

# Guidelines for Planning Local Seed System Interventions



## IMPROVING THE EFFICIENCY IN SEED DISTRIBUTION



International Crops Research Institute  
for the Semi-Arid Tropics  
(ICRISAT)



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**Published by**



International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)



National Agronomic Research Institute (INIA)

# Guidelines for Planning Local Seed System Interventions

This publication is a product of the 'Improving the Efficiency of Seed Distribution' project, financed by USAID under the ambit of American assistance for the emergency situation in Mozambique, 2000.

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## ACKNOWLEDGEMENTS

*ICRISAT-MOZAMBIQUE would like to thank all the institutions and individuals who contributed criticisms and suggestions which helped us to produce these Guidelines for Planning Local Seed System Interventions.*

*The following deserve a special mention: the staff of the District Agriculture and Rural Development Directorates of Massinga, Panda and Chibuto where the methodology was tested; the District Officer of the National Disaster Management Institute in Panda; the Emergency Co-ordination Unit for Agriculture (UCEA); the Non-Governmental Organizations HANDICAP INTERNATIONAL, WORLD VISION, MALHALHE and ACORD, which helped ICRISAT-MOZAMBIQUE, in a cordial and participatory manner, to prepare the present guide.*

*We would like to give the Agrarian Training Centre (CFA) our special thanks for the contributions it made to testing, editing texts and offering critical suggestions which helped to make the manual more practical.*

*Finally, we wish to thank the farmers of Massinga, Panda and Chibuto districts for the active and enthusiastic way in which they participated in the testing of Modules 1 and 3 of the manual. Their participation was invaluable in helping us make additional improvements to the methodology.*

*The financial support of the USAID mission in Mozambique made our activities possible. ICRISAT-MOZAMBIQUE hopes that this manual will help to make local seed system interventions more efficient, and that it will serve as a practical instrument to be used by those involved in agricultural and rural development.*

## **LIST OF ABBREVIATIONS**

**CFA** - *Agricultural Training and Rural Development Centre*

**DDADR** - *District Agriculture Directorate*

**FEWS-NET** - *Famine Early Warning System Network*

**ICRISAT** - *International Crops Research Institute for the  
Semi-Arid Tropics*

**INIA** - *National Agricultural Research Institute*

**NGOs** - *Non-Governmental Organization*

**MADER** - *Ministry of Agriculture and Rural Development*

**SSP** - *Seed System Profile*

**USAID** - *The United States Agency for International  
Development*

## Introduction

ICRISAT-Mozambique implemented the project 'Improving the efficiency of seed distribution in emergency situations: linking seed distribution to market development' with the following objectives: to gain a detailed understanding of the present procedures for assessing seed requirements in emergency situations and to propose a new needs assessment methodology which takes into account farmers' knowledge, attitudes and local practices in the process of obtaining seeds without upsetting normal market behaviour.

As part of this project, ICRISAT-Mozambique carried out a study that led to the production of the Guidelines for Planning Local Seed System Interventions, which you have in your hands. The Guidelines are based on experiences in the field and comments made by Ministry of Agriculture and Rural Development (MADER) staff from district to central level. Initial drafts of the Manual were tested in three districts: in Panda and Massinga Districts (Inhambane Province) and in Chibuto District (Gaza Province). The lessons learned during these tests have been integrated into this first edition, although there is still room for improvement and we welcome your suggestions.

These Guidelines present a methodology to gain a better and more realistic understanding of the seed systems used by farmers in their districts. The methodology includes procedures to better define 'what, when and how' to act in the event of natural disasters such as droughts and floods which affect the normal functioning of the seed system. Thus, interventions should only be planned and implemented after the problem has been clearly defined so that they really meet the needs of those who are genuinely affected.

The Guidelines are divided into three modules, which simply and clearly present the steps to be followed and the expected results of each step.

Module 1 explains the Seed System Profile (SSP). It describes each step involved in preparing the SSP, and where and how each action should be carried out. This module also describes the collection and analysis of information from various primary and secondary sources used in developing the Seed System Profile.

Module 2, or the Seed Security Assessment Framework, presents a simple matrix to describe the characteristics of a disaster, its impact on agricultural production, the availability of and access to seed, and the identification of seed-related problems. Certain tips are also included in this module about questions to ask community leaders to assess the impact of the disaster. The third and final module, 'Identification of Appropriate Interventions', is based on the problems outlined in Module 2.

The module is used to determine the main causes of the problems and how they can be resolved in both the short and long term. Actual examples are given from Panda and Massinga Districts, together with general suggestions for actions to be considered in specific situations.

The combination of the information to be collected in Module 1, the assessment to be made in Module 2, and the interventions to be identified in Module 3 make this Manual an invaluable instrument for strengthening local seed systems at District level. These pages should not just be read: the suggestions should be acted upon.

# Module 1

## Preparing a Seed System Profile at District Level



## OBJECTIVE OF MODULE 1



To prepare a Seed System Profile (SSP) at district level in a simple, clear and organized way, presented in a single document, that will serve as a reference for future interventions in the local seed system.

## CONTENTS OF MODULE 1

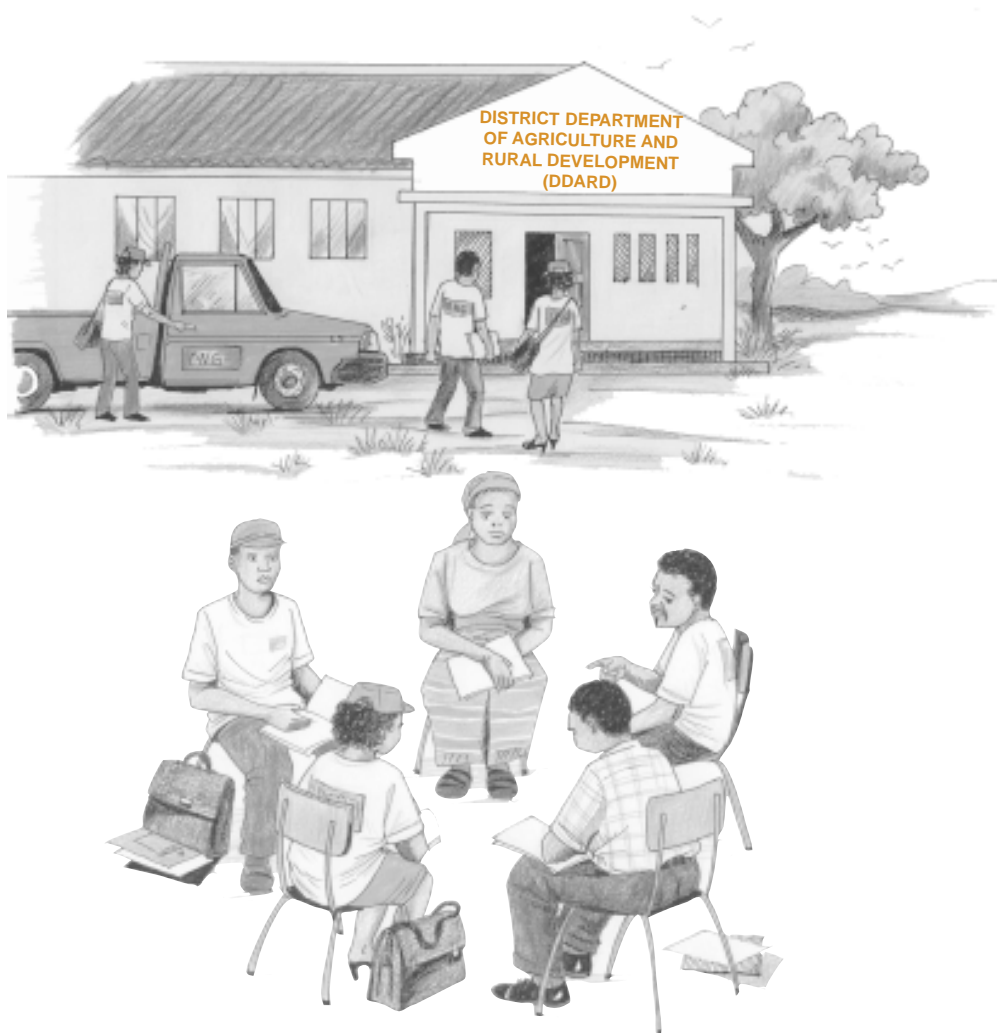
- ¥ What is the Seed System Profile (SSP)?
- ¥ Where should the SSP be prepared, and by whom?
- ¥ The steps to prepare the SSP
- ¥ Gathering SSP data
- ¥ Analysis of the local seed system

