to think through the following questions:

- What is the objective of the training course?
- What will be the subject of the training in detail?
- Who will be attending the training?
- Who will give the training?
- Where will the training be organized?
- In what form is the training going to be organized?

Before starting any training you have to know the group needs for information or skills. It is important to take into account the needs of all the group members. In order to find this out, you could do a SWOT analysis with all group members (see section 6.7).



→ *SWOT Analysis, page 77*

It is important to think through the objectives of the training. In other words you have to ask yourself the question: what will change after the training? For example an overall objective of any training programme could be: "to increase the members' potential to participate effectively in the organization and management of the group". A more specific objective could be: "to make the participants familiar with simple milk record keeping methods".

Special training can be given to the leaders of the group. Leaders should develop their skills and knowledge to be able to manage the group properly. Since most of the group decisions are made in meetings, special attention can be given to how they are conducted. Many organizations overlook the importance of planning and preparation in the effective use of meetings. Below is a list of possible subjects for training:

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**TECHNICAL DAIRY TRAINING**

1. milk collection (see section 4.1)
2. milk processing (see section 4.3)
  - hygiene in milk processing;
  - production of specific products;
3. animal feeding (see section 5.1)
  - cultivation of appropriate legume and grass seeds;
  - use of crop residues;
  - 'winter' feeding (e.g. small-scale silage making);
  - feed formulation;
4. animal breeding (see section 5.4)
5. animal health care (see section 5.5)
6. keeping milk records

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**GENERAL TRAINING**

1. literacy
2. record keeping (see section 2.3)
3. communication skills
4. marketing

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**TRAINING FOR LEADERS**

1. leadership skills
2. management training
3. how to conduct meetings (see section 2.4)

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- developing agendas;
  - encouragement of participants;
  - arriving at decisions;
  - reporting and follow up;
4. conflict resolution (see section 3.3).

### **who will be attending the training?**

You have to think through carefully who will participate in the training. If most people are illiterate for example, and you want to organize a training for all members on record keeping, you will have to make sure the record keeping methods are suitable for illiterate people. Make sure the training is organized in such a way that women can also attend.

### **what will be the source of information?**

You should first look within the group to see whether there is anybody who is capable of facilitating or providing training. If the group does not have such people, you will have to look at outsider advisors. If you have done a 'dairy institutional diagram' (see section 6.3), this might give you some ideas about which other organizations you could approach. Information sources could be extension agents, other dairy projects, government institutions, books, videos, CD-ROMs, websites, etc.

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### **in what form is the training going to be organized?**

Adults learn best when everybody is actively involved and there is a chance to share experiences with others. There must therefore be an emphasis on a participatory approach to training. You will have to limit formal lectures and organize learning tours or video discussions, for example.

#### **flip-chart**

A flip chart is a stand with large sheets of white paper to write on. It is particularly



useful to focus the attention of the participants on a specific subject, to note ideas from participants during a brainstorming session (see brainstorming and ranking, section 6.5) or for example to write the agenda of a meeting.

### video presentation

Decide on which video you are going to show: the video should be interesting, relevant to the group, and fun!

- ▶ Find an **appropriate venue**. The venue has to be close to the members and have easy access. If there is no electricity, you will need a generator. If you want to show a video during the day, make sure the room can be made dark.
- ▶ Before you start, **try out everything** and make sure somebody is capable of solving a problem when something goes wrong.
- ▶ **Arrange the room and the seats**: make sure everybody can see the video (don't forget the children and people with poor eyesight) and that everybody is comfortable.
- ▶ **Provide a short introduction** on the objectives of the session and the topic of the video. Beforehand explain things that you think might be difficult to understand (alternatively, you can stop the video during a difficult passage and explain).
- ▶ **Ask questions to stimulate the discussion** when the video is over. Check with the members what they thought was interesting and what they have learned. You can also ask whether something should be done differently in the future.
- ▶ You could now proceed with **some group work** on the topic, or continue with another activity.



*"The Community Livestock and Dairy Development project in Bangladesh uses for its training the so-called DEMO system (Demonstration-Mobile, also used in many other countries). DEMO trainers are equipped with a basic portable set of audio-visual equipment. This includes a television, video recorder (or combined television/Video-recorder), audio recorder, digital video camera, a portable flip chart, and is packed in robust containers for easy transport.*

*In this way, the DEMO trainers can go to the villages and provide training with the assistance of audio-visual material. With the digital video camera, the trainers can make their own training videos. These videos can address specific local training needs, which will be easy to understand for milk producers, since their own language is used and the setting is familiar."*

## learning tours

Learning tours are activities where group members go and visit a place of interest. It allows informal learning, and facilitates discussion. Members learn most if they see people doing the same things as themselves. Visits could be made to farms, other milk producer groups, dairy enterprises, and markets. Try not only to look for success stories as a lot can be learned from things that went wrong.

- select a topic, host institutions and resource persons and visit them;
- visit the place beforehand and make sure the hosts are ready to provide the necessary information, that they understand why you are coming and that the group members can actually learn something;
- ask the participating members for some kind of contribution. Willingness to share the cost from their own funds or from other sources can be a measure of the members' commitment to learn;
- select committed members based on clear criteria, and try to get a balanced mix of participants (i.e. leaders/normal members, men/women, young/old, etc.);
- make a budget;
- make a plan for evaluation and follow-up activities;
- brief the participants on the field visits;
- arrange logistics and co-ordination;
- maintain a flexible schedule, because there will always be changes;
- organize discussion sessions, and finalise with action plans;
- obtain ideas for improving the tour;
- present the lessons learnt to other group members;
- make sure there is some money for follow-up activities.