## 1. WHAT IS A SEED SYSTEM PROFILE?

A Seed System Profile, known as the SSP, is a written document giving a detailed description of farmers' seed systems as part of the broader agricultural system, i.e. the ways in which farmers produce, select, save and acquire seeds.<sup>1</sup> The SSP serves as a baseline for making decisions about seed interventions in a particular area.

### 1.1 Where should the SSP be prepared, and by whom?

The Seed System Profile should be prepared at district level by the staff of the District Agriculture and Rural Development Directorate (DDADR) and the District Administration with the participation of NGOs and other organizations concerned with crop production within district.



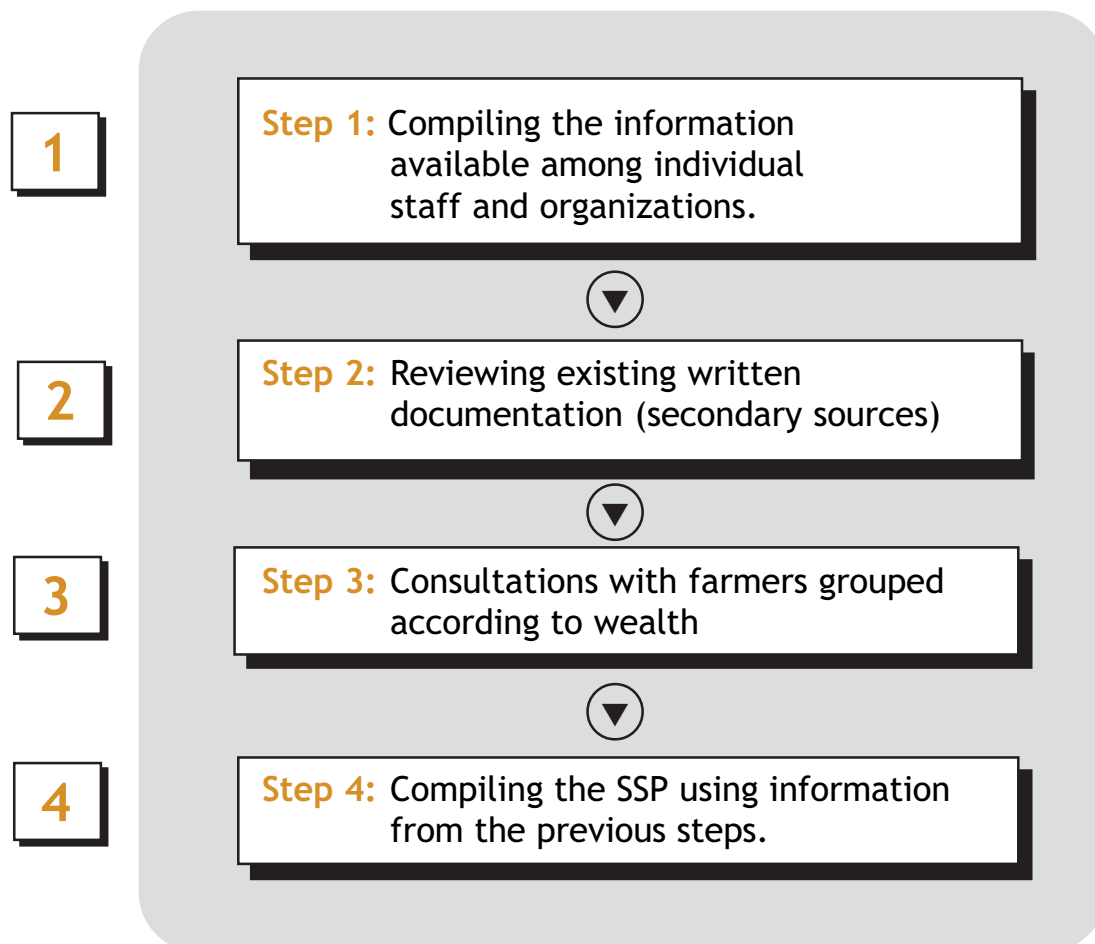
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<sup>1</sup> Seed should be understood as the planting material used for sowing.

## 1.2 How should the SSP be prepared?

The methodology for preparing the SSP should follow four basic steps as outlined in the figure below:

**Figure 1: The four steps for preparing the SSP**



## 2. DESCRIPTION OF EACH STEP

### 2.1 Compiling the information available among individual staff and organizations

#### STEP ONE

To begin with, it must be clear to those involved, (i.e. DDADR staff, the District Administration, NGOs and other organizations), that the objective of this step is to document knowledge and experiences accumulated by individuals and organisations about actual agricultural activity, in the district mainly concerning seeds.

#### 2.1.1 The process of compiling existing knowledge and experience

As mentioned above, the compilation of existing knowledge and information should involve DDADR staff, the District Administration, NGOs and other organizations working in the area of crop production. Information can be compiled through mapping exercises and discussions. Some of the information, from the discussions can be recorded on maps drawn on paper with simple and clear keys. Other information that is elicited through the discussions but cannot be included in the maps, will need to be noted and subsequently included in the SSP report. The contribution of all the participants helps diversify the information. It is important to note that the mapping exercise is not only intended to produce a map but the process of preparing the map is also an opportunity to share important information through discussion.





*The map and its key should be clear and easy to understand and should include the following:*

- **Main politico-administrative infrastructures (e.g. administrative posts, localities)**
- **Main socio-economic infrastructures (e.g. shops, grain markets, agro-industrial enterprises etc.)**
- **Main transport infrastructure (e.g. roads, bridges, railways);**
- **Agro-ecological zones in the district (marking and classifying the zones as A, B or C)**
- **Areas where different types of disasters have happened or might happen (e.g. floods, droughts)**

## 2.2 Reviewing existing documentation

It is important that those involved are clear that the objective is to collect written information available at district level to be used in preparing the SSP. Some sources of available information will have been identified in step one.

### STEP TWO

#### 2.2.1 Sources of information

There are at least three sources of written information that might be considered in the process of preparing SSP:

1. information available through the Early Warning System;
2. the population census;
3. socio-economic information available in existing reports.

For a good SSP, it is not enough to gather information from different sources. It is very important to verify the data in the documents, who produced them and why and when they were produced. The following tables show where the three sources suggested above can be found and the kind of information that needs to be gathered from each source and verified or corrected by those involved in the exercise.

#### 1. Information available through the Early Warning System.

Where can this source be found?

- In reports prepared by DDADR.

What information needs to be gathered from this source?

- The average area cultivated per family;
- The crops that are cultivated;
- Information about the climate, (e.g. rainfall), and cropping calendar;
- The total cultivated area and total cultivated area per crop;
- The number of farming families.

## 2. Population Census

**Where can this source be found?**

- In the District Administration;
- In the FEWS-NET reports (if they exist);
- In reports by other organizations.

**What information needs to be gathered from this source?**

- Total number of inhabitants;
- Number of inhabitants per administrative post or locality;
- Number of women/men.

## 3. Socio-Economic Information

**Where can this source be found?**

- In the District Administration;
- In the FEWS-NET reports (if they exist);
- In reports by other organizations.

**What information needs to be gathered from this source?**

- Total area of the district;
- Main economic activities in each zone identified;
- Significant historical factors relating to the economy and the population, e.g. the presence of migrant communities;
- Significant land tenure systems;
- Important trading activities;
- Livelihood strategies in each zone identified;
- Exchanges of food, labour and other resources that take place between people in the different zones;
- NGOs who work in the district and relevant activities.

## 2.3 Consultations with farmers grouped according to wealth

### STEP TREE

As in previous steps, the objective should be made clear. In this case the aim is to confirm and validate the information gathered, obtaining complementary detailed data from farmers grouped according to their resources or standard of living. Its necessary to plan the consultations in advance.

### 2.3.1 Selecting farmers for the consultations

A basic method for selecting the farmers to be consulted is to separate them into at least two groups according to their resources or standard of living. This separation is important because not all farmers in the same community have the same resources, the same ability to access and control resources, the same sources of income or the same livelihood strategies. These aspects are manifested in each farmer's level of wealth or standard of living. The means of producing and obtaining seeds and the purpose of agricultural production differ for farmers with different levels of wealth or standards of living.

The figure below suggests the procedures for selecting the farmers to be consulted.

**Figure 2: Procedures for selecting farmers for the consultations**

**Procedure 1:** At least two communities, that are most representative of each agro-ecological zone identified on the map, should be selected.

**Procedure 2:** For each community selected, community leaders should be told in advance about the objectives, time and place, and procedures to be followed below.

**Procedure 3:** Community leaders select 10-12 experienced farmers, both men and women, and with varying levels of wealth.

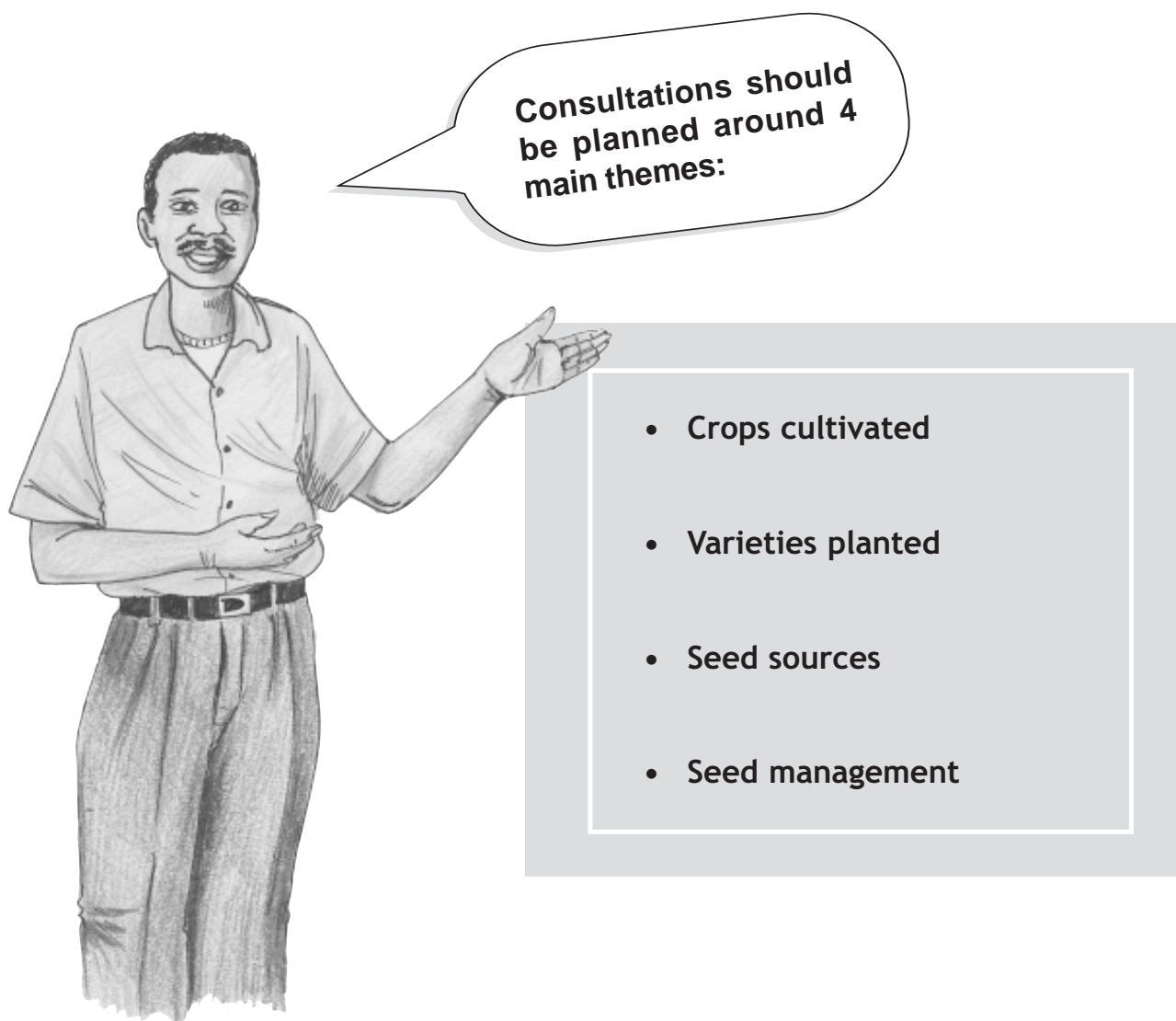
**Procedure 4:** Community leaders define the criteria for grouping the selected farmers according to levels of wealth. Two different groups is usually sufficient. Staff from Government and other institutions should be aware of the criteria used.

**Result:** Two groups of farmers, representing two different standards of living comprised of 5-6 people each. The proportion of women participants should correspond to the work that they do in the field.

### 2.3.2 Carrying out the consultations

For each community, separate consultations should be carried out with each wealth group. Staff involved in the consultations should use the following guidelines. It should be remembered that the objective of the consultations is to confirm and obtain a wide range of information for the SSP. For this reason the consultation should be flexible and adapted to each specific situation

In the suggested checklist that follows, questions are grouped around four general themes: crops cultivated, varieties planted, seed sources and seed management.