## 5.4. animal breeding services

Genetic potential for milk production is very important in dairy animals. Upgrading of the animals is achieved through selection within local breeds, or the introduction of exotic genes mainly through cross breeding based on artificial insemination. It is essential to have appropriate levels of husbandry and health care before introducing high yielding animals. Breed improvement programmes can be based on natural service or on artificial insemination.

### **natural breeding**

Milk producer groups could maintain breeding bulls, and a fee could be charged for every service, which provides additional income for the group. The health status of bulls must be carefully monitored to avoid spread of diseases.

### **artificial insemination (AI)**

The establishment of an artificial insemination service requires the frequent supply of frozen semen straws and liquid nitrogen. For a small milk producer group, the investment in time and money to initiate these facilities themselves often exceeds the capabilities of the group. The group can either join an existing AI service that is carried out by the government or other organizations in the neighbourhood, or find a reliable supply of liquid nitrogen and semen. Training in heat detection is an important factor in the success of AI schemes and this aspect is frequently overlooked. The fee the group charges for the services should at least meet the total cost.

## 5.5. animal health care services



→ *FAO, A manual for the primary animal health care worker, page 83*

Well-organized animal health care services should be provided for the milk animals on the farm. If this is one of the group activities, it is best to collaborate with the government and other organizations offering animal health care services. A good quality animal health care service avoids losses of valuable dairy animals and provides a sense of security to the milk producers concerning their animals. Ideally, animal health services should include:

- ▶ organization of regular visits to members for routine and emergency services;

- ▶ supply of all necessary veterinary drugs;
- ▶ a central diagnostic laboratory for disease diagnosis;
- ▶ preventive vaccination of the dairy animals within the area.



A group has easier access to outside veterinary services. If the availability of veterinarians is a problem in the area, you could decide to train some selected group members as village animal health care workers. This can supplement the veterinary services already offered. These training programmes could be very valuable to the milk production in the area, especially in offering simple services such as de-worming and vaccinating. We will not go into detail on such a programme here, but there are some excellent booklets written on this subject (see information sources at the end of the book).

If there is no access to a cheap and good quality veterinary drug supply, the group could decide to offer these services to its members.



## 5.6. other activities

Below is a list of other possible activities for the milk producer group:

### **influencing policy**

A group has greater standing than an individual milk producer. The group can try and influence policy and management of a milk factory or government institutions. This will often be on matters like the milk price, the cost of credit or the inadequate provision of services.

### **sharing labour**

When agriculture or other activities require extensive labour, the group can come together and share their labour to assist with these activities.

### **security**

A group could pay a guard to watch the animals or equipment or share guard duties.

### **other**

- ▶ Management of common grazing land;
- ▶ bio-digesters.

We are sure there are many other activities that can be carried out in a milk producer group, keep us updated!



## chapter 6. participatory tools



*In this chapter we briefly explain what the term participation means in the context of this book, and then give some participatory tools that can be used to enhance participation. Most of these techniques are useful and informative and are considered from the perspective of an outside advisor, but they can also be used by a group to reflect on their own situation and when deciding on how to improve.*



→ *participatory learning and action handbook, page 83*

→ *FAO participation website, page 83*

### 6.1. what is participation?

If you are an outside advisor to a group, it is important to understand that when group members are empowered to make their own decisions, the group you are dealing with will be a more successful and effective group. You can assist a group not by telling them what to do, but by helping them to decide for themselves what they should do and giving guidance on the way. You can help the group to discuss their problems and find solutions together.

If you are one of the group members, it is very important to try and involve every member in the group activities and decision making. If you are doing this, group members will feel more ownership of the group and your group will be more effective and sustainable.

Participatory tools are used to increase participation of all group members, whether they are illiterate, young, old, men or women. The tools use mapping and other visualisation techniques that make everybody understand what the discussion is about. They are useful in gathering background information, in analysing the situation of the group and in improving ownership of the group.

When using the tools, ask open questions like “Which products would you like to produce?” rather than “You want to produce cheese, don’t you?” It is important that the members come up with the answers. Group members should analyse the problem and find the solutions themselves, only then will they really carry out the plan of activities. You can of course give guidance on the way, but the group members should decide for themselves what they are going to do.

## 6.2. milk production map

A milk production map is a map of the area, indicating all items of interest to the group. A milk production map can be used as a starting point for discussion on, for example where the milk collection centre should be. The map will provide an overview of all items to consider and will facilitate decision making.

**Objective:** to facilitate the drawing of a map by group members which shows items of interest to milk production in the area of the milk producer group, to identify opportunities for co-operation and facilitate discussion about these opportunities.