### 2.3.3 Checklist for consultations with farmers

#### A. Preliminary meeting with farmers

1. Give a short introduction, explaining the objectives of the meeting.
2. Find out about the main crops and areas of cultivation (upland or lowland zones).

Discuss with farmers to confirm that the list of crops and agricultural calendar compiled in Module 1 are accurate. Then ask the following questions:

1. What are the crops cultivated primarily for consumption?
  2. What are the crops cultivated primarily for sale?
3. Establish with all the farmers examples of a 'Good' year and a 'Bad' year, to serve as a reference for the group work that follows.
  4. Separate the farmers into two wealth groups, according to the criteria determined by the community leaders. While the farmers form groups, the interviewers should agree about the crops to be discussed by each group in question 3 below. It is recommended that the group of better-off farmers should spend more time discussing cash crops.

#### B. Separate consultations with groups of farmers.

1. Explain to the farmers in general terms, the topics to be discussed:

- a) Crops and varieties;
- b) Sources for obtaining seeds.
- c) Seed management;
- d) the quantity of seed used.

- a) Crops and varieties.

Try to find out about the quantity of seed that is generally planted for the specific crops to be discussed in detail by the groups, as well as for the other crops that the farmers grow.

For each of the crops to be discussed in detail by the groups, complete the table on page 23 by asking the relevant questions, namely about the varieties usually planted by the farmers, and a description of their main characteristics.

b) Sources for obtaining seeds.

For each of the main crops grown by the farmers, find out about the sources of seeds that they normally use, for example:

- Their own seed;
- Seed obtained from neighbours within the community;
- Seed obtained from other farmers in nearby communities;
- Seed bought in the markets.

For each of the main crops grown by the farmers, ask them to indicate the proportion of farmers in the community who use each of the sources mentioned, both for a year considered 'Good' and one considered 'Bad'.

It is recommended that in this exercise, ten stones or grains of maize are used to represent farmers in the community. Five stones or grains of maize represent half the farmers in the community. In the course of this exercise, the information listed in figure 3 must also be noted.



## Varieties crop cultivated by farmers and main seed-related activities

Crop \_\_\_\_\_

Location \_\_\_\_\_

Varieties (local name)	Duration (days between sowing and harvesting)	Sowing months		Harvesting months		Other characteristics of the variety
		First season	Second season	First season	Second season	

Seed management practices, (see point c): \_\_\_\_\_

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<sup>1</sup> The characteristics could include the distinctive aspects of the variety, including its visual appearance, its specific use, its tolerance to different conditions, etc.

**Figure 3: Information on seed acquisition**

- If seed is obtained from neighbours or from other communities, find out who normally makes the seed available (men or women) and how it is obtained (e.g. given, bought, exchanged).
- If it is exchanged, ask what is given in exchange.
- If seed is obtained from other communities, find out the location of these communities, for example, the district, locality, village, etc.;
- If seed is obtained in the markets, find out which markets.

c) Seed management

In relation to seed management describe the activities which are presented below by asking farmers to explain how they carry out the activities and who is responsible for each one (man or woman).

- i. Selecting seed  
When and where does selection take place: during the harvest, or after the harvest; in the field, or at home?
- ii. Processing seed  
How are threshing, drying, treating, etc. undertaken?
- iii. Storing seed  
When is the seed separated from the grain? Where is it stored? What type of container is used? Are there any specific problems linked to this activity?
- iv. Sowing  
Is all the saved seed sown at the same time or is some kept for later planting?
- v. What are the main constraints to agricultural production and seed-saving?

d) The quantity of seed used

For the specific crops in the group, as well as other crops cultivated in the area, to obtain information on the quantity of seed used by the farmers.

### Final note concerning the consultations:

As mentioned above, the form of the consultations will inevitably vary according to local circumstances, but all of the information described above must be collected. The whole process should be carried out so that each consultation produces the results given in figure 4 below.

### Figure 4: Main results expected from the consultations with groups of farmers

1. Crops grown and respective varieties; growth cycle; agricultural calendar and other specific characteristics of the varieties;
2. The average quantity of seed normally used for sowing each crop, and who sows it (men or women);
3. Activities carried out between harvesting and sowing for each crop, and who carries them out (women or men);
4. Where and how the seed is selected and stored, types of treatment or processing;
5. Main constraints to agricultural production and seed saving;
6. Normal and alternative seed sources for each crop type. For this step, the tendency of farmers to use different sources in normal years and years of shortage (bad years) should be analyzed for each crop. This should be based on the results obtained from exercises done with the farmers (with stones or beans, for example).

To illustrate result 6 in figure 4, we present an actual case from the methodology-testing phase in Panda district (Mawaela Administrative Post). The following results were obtained by consulting the poorer farmers. The main sources of seeds that farmers use in years considered good and in years of shortage (“bad” years) were analyzed.

**(a) “Good” Year**

Crop	Seed Sources			
	Own seed	Neighbours	Other Communities	Markets
Maize	8	2	0	0
Peanuts	7	1	1	1
Cowpeas	9	1	0	0
Cassava	10	0	0	0

In normal circumstances (“good” year) the main source of seed for maize, peanuts and cowpeas were the farmers’ own seed. Neighbours are also an important source of seed, though on a smaller scale. It can be seen that the only source of cassava, however, is the farmers’ own fields.

**(a) “Bad” Year**

Crop	Seed Sources			
	Own seed	Neighbours	Other Communities	Markets
Maize	2	1	2	5
Peanuts	3	0	1	6
Cowpeas	4	1	0	5
Cassava	10	0	0	0

Although the farmers are still able to save some seed in a shortage situation or “bad” year, a clear tendency can be seen of obtaining seed from other communities and markets particularly maize and peanuts. The market is specially important as an alternative source for, peanuts. In the case of cassava, the situation remains the same in both good and bad years: the main source is still the farmers own farm.

## 2.4 Compiling the Seed System Profile

This is the fourth and final step in preparing the SSP. It involves the analytical summary and organization of the data collected during the three previous steps. The objective of this step is to compile and organize information about the local seed systems in the district in a simple and clear manner, in a single document.

### STEP FOUR

The Seed System Profile should be a written document that is descriptive and easy to read and understand. It should cover the following four points:

1. General information about the district;
2. Information about the district’s agricultural systems;
3. Information about the seed systems, and potential problems that may occur in a particular disaster situation.
4. Final summary and conclusion.

The structure and contents of each of the four points to be included in the Seed System Profile document are presented below.

### 2.4.1 General information about the district

A map that shows:

- Total area;
- Total population;
- Average rainfall;
- Administrative posts;
- Agro-ecological zones;

- Commercial infrastructures: local stores, informal grain markets;
- Accessibility of means of access (existing roads, paths and bridges);
- NGOs that undertake agricultural activities and/or distribute seeds and the areas in which they work in the.

#### 2.4.2 Agro-ecological information in the district

- Total cultivated area and total cultivated area per crop;
- Average area cultivated per family;
- Number of farming families.

#### 2.4.3 Describing the district's agro-ecological zones

Make a separate description of each zone identified on the map, focusing on the following aspects:

- Administrative posts in the zone;
- Climatic and ecological characteristics, for example, rainfall; type of soil; type of disasters and their frequency;
- Main subsistence activities;
- Farmers' sources of income;
- Main crops grown and cultivated areas (upland or lowland areas);
- Agricultural calendar;
- Description of the varieties that the farmers use.