**When to use:** when starting a new group or analysing an existing group.

**No. of members:** groups of 3 - 10 members.

**Materials:** naturally occurring materials , large sheets of paper and pens.

**Time needed:** about 45 - 75 minutes.

### How to proceed

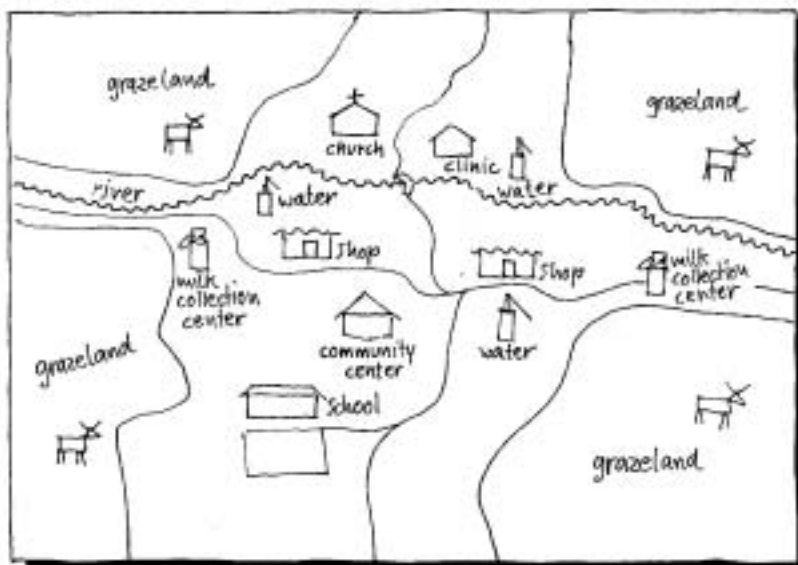
First, you have to decide what the object of the exercise is, e.g. finding a central place for the milk collection centre. The members then have to make a list of items to include. These might be roads, the homesteads of milk producers, markets, etc. You can include many things in a milk production map, depending on what you want to know and analyse, e.g.:

- ▶ households of group members or all producers in the area;
- ▶ milk collection points and collection routes;
- ▶ milk processing units, factories, etc.;
- ▶ possible marketing sites and points;
- ▶ water points;
- ▶ number of dairy animals owned by each milk producer;
- ▶ amount of milk produced/delivered to the collection point;

- ▶ home of veterinarians, traditional healers, etc.;
- ▶ grazing land or animal grazing routes.

If necessary, divide the members into groups to produce a map-model of the area. You can make a map on the ground or on paper; the advantages of using the ground and natural materials (e.g. stones), is that it can easily be adjusted when necessary.

Once the map is finished, you can ask the group to transfer the map onto paper, copying what they see on the ground. You can then ask the group questions and initiate discussion, e.g. on where the collection centre should be.



### 6.3. dairy institutional diagram

The area covered by each milk producer group contains other organizations with similar or complementary activities. These organizations might be willing to work together or they might compete because of conflicting interests. A dairy institutional diagram can help to get a clear picture of which other organizations are active in the same area. The diagram will assist in deciding the activities of the group and in choosing the organizations to approach for possible co-operation. Below are the steps needed to make a dairy institutional diagram. These give you an idea about how to proceed, but you can adjust the steps according to your needs.



**Objective:** to facilitate the drawing of a diagram by group members which represents the organizations working in the area of the milk producer group; to identify the relationships between them, opportunities for co-operation and to facilitate discussion about these opportunities.

**When to use:** when starting a new group or analysing an existing one.

**No. of members:** maximum 8 members, if there are more, you have to split into groups.

**Materials:** coloured paper (A1 size) or a flip chart, markers in different colours, tape.

**Time needed:** approximately 60 minutes.

### **How to proceed:**

#### **STEP 1. DEFINE THE BASIC QUESTION (10 MINUTES)**



At the outset, and with all members present, it is important to define the basic question: what exactly do you want to analyse? The steps below all depend on this, so it is important to decide on your basic question in detail. You should decide on the type of organizations to be included, the geographical area of analysis and the sphere of activities. Once the basic question has been decided, you can write it on a big piece of paper.

Below are examples of possible objectives and related basic questions:

- ▶ To find out which organization could help to provide livestock support services to the group: *"What other organizations working in livestock development exist in the region that can provide livestock support services and what are the relationships between them and my group?"*
- ▶ To find out in general what the links are with other organizations: *"What organizations exist in the region and what are the links between them and my milk producer group?"*
- ▶ To improve communication within the group: *"Who are the members of my group, who is communicating with whom, and in what way are they communicating?"*
- ▶ To find out which milk producer groups could form a milk producer group association: *"What other milk producer groups exist in the region, what are their activities and what are the relationships between them?"*



## **STEP 2. DEFINE THE TYPE OF RELATIONSHIPS TO ANALYSE (10 MINUTES)**

Decide on the type of relationships, these could be:

- ▶ Financial, who finances who?
- ▶ Co-operation, who co-operates with whom?
- ▶ Hierarchical, for example who gives orders to whom?
- ▶ Operational, who provides inputs / services to whom?
- ▶ Communication, who is communicating with whom?



## **STEP 3. DRAW THE DIAGRAM (20 MINUTES)**

- ▶ Decide how to symbolize all the different types of organizations (e.g. circles for village groups, squares for government organizations).
- ▶ Decide how to show the relationships between the organizations (e.g. blue lines for financial co-operation, red lines for operational relationships).
- ▶ Decide how to represent the quality and /or intensity of the rela-

tionships (e.g. thick lines for very good communication, broken lines for poor communication).