#### 2.4.4 Seed production, selection and storage

For each crop cultivated describe:

- How are seeds produced?
- How are seeds selected, processed and stored?
- What type of treatment is used for each type of seed?
- Who is responsible for selecting and processing the seed?

### 2.4.5 Constraints to agricultural activity and seed saving

For each crop cultivated describe:

- Pests in the field and store;
- Diseases;
- Production constraints;
- Access and availability of seed;
- Others.

### 2.4.6 Seed sources used by farmers

For each crop cultivated it is necessary to identify and analyze the sources, considering:

- “Good” years;
- “Bad” years.

### 2.4.7 Analysis of the seed system

The seed system profile should highlight the strengths and weaknesses in the seed system in the zone being described. It is also important to list the main problems in the seed system, in other words, the system’s principal weaknesses.

The table below is an example of a seed system analysis in an interior area of Massinga district, comprising the Chicomo, Liondzuane localities and part of Nhachengue.

### Example of a Seed System Analysis

	STRENGTHS	WEAKNESSES
<b>Cropping system</b>	<ol style="list-style-type: none"> <li>1. The diversity within the cropping system favours both seed and food security.</li> <li>2. The shifting cultivation system is practiced because land is available and it improves soil fertility.</li> </ol>	<ol style="list-style-type: none"> <li>1. There is only one rainy season, thus only one planting season.</li> <li>2. Little use of animal traction.</li> <li>3. Few permanent crops.</li> </ol>
<b>Varieties used</b>	<ol style="list-style-type: none"> <li>1. In general the varieties are local, good and adapted to local production conditions (resistant to drought).</li> <li>2. There are a good number of varieties of cassava.</li> </ol>	<ol style="list-style-type: none"> <li>1. Few varieties for certain crops:               <ul style="list-style-type: none"> <li>– only one variety of maize, sorghum and pigeon pea;</li> <li>– two varieties of peanut (one early variety).</li> </ul> </li> </ol>
<b>Sources of seeds</b>	<ol style="list-style-type: none"> <li>1. Main sources are own seed or seeds obtained from neighbours, other communities and in the market.</li> <li>2. Good availability of seed.</li> <li>3. Rapid access to seeds.</li> </ol>	<ol style="list-style-type: none"> <li>1. In time of low production, the availability of seed is reduced.</li> </ol>
<b>Seed Management</b>	<ol style="list-style-type: none"> <li>1. Farmers make an effort to keep and use their own seeds.</li> <li>2. The farmers, particularly women, have a good understanding of local techniques for saving seed.</li> <li>3. The cultivation of upland and lowland zones minimizes seed storage time, helping to avoid losses due to pests during storage.</li> </ol>	<ol style="list-style-type: none"> <li>1. No knowledge of “improved” of means of storing seed.</li> <li>2. Some difficulties in storing seed over long periods (pests, fungus and humidity).</li> </ol>

	STRENGTHS	WEAKNESSES
<b>Infrastructure and markets</b>	<ol style="list-style-type: none"> <li>1. There is a local seed market (grain).</li> <li>2. Seed may also be acquired in the interior of the district and in other neighbouring districts</li> </ol>	<ol style="list-style-type: none"> <li>1. The seed market has no certified seeds of "improved" varieties.</li> <li>2. The present seed market is affected by the free distribution of seed by NGOs and governmental institutions.</li> </ol>
<b>Social relations</b>	<ol style="list-style-type: none"> <li>1. The exchange of seed favours social relationships between communities.</li> <li>2. Exchange relationships favour the less well-resourced farmers.</li> </ol>	
<b>General observations associated with disaster situations</b>	<p>In times of drought, for example, the farmers use the strategy of planting cassava on a large scale, because this crop is drought resistant.</p>	<p>The presence of NGOs creates a certain dependency on free seed handouts. It is necessary to consider local dynamics. Farmers' capacity to respond to disasters is poor. Drought-tolerant varieties or crops are not widely available.</p>

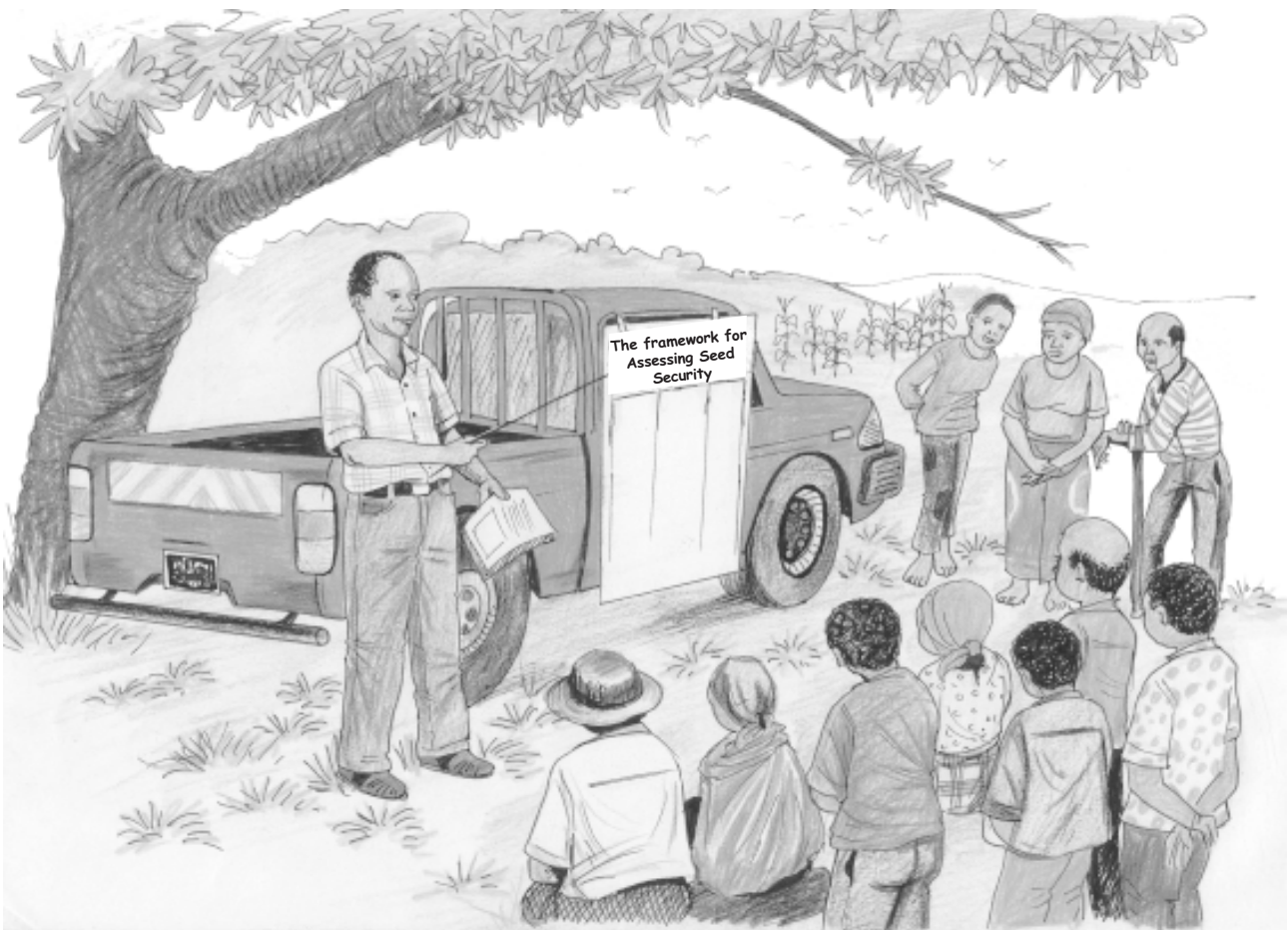
### Summary of the Main Problems in the Seed System

- There is only one rainy season, thus only one sowing season;
- Animal traction is rarely used;
- There are few permanent crops;
- There are few varieties of some crops: maize, sorghum and pigeon pea (only one variety). There are two varieties of peanut (one early-germinating variety);
- In the shortage seasons, seed availability is reduced;
- Farmers are not aware of "improved" methods of seed storage;
- There are difficulties in storing seed over long periods (pests, fungus, humidity);

- The seed market has no certified seeds of “improved” varieties;
- The present seed market is affected by free seed distribution by NGOs and governmental organizations;
- The presence of NGOs creates a certain dependency for seeds, especially in times of shortage. Local dynamics should be considered;
- Farmers’ capacity to respond to disasters is poor. Drought-resistant varieties or crops are not widely available.

## Module 2

# The framework for Assessing Seed Security



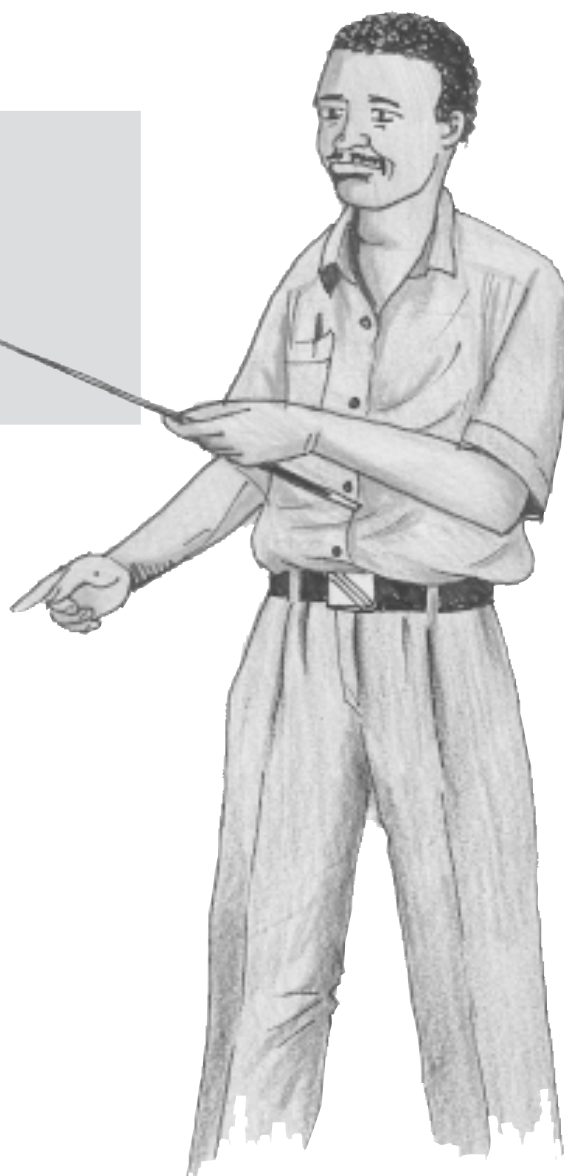
## OBJECTIVE OF MODULE 2



To assess farmers' seed security after disasters and identify the main problems to be solved in order of priority, in both the short and long term.

## CONTENTS OF MODULE 2

- The five parts of the Framework
- Questions to ask to assess seed security



Seed security can be described as the sustainable capacity for all farmers to have enough seeds of different crops at the right time. Seed security may be defined at different levels: *family, community, agro-ecological zone or food economy zone, district, provincial, national and regional*. The exercise proposed here will focus on seed security at the level of the agro-ecological zones within the district that were identified in the SSP (Module 1).

There are three main aspects to consider when assessing seed security:

- i. Availability* - if there are enough seeds of the crops available, within a reasonable distance or at the right time for the farmers during the sowing season;
- ii. Access* - if farmers have the financial or other resources that allow them to acquire the appropriate seed by purchasing, exchanging or other mechanisms;
- iii. Quality* - if the seed is of an acceptable quality and the varieties are locally appropriate.

The framework presented in this module considers seed availability and access. Aspects related to seed quality and varietal aspects are considered in SSP (Module 1) in the sections referring to 'seed storage systems' and 'varieties used'.

The Framework to assess seed security consist of five parts.

## 2.1 The five parts of the frame work

1. The characteristics of the disaster.
2. The impact of the disaster on agricultural production.
3. The availability of seed or propagation material at the time of sowing.
4. Access to locally available seed.
5. Identifying the problems to be resolved.

Every part is a matrix where:

The *first column* presents the various questions which should be answered for each part of the framework. The second column suggests different sources of information which may be used to answer each of the questions in the framework. For example, information may be:

- compiled by different organizations;
- from the Early Warning system;
- from the District Administration;
- from Community Leaders and farmers in areas affected by the disaster;
- from market traders and other key informants in the district.

This assessment will probably take a few days (up to one week) to complete. It should be undertaken by a team of people from DDADR, the District Administration NGOs involved in emergency assessments.

**Figure 5: Framework for assessing seed security.**

<b>PART 1: CHARACTERISTICS OF THE DISASTER</b>			
<b>A: Questions to be answered</b>	<b>B. Sources of Information</b>		
1. What type of disaster is it? How often does it happen? How long did it last? How severe was it?	Consultations with community leaders and farmers, information from District Administration and DDADR, NGO reports and INGC.		
2. What areas (administrative post, locality) were affected? Have these areas been affected by similar disasters before?	DDADR information, NGO reports, District Administration information and consultations with community leaders and farmers.		
3. What are the direct impacts of the disaster in the affected zone? E.g. damage to infrastructure, lives lost, etc.	Information from District Administration, consultations with community leaders and farmers, information from DDADR, NGO reports.		
4. Were people displaced on a large scale from areas which are normally cultivated?	Consultations with community leaders and farmers, information from District Administration and DDADR, NGO reports.		
<p><b>C. Results:</b> description of the type and magnitude of the disaster, for example:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <p><b>An <i>acute</i> disaster is:</b></p> <ul style="list-style-type: none"> <li>- not common;</li> <li>- rapid and with a severe impact;</li> <li>- relatively short;</li> <li>- with large scale displacement;</li> <li>- causing severe damage to infrastructure;</li> <li>- the local capacity to respond and / or the subsistence strategies are inadequate.</li> </ul> </td> <td style="width: 50%; vertical-align: top;"> <p><b>A <i>chronic</i> situation involves disasters which are:</b></p> <ul style="list-style-type: none"> <li>- frequent and / or repeated;</li> <li>- relatively slow and long;</li> <li>- with a relatively low impact;</li> <li>- with few displaced people;</li> <li>- the local capacity to respond and / or the subsistence strategies are based on local knowledge for responding to similar situations.</li> </ul> </td> </tr> </table>		<p><b>An <i>acute</i> disaster is:</b></p> <ul style="list-style-type: none"> <li>- not common;</li> <li>- rapid and with a severe impact;</li> <li>- relatively short;</li> <li>- with large scale displacement;</li> <li>- causing severe damage to infrastructure;</li> <li>- the local capacity to respond and / or the subsistence strategies are inadequate.</li> </ul>	<p><b>A <i>chronic</i> situation involves disasters which are:</b></p> <ul style="list-style-type: none"> <li>- frequent and / or repeated;</li> <li>- relatively slow and long;</li> <li>- with a relatively low impact;</li> <li>- with few displaced people;</li> <li>- the local capacity to respond and / or the subsistence strategies are based on local knowledge for responding to similar situations.</li> </ul>
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**PART 2: WHAT IS THE IMPACT OF THE DISASTER ON AGRICULTURAL PRODUCTION?**