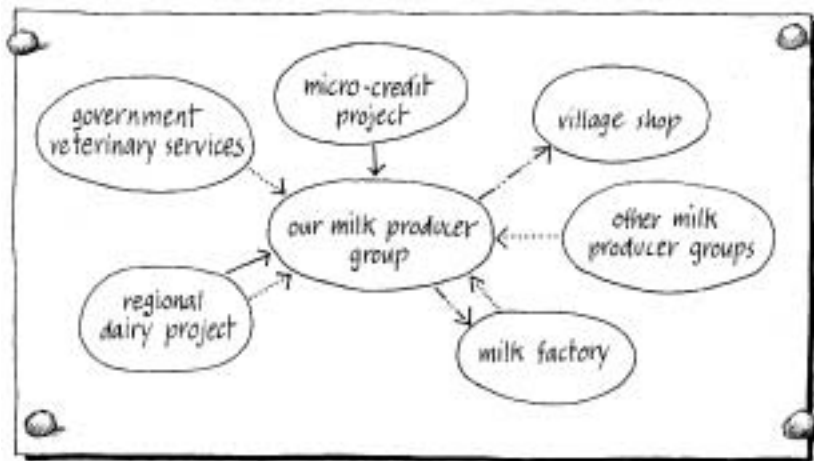
- ▶ Make a list of the organizations and type of relationships, keeping in mind the basic question.
- ▶ Members can now draw the diagram.

#### STEP 4. ANALYSE THE DIAGRAM (20 MINUTES)

When the drawing is finished, it is important to take time with all group members present to analyse what has been drawn. You can ask the questions: "what do we see?" and "what can we learn from it?" It is important to let the members speak and let the members analyse the diagram. After a while you can go back to the basic question and see whether the group members can make suggestions about answering the basic question. Figure 5 gives an example of a dairy institutional diagram.

In the example below, the links between a milk producer group that has just started and possible future collaborative partners are analysed.

**figure 5: example of dairy institutional diagram**



- > possible financial assistance
- - -> possible technical assistance
- · -> possible selling points

## 6.4. semi-structured interviewing

A semi-structured interview is an informal guided dialogue to collect information with the assistance of a checklist. The checklist might be a short list of questions, but is not a questionnaire. The checklist is only used to initiate the interview and to keep the interview flowing.

- Objective:** to collect information in an informal way.
- When to use:** when starting an activity; when wanting to find out information from others.
- No. of members:** carry out interviews with a maximum of two members.
- Materials:** paper and pen.
- Time needed:** from 10 to 60 minutes.

### How to proceed:



#### STEP 1: DEFINE THE PURPOSE OF THE INTERVIEW

First you need to define the purpose of the interview in detail and how you are going to use the information: What exactly do you want to find out? For example: “what do consumers (minimum 20) think of the milk products available in the village shop and how will this help us to make better products ourselves in the future”.



#### STEP 2: MAKE A SHORT CHECKLIST

Make a short checklist, focused on the purpose of the interview. Ask open questions (“What products do you like?”) and try to avoid leading questions (“I suppose you do not like this yoghurt?”).

For example:

- ▶ *ask which products they prefer and why*
- ▶ *ask how many of each product they buy*
- ▶ *ask what they would like to buy, but is not there currently*

Etc.





### STEP 3: CARRY OUT THE INTERVIEW

Go to where you think is the best place to interview. Take into consideration the limitations of a certain place, e.g. if you go to a shop and only women buy milk products, then you are not taking into account the view of men. Do not carry out an interview with more than two members. If you interview people that are busy, don't take too long and ask only the main questions. Always thank the people for their time.



### STEP 4: ANALYSE THE RESULTS

Look back and see what was the purpose of your interview. You have to ask yourself: Did I find out what I wanted? If not, then you have to go back and repeat or adjust the interview.

## 6.5. brainstorming and ranking

### introduction

A brainstorming session is a means of getting a list of all the ideas of all the members. Ranking is a method of prioritising items in a participatory way. You can for example perform a ranking to decide which group activities to start or which training is needed most.



- Objective:** to prioritise items in a participatory manner.
- When to use:** when deciding on a new activity; anytime you want to decide on priorities.
- No. of members:** 5 to 20 members, if there are more, you have to split into groups.
- Materials:** large sheets of paper, markers and small stickers, or stones, beans or anything else appropriate.
- Time needed:** 30 to 60 minutes (depending on number of members, number of items to rank, etc).

### **How to proceed:**



#### **STEP 1: BRAINSTORMING**

First, you have to carry out a brainstorming session. A brainstorming session is a means of getting a list of all the ideas of all the members. This could be a list of all the milk products you could produce, a list of all the activities the group could start, a list of all the different training you could organize, etc. It is important to take enough time for this, at least 20 minutes if the group is large to make sure all the ideas are listed. You will have to encourage all members to contribute. If some members are illiterate, you can make use of symbols, but you have to make sure these symbols are understood by everybody. Some members could feel reluctant to speak out, for example women in a mixed group. In this case, you should consider dividing the group into subgroups, for example according to gender.



#### **STEP 2: DEFINE CRITERIA**

Once you have done this, it is time to rank the ideas in your list. Before ranking, you have to ask the right question of the members: e.g. "which activity would you like the group to start within the next month?" or "which training do you feel is most important for you in the upcoming training course?" The criteria for ranking will be based on this question, and it is important to have the question with all the criteria (time, for whom? etc). According to this question, the members should rank the list of items.



### STEP 3: RANKING

For the ranking, you could make three columns (see below), one for the votes and one to define the order after the ranking has finished. The ranking can be carried out in several ways. You can use whatever is available such as small stickers on a big piece of paper, stones or beans on a list of items on the ground, etc. You can give each member a fixed number of stones/stickers/beans (e.g. 1 for every item) and decide on a maximum number of stones per member per item (e.g. 3) in order not to have members choosing only one activity.