A. Questions to be answered	B. Sources of information
1. In which phase of the agricultural calendar did the disaster take place?	Information from DDADR, consultations with farmers and community leaders, NGO reports.
2. Which crops - planted at which times and in which ecologies (upland or lowland) - were affected?	SSP provides an agricultural calendar and indicates the zones in which the different crops are planted: upland or lowland; field visits; consultations with farmers and community leaders; DDADR information.
3. To what extent were the crops affected, for example: i.e. What will be the level of harvested output, if any? Remember to include harvested output of the same crops planted at different times and/or in different ecologies.	Field visits; consultations with farmers and community leaders; information from DDADR, Prior Warning reports.
4. What cultivation strategies do farmers use to reduce the impact of crop losses in the short and long term?	Consultations with farmers and community leaders.
<p><b>C. Results:</b> an indication of the impact of the disaster on agricultural production, taking into account the stage of crop development and the period in which the disaster happened.</p>	

**PART 3: ARE SEEDS OR PLANTING MATERIALS AVAILABLE AT THE TIME OF SOWING?**

A. Questions to be answered	B. Sources of information
1. Were seed or other planting materials affected by the disaster?	Consultations with farmers and community leaders, field visits, information from DDADR, NGO reports.
2. What constraints exist in the local seed system?	SSP (indicates the main constraints in the local seed system).
3. Are affected seeds available from the seed sources that farmers normally use?	SSP (supplies information about the sources of seed used by the farmers and the means of acquisition); visits to the markets; visits to other neighbouring communities; consultations with farmers and community leaders, information from market traders.
<p><b>C.Results:</b> indication of the availability of seeds or propagation material for affected crops from sources used by farmers.</p>	

**PART 4: IF SEED IS AVAILABLE, DO FARMERS HAVE ACCESS TO IT?**

A. Questions to be answered.	B. Sources of information
1. If the seed for different crops is available in the district, is it physically accessible to the farmers in affected zones? For example, is seed/planting material for sale in local markets? If so, is there transport for farmers to travel to these markets or to other communities to acquire seeds?	Visits to means of access; SSP (supplies information about the state of access routes); consultations with farmers and community leaders, information from DDADR, information from District Administration; information from market traders, NGO reports.
2. If seed is available and physically accessible, do farmers have the means or resources (financial or otherwise) to obtain seeds?	Consultations with farmers and community leaders, information from the District Administration and DDADR, NGO reports.
<p><b>C. Results:</b> indication of the access to seed and propagation material, available in the district, for the farmers from different wealth groups.</p>	

**PART 5: IDENTIFYING PROBLEMS TO BE RESOLVED**

Summarize the replies obtained from the previous parts (1 to 4) in terms of problems to be resolved: i) For each crop affected by the disaster, are there problems related to seed? If so, is this problem related to the unavailability of the seed or problems of access? ii) Prioritize the problems according to the crops for which the seed system was most severely affected. iii) Indicate which groups of farmers and areas are most likely to have problems of seed availability and / or access to seed.

**Prioritize the problems** according to the need to resolve them in the short-term (e.g. the next sowing season) or long term.

**Result:** a clear list of problems to be resolved in the short and long term. Each problem should be presented according to whether it is linked to seed availability or access to seed for the farmers, and according to the crops and types of farmers affected.

## 2.2 Discussions with community leaders to assess the impact of the disaster.

**Figure 6: Guidelines for discussions**

1. Explain the points to be discussed:

- the impact of the disaster (for example, the drought);
- the availability of and farmers' access to seed.

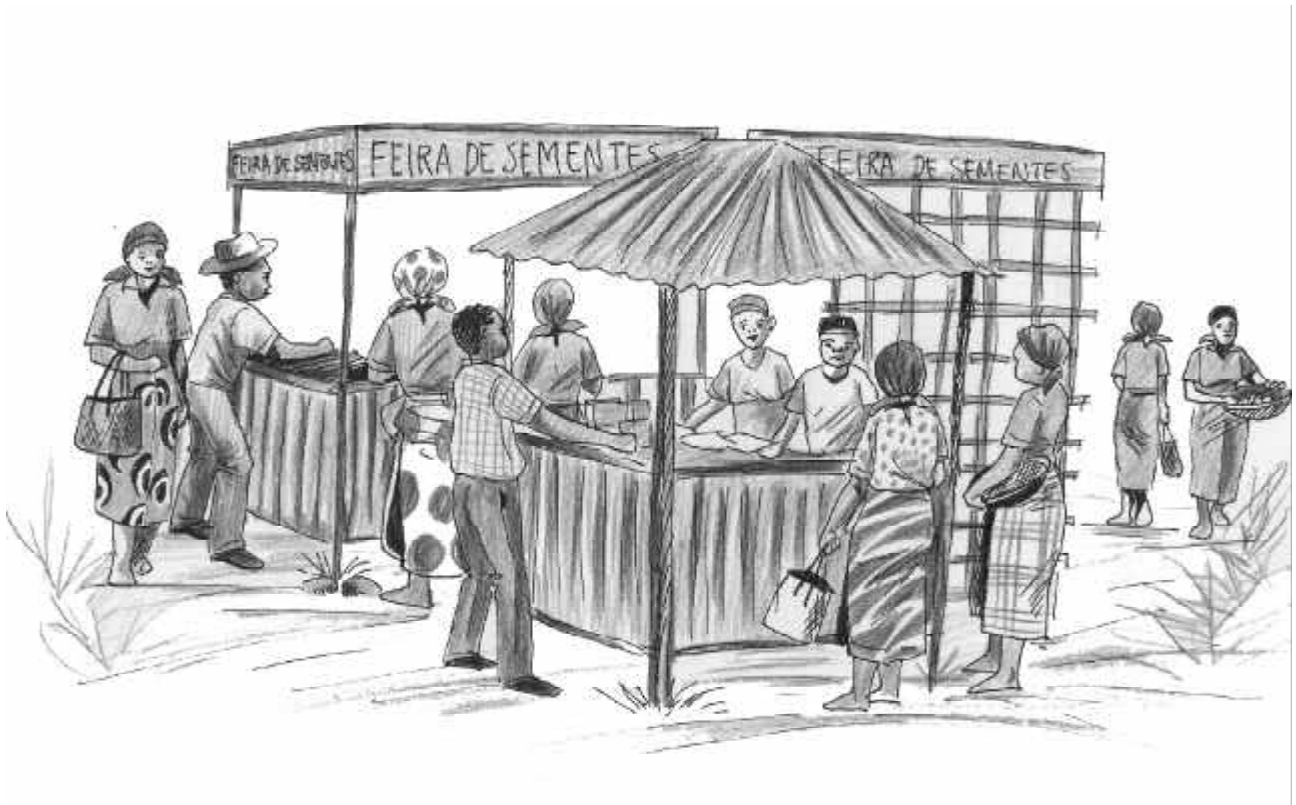
Background information from the seed system profile should be used to discuss these points with community leaders to help verify the information provided by the leaders and to probe for further details, based on the following questions.