**figure 6: example of a ranking matrix (possible activities):**

activity	votes	rank
milk collection	✓✓✓✓✓✓✓✓✓ (9 votes)	1
yogurt making	✓✓✓ (4 votes)	4
artificial insemination service	✓✓ (2 votes)	6
buying concentrates	✓✓✓✓✓ (5 votes)	3
starting a savings scheme	✓✓✓✓✓✓ (6 votes)	2
buying fencing material	✓✓ (2 votes)	6
starting a shop	✓✓✓ (3 votes)	5

## 6.6. group assessment checklist

Evaluation and monitoring is an important element for the success of the group. A participatory approach to evaluation will make sure all members feel ownership of the outcome of the evaluation, and will be more committed to the development of the group. The "group assessment checklist", which is described below, can assist you in evaluating the group in a participatory manner. Outside advisors can fill in this list, but group members can also assess the group for themselves. You can use this list for monitoring purposes and, for example, fill in the list every three or six months to find out whether the group is making progress.

- Objective:** to assess the status of a group and find its strong and weak points, or to monitor / evaluate progress of the group.
- When to use:** when you want to assess an existing group.
- No. of members:** as many as possible.
- Materials:** the checklist and pens.
- Time needed:** about 10 - 20 minutes.

### **How to proceed**

On the next page, you will find an example of a checklist. Please adjust this according to your own ideas, language and points of interest and add and delete items whenever you think it is necessary. If something is not clear, you should refer to other chapters in this book for an explanation. The list can be given to group members so they can analyse for themselves how their group is doing. The score can be recorded in the grey squares. You can add the scores for each topic. When the members have filled in the questions, you can have a group discussion on the outcomes of the exercise. The result will show the strong and weak points of the group.

### **Notes:**

Please adjust this checklist according to your needs, adding or changing topics as you feel appropriate;

**figure 7: example of a group assessment checklist:** (Score: 1 is lowest achievement and 4 is highest; If items are not applicable don't fill in anything)

TOPIC:	SCORE:			1	2	3	4
<b>GENERAL GROUP CHARACTERISTICS</b>							
1. group name	no name	no clear name	understood by some members	clear, but not appropriate name	well defined and appropriate	understood by all members	clear and shared by all
2. objectives of the group are	not really understood	existing but not clear	specified but not clear	not clear and not detailed	detailed, not clear to everyone	official and appropriate	detailed and clear to everyone
3. long term group vision	no vision exists	not specified	no official registration	only informally registered	some written rules exist	detailed and adequate	every 1-3 months
4. physical working area of the group	not specified	no such basis exists	no training is received	every 6-12 months	realistic but not detailed	realistic and detailed	a lot of interactions exist
5. requirements to become a member are	not specified	no plan exists	non-existent	very few interactions	some interactions		
6. official registration of the group	no official registration	no such basis exists	no regular member meetings	on average every 2 months	at least monthly	weekly & whenever needed	
7. constitution or by-laws	no such basis exists	no training is received	less than majority; under 50%	a majority: 50-70%	most members: 70-90%	almost all: over 90%	
8. members receive training	no training is received	no plan exists	not in a regular way	by leaders only	by majority vote of members	by a consensus of all members	
9. planning of activities	no plan exists	no plan exists	very few members	some members	most members	all members	
10. interactions with outside organizations	non-existent	non-existent	women do not participate	women participate sometimes	women participate often	women participate as men	
<b>PARTICIPATION OF MEMBERS</b>							
11. average frequency of member meetings	no regular member meetings	on average every 2 months					
12. number of members at meetings	less than majority; under 50%	a majority: 50-70%					
13. group decision are made	not in a regular way	by leaders only					
14. the activities of the group are done by	very few members	some members					
15. participation of women	women do not participate	women participate sometimes					
<b>LEADERSHIP AND FINANCE</b>							
16. average frequency of leader meetings	less than every month	every month					
17. tasks of leaders	not clear	some tasks are defined					
18. leaders receive training	never	seldom					
19. rotation of leaders	never	only if not performing well					
20. contribution of members to the group	none	seldom and not sufficient					
21. savings: funds built up by members	none	seldom, not sufficient					
22. financial reports	never	once a year					
23. reserve fund	no reserve fund	minor reserve funds					
24. full and prompt repayments of loans	by very few / no members	by some members					
<b>RECORD KEEPING</b>							
25. financial record keeping	no financial records	some financial records					
26. minutes of meetings	no minutes kept	some minutes & not detailed					
27. progress reports of the group	do not exist	occasionally					
28. group membership cards	no membership cards	some, not detailed					
29. list of group members	no list exists	out of date, no details					

## 6.7. SWOT analysis

### introduction

'SWOT' stands for Strengths, Weaknesses, Opportunities and Threats. A SWOT analysis helps you to find out and analyse the strong and weak points within the group. At the same time, it looks at outside opportunities and threats. When the group has listed all strengths, weaknesses, opportunities and threats, you can discuss how you can use the strengths and opportunities to tackle the weaknesses and threats.

You can use this information to develop a strategy for the group. The steps for doing a SWOT analysis are given below. These steps give you an idea about how to proceed, but you can adjust the steps according to your needs. The information from the participatory group assessment checklist can be used to define strengths and weakness (see section 6.6).

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**Objective:** to analyse the Strengths, Weaknesses, Opportunities and Threats of the group and develop a group strategy, using the strengths and opportunities to tackle the weaknesses and threats.

**When to use:** when starting a new group or developing an existing one.

**No. of members:** maximum 15 members, if there are more, you have to split the group.

**Materials:** flip chart, markers in different colours, tape.

**Time needed:** 60 - 90 minutes.

### How to proceed:

First you have to list all the strengths and weaknesses of the group, with as many group members present as possible. You can use the participatory group assessment checklist to do this, adding questions that you think are relevant for the group. Or you can use a brainstorming session, listing as many strengths and weaknesses as possible and then using the ranking exercise of section 6.5 to define which ones are more and which ones are less important. Do this for the strengths and weaknesses, as well as for the opportunities and threats. The strengths and weaknesses should focus on

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internal group factors. The opportunities and threats focus on external factors.

The list should be displayed on a whiteboard or flip chart in a table. Figure 8 gives an example of a SWOT analysis of a milk producer group.

**figure 8: example of a SWOT analysis**

<p><b>STRENGTHS</b></p> <ul style="list-style-type: none"> <li>- Knowledgeable about local issues</li> <li>- Good contacts with local community leaders</li> <li>- Good offices</li> </ul> <p><b>OPPORTUNITIES</b></p> <ul style="list-style-type: none"> <li>- Co-operation with EU funded programme</li> </ul>	<p><b>WEAKNESSES</b></p> <ul style="list-style-type: none"> <li>- Lack of skills in participatory tools</li> <li>- No computers</li> <li>- Lack of transport</li> </ul> <p><b>THREATS</b></p> <ul style="list-style-type: none"> <li>- Poor phone lines</li> <li>- Low salaries</li> </ul>
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### 6.8. collaboration matrix

A collaboration matrix can help to get a clear picture of the possible collaboration activities between organizations. The collaboration matrix exercise can be undertaken after completing a dairy institutional diagram (see section 6.3) or when you already have an idea which organizations you would like to co-operate with.

The steps for making a collaboration matrix are provided below. These give you an idea about how to proceed, but you can adjust the steps according to your needs.

**Objective:** for group members to design a collaboration matrix which will facilitate the analysis of collaborative opportunities, between the group and other organizations working in the region.

**When to use:** when starting a new group or when developing contacts with someone from an existing group.

**No. of members:** maximum 8 members, if there are more, you have to split into groups.

**Materials:** Coloured paper (A1 size) or a flip chart, markers in different colours, tape.

**Time needed:** about 1 hour.

### **How to proceed:**



#### **STEP 1. DEFINE WHICH ORGANIZATIONS TO ANALYSE (5 MINUTES)**

Decide which organizations you want to analyse in the dairy institutional diagram. You should then decide on making either a matrix between the group and one other organization or between a group of organizations. If you choose just two organizations, you can analyse the potential collaboration matrix in more depth.



#### **STEP 2. LIST THE ACTIVITIES OF EACH ORGANIZATION (15 MINUTES)**

Make the list of activities and choose only the activities relevant to the group. Group the activities according to the areas of interest, e.g.: milk related activities, financial services, livestock support services, etc. You can focus the list of activities on specific issues if you know what you want to analyse. For example, a more focused analysis could be if you are looking to collaborate with other organizations that might provide livestock support services to the group. Make sure you don't forget any activities. If you don't know exactly what another organization is doing, it is time to find out and talk to them.



#### **STEP 3. DRAW THE MATRIX (20 MINUTES)**

Decide on what you are going to complete in the cells of the matrix regarding the activities and co-operation possibilities. An example could be:

- +++ organization has activities, and members see a lot of co-operation possibilities
- ++ organization has activities, and members see some co-operation possibilities



- + organization has activities, but members see no co-operation possibilities
- organization has no activities in this field
- ? members are not sure whether organization has activities in this field



#### STEP 4. ANALYSE THE MATRIX (20 MINUTES OR MORE)

When the matrix is finished, it is important to take time with all group members present to analyse what has been drawn. You can ask the questions: "what do we see?" and "what can we learn from it?" It is important to let the members speak and let the members analyse the matrix.

When possibilities for collaboration have been defined, it is important to perform an in-depth analysis of the collaboration: what does the other organization think about collaboration with you? Will they have to spend more time, more money, is it also positive for them? A mutual benefit will form an important base for a possible co-operation. Figure 9 gives an example of a dairy institutional diagram.

**figure 9: example of collaboration matrix**

	ORGANISATION:			
	Village Shop	Ministry of Livestock	Dairy Project	Village Milk Group
<b>MILK ACTIVITIES:</b>				
Milk collection	—	—	—	X X X
Milk processing	—	—	—	X X
Marketing for milk	X X X	—	?	X
<b>SUPPORT SERVICES:</b>				
Veterinary services	—	X X	?	—
Artificial insemination	—	X X	?	—
Input supply services	X X X	—	?	X X
Training activities	—	X X X	X X X	X
Financial services	—	—	?	—

The above matrix shows that:

- members do not have much information about what the dairy project is doing, other than training activities, and more information is needed.
- The village shop can assist in input supply services and marketing.
- The dairy project and the ministry could assist the group in providing training.
- The group could look into more collaboration with the ministry regarding veterinary services and artificial insemination.



→ adapted from *Management for Development Foundation*, page 83



## information sources and references

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### GENERAL

For a list of developing countries, see Development Assistance Committee (DAC) list: [www.oecd.org/dac/htm/dac1st2000.htm](http://www.oecd.org/dac/htm/dac1st2000.htm)

### GENERAL DAIRY

FAO dairy information page:  
[www.fao.org/ag/aga/lps/dairy/index.htm](http://www.fao.org/ag/aga/lps/dairy/index.htm)

FAO small scale dairy manual (5 volumes):  
[www.fao.org/ag/AGA/AGAP/Dairyman/Dairy/title1.htm](http://www.fao.org/ag/AGA/AGAP/Dairyman/Dairy/title1.htm)

The codex standards for the use of Lactoperoxidase: [www.codex-alimentarius.net/STANDARD/volume12/vol12\\_e.htm](http://www.codex-alimentarius.net/STANDARD/volume12/vol12_e.htm)

FAO Dairy Outlook Information Network, a discussion list to disseminate and exchange information on the world dairy economy:  
[www.fao.org/Mailnews/DairyOut.htm](http://www.fao.org/Mailnews/DairyOut.htm)

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[www.fao.org/docrep/x5661e/x5661e00.htm](http://www.fao.org/docrep/x5661e/x5661e00.htm) (full version online)

### **GROUP DEVELOPMENT**

FAO. 1994. The group promoter's resource book; a practical guide to building rural self-help groups, FAO, Rome.

[www.fao.org/sd/PPdirect/PPre0019.htm](http://www.fao.org/sd/PPdirect/PPre0019.htm) (full English, Spanish, French and Arabic versions)

FAO. 1995. The group enterprise book; a practical guide for group promoters to assist groups in setting up and running successful small enterprises, FAO, Rome .

[www.fao.org/sd/PPdirect/PPre0018.htm](http://www.fao.org/sd/PPdirect/PPre0018.htm) (full English, Arabic, Spanish and French versions).

FAO. 2001. The inter-group resource book; a guide to building small farmer group associations and networks, FAO, Rome.

[www.fao.org/sd/2001/PE0701\\_en.htm](http://www.fao.org/sd/2001/PE0701_en.htm)

FAO. 1998. Agricultural Co-operative Development; a manual for trainers, FAO, Rome.

Homepage of the International Co-operative Alliance,  
[www.coop.org/ica/](http://www.coop.org/ica/)

Management for Development Foundation, the Netherlands:  
[www.mdf.nl](http://www.mdf.nl)

### **PARTICIPATION**

FAO participation web-site: [www.fao.org/participation/](http://www.fao.org/participation/)

Pretty, J. 1995. Participatory learning and action; a trainer's guide. IIED Participatory Methodology Series, IIED, ISBN: 1 899 825 00 2.

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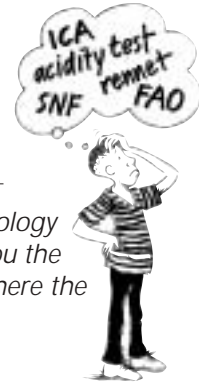
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# **glossary and index**

*In the list below you will find an explanation of the terminology we use in the context of this book. The third column gives you the main topic the term is related to and the page number(s) where the term is used.*



<b>acidity test</b>	milk quality test that measures lactic acid	<i>milk testing</i>	39
<b>adulteration</b>	addition of other substances to milk which reduces the quality of the milk (e.g. water)	<i>milk payment</i>	42
<b>alcohol test</b>	milk quality test	<i>milk testing</i>	39
<b>animal health care services</b>	services provided by the group to prevent and treat sick animals	<i>group activities</i>	62
<b>artificial insemination</b>	animal breeding method	<i>group activities</i>	62
<b>association</b>	association consisting of and governed by representatives of milk producer groups	<i>developing groups</i>	29
<b>auditing</b>	checking of bookkeeping	<i>keeping records</i>	21
<b>balance brought forward</b>	amount of money used as a starting point of a new financial period / new cashbook page	<i>keeping records</i>	20
<b>brainstorming</b>	a means of getting ideas from participants	<i>participatory tools</i>	73
<b>breeding services</b>	upgrading of animals through introduction of improved genes	<i>group activities</i>	62
<b>calling meetings</b>	see meetings	-	
<b>cashbook</b>	record of cash coming in and going out	<i>keeping records</i>	19
<b>chairperson</b>	leader of the group with specific tasks	<i>leadership/elections</i>	15
<b>cheese</b>	milk product	<i>milk processing</i>	48
<b>churning</b>	agitation of whole milk or cream to make butter adding starters and rennet	<i>milk processing</i>	47
<b>clot on boiling test</b>	milk quality test through heating	<i>milk testing</i>	39
<b>clotting</b>	change from liquid milk to (semi-) solid by	<i>milk processing</i>	47
<b>collaboration matrix</b>	tool to assess possible collaboration with other organizations	<i>participatory tools</i>	78
<b>collection centre</b>	a place to collect milk in bulk	<i>milk collection</i>	31
<b>conflicts</b>	disagreements within the group	<i>developing groups</i>	27
<b>constitution</b>	set of written rules made by members of a group	<i>forming groups</i>	11
<b>cream</b>	milk product	<i>milk processing</i>	47
<b>credit</b>	advance money from group to members	<i>financial service</i>	56
<b>curd separation</b>	after coagulation the milk is separated into whey and cheese curd	<i>milk processing</i>	47
<b>dairy institutional diagram</b>	tool to explore co-operation with other organizations	<i>participatory tools</i>	67

<b>developing countries</b>	see Development Assistance Committee (DAC) list: <a href="http://www.oecd.org/dac/htm/daclst2000.htm">www.oecd.org/dac/htm/daclst2000.htm</a>	-	
<b>developing groups</b>	improving already existing groups	<i>developing groups</i>	25
<b>elections</b>	group members choosing their leaders	<i>leadership/elections</i>	16
<b>enabling environment</b>	external factors for a group	<i>read this first!</i>	4
<b>FAO</b>	Food and Agriculture Organization of the United Nations	-	
<b>feasibility study</b>	assessing whether a product is likely to make money	<i>milk marketing</i>	50
<b>feed</b>	animal feed bought in bulk by the group	<i>input supply services</i>	53
<b>financial records</b>	notes of income and expenses	<i>keeping records</i>	19
<b>financial services</b>	savings and credit provided by the group	<i>group activities</i>	54
<b>flip-chart</b>	paper holder to be used for training	<i>information/advice</i>	59
<b>formal registration</b>	legally registering the group	<i>forming groups</i>	13
<b>forming groups</b>	setting up groups of milk producers	<i>forming groups</i>	5
<b>Gerber test</b>	test to determine amount of fat in milk	<i>milk testing</i>	40
<b>group assessment checklist</b>	checklist used to analyse group development	<i>participatory tools</i>	74
<b>group motivation</b>	making sure members are keen to continue with the group activities	<i>developing groups</i>	26
<b>heat treatment</b>	destroying any potential pathogenic germs by heating milk at a minimum of 63°C for 30 min	<i>milk processing</i>	47
<b>ICA</b>	International Co-operative Alliance	<i>read this first!</i>	3
<b>inaugural meeting</b>	first official meeting of the group	<i>forming groups</i>	13
<b>insurance schemes</b>	group insurances for e.g. animals	<i>financial services</i>	56
<b>Lactoperoxidase</b>	enzyme that keeps the milk for a longer period	<i>milk preservation</i>	35
<b>learning tours</b>	members go and visit places of interest to learn	<i>group activities</i>	61
<b>loans</b>	see credit	-	
<b>marketing</b>	selling milk products	<i>group activities</i>	50
<b>meetings</b>	get together of group members	<i>forming groups</i>	21
<b>milk</b>	milk from animals that is collected and processed (from cows, goats, sheep, yaks, buffaloes, camels)	-	
<b>milk collection</b>	collection of milk from more than one farmer to a collection point or centre.	<i>milk collection</i>	31
<b>milk cooling</b>	cooling milk to increase keeping time	<i>milk preservation</i>	35
<b>milk hygiene</b>	making sure a milk product is clean and safe for consumption	<i>milk collection</i>	33
<b>milk payments</b>	payments from group to an individual member	<i>milk payment systems</i>	40
<b>milk preservation</b>	increasing keeping time of milk	<i>milk processing</i>	35
<b>milk processing</b>	processing of raw milk into milk products	<i>milk processing</i>	46

<b>milk producer association</b>	see association	-	
<b>milk producer groups</b>	group consisting of milk producers with, as a main activity, collecting milk from members in order to sell directly, process, cool or transport the milk.	<i>read this first!</i>	1
<b>milk producer union</b>	national organization of milk producer groups	<i>developing groups</i>	30
<b>milk production map</b>	map of all milk production related items for participatory analysis	<i>participatory tools</i>	66
<b>milk sampling</b>	taking small amounts of milk for analysis later	<i>milk collection</i>	37
<b>milk testing</b>	checking the hygiene and composition of milk	<i>milk collection</i>	37
<b>motivation</b>	see group motivation		
<b>organoleptic tests</b>	tests based on taste, smell, or visual observations.	<i>milk testing</i>	37
<b>participation</b>	acknowledging ideas of all group members	<i>participatory tools</i>	65
<b>pasteurisation</b>	destroying any potential pathogenic germs by heating milk at a minimum of 63°C for 30 min	<i>milk processing</i>	46
<b>planning of activities</b>	planning who is doing what and when	<i>forming groups</i>	22
<b>principles of a group</b>	features of a participatory group (by ICA)	<i>read this first!</i>	3
<b>processing of milk</b>	making milk products like cheese, yoghurt, etc.	<i>milk processing</i>	46
<b>ranking</b>	method used to prioritise items	<i>participatory tools</i>	72
<b>record keeping</b>	noting down important information for the group	<i>forming groups</i>	17
<b>recruitment</b>	see staff recruitment	-	
<b>registration</b>	see formal registration	-	
<b>rennet</b>	substance causing milk to coagulate, used for the preparation of cheese	<i>milk processing</i>	48
<b>saving</b>	putting money aside for future purposes	<i>financial services</i>	54
<b>secretary</b>	group leader with specific tasks	<i>leadership/elections</i>	16
<b>semi-structured interviewing</b>	an informal guided dialogue	<i>participatory tools</i>	71
<b>SNF</b>	Solids Non Fat	<i>milk testing</i>	43
<b>staff recruitment</b>	employing workers	<i>developing groups</i>	25
<b>standardisation</b>	making milk with constant butterfat through partial skimming	<i>milk processing</i>	47
<b>SWOT analysis</b>	Strengths, Weaknesses, Opportunities, and Threats analysis	<i>participatory tools</i>	77
<b>testing of milk</b>	see milk testing	-	
<b>training</b>	education of milk producer group members	<i>information/advice</i>	57
<b>treasurer</b>	group leader with specific tasks	<i>leadership/elections</i>	16
<b>TS</b>	Total Solids	<i>milk payments</i>	43
<b>veterinary services</b>	see animal health care services	-	
<b>video presentation</b>	training method with the use of a video	<i>information/advice</i>	60
<b>whhey</b>	watery part remaining after milk has curdled	<i>milk processing</i>	47
<b>yoghurt</b>	fermented milk product	<i>milk processing</i>	47