2. What types of disasters occur in the community, what is their frequency and length? Which zones are normally affected, (upland, lowland)?
3. How have the communities been affected by the present disaster, e.g.: death, selling cattle, looking for work in cities or towns, large-scale displacement of the population.
4. Which crops are affected by the disaster? How severely have they been affected? (e.g. if it is possible to harvest part of the crop or not?) Try to relate the timing of the disaster to the agricultural calendar to find out the stage of development at which the crops were affected.
5. Is seed available for the crops that were affected? If not, is seed available for these crops in neighbouring communities or in the markets? Might seed availability be a problem for some crops?
6. Do the farmers have resources to obtain seeds?

**Note:** Answers provided by community leaders should be verified as far as possible, by visits to farms and local markets and by talking to farmers and traders.

## Module 3

# Identifying the most Appropriate Interventions



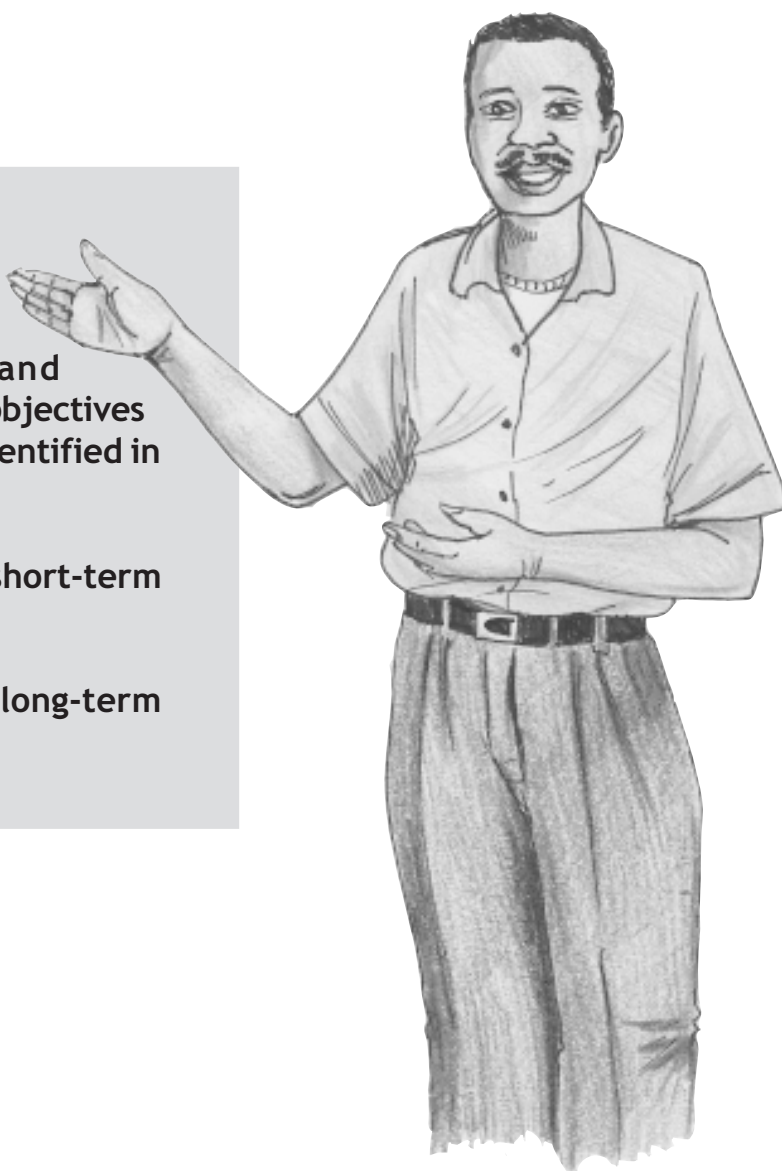
## OBJECTIVE OF MODULE 3



- Identify the main causes associated with each problem arising in Module 2.
- Identify the necessary interventions to resolve the causes of the problems both in the short and long term.

## CONTENTS OF MODULE 3

- Steps for defining the interventions.
- Examples of problems and their causes, intervention objectives and suggested strategies identified in Panda and Massinga.
- Suggestions for planning short-term interventions.
- Suggestions for planning long-term interventions.



The result of the assessment described in Module 2 is a series of well-defined problems in order of priority. In this module, we first identify the main causes of each problem and then identify the interventions needed to resolve the problems in both the short and long term.

In a disaster situation, Module 3 could be used immediately after carrying out the activities in Module 2. The same group of people who identified the problems in Module 2 can also participate in identifying the necessary interventions using Module 3. We suggest that a whole day is reserved for participants to complete Module 2 in the morning and Module 3 in the afternoon.

The main steps to be followed in Module 3 are presented in the following table:

Problems (identified in Module 2)	Causes	Objectives		Suggested interventions	
		Short-term	Long-term	Short-term	Long-term
1.					
2.					
3.					
4.					

### 3.1 Steps for selecting interventions

The specific problems identified in Module 2 should be written in the first column in the specified order of priority. Each problem should be clearly identified or defined so that it is easy to tell whether the problem is linked to *the availability of seed* or *the access to seed*, as well as the crop and the affected farmers.

The respective causes of each problem need to be identified in the second column. This is particularly important in chronic disaster situations: if the causes of the problem are not addressed it is likely that the problem will recur whenever there is a disaster.

In the following columns, the objectives and interventions should be identified that are needed to resolve the problem and its causes. In a disaster situation - especially an acute situation or where the effects of a chronic problem are particularly severe - it is advisable that the primary objective is to resolve the immediate problem in the short-term. However, it may also be necessary to identify long-term objectives for actions to deal with the causes of the problem. Long-term objectives should be aimed at strengthening the farmers' seed system, making them less vulnerable to frequent disasters. If various interventions are suggested, it may be better to prioritize them according to need.

The following table gives examples of situations identified in the first methodology testing sessions in Massinga and Panda districts.

### 3.2. Examples of Situations Identified in Panda and Massinga

Problems	Causes	Objectives of the interventions		Suggested interventions	
		Short-term	Long-term	Short-term	Long-term
1. Some poorer farmers in areas affected by drought have no access to maize and cowpea seed	The effects of the drought aggravate existing poverty.	Provide poor farmers with the means for timely access to locally available seed for the following sowing season.	Alleviate poverty among the farmers	Seed fairs where seed vouchers are provided to poorer farmers.	Development activities for the poor (not a priority in the present context of seed interventions).
2. In the area considered as Zone A in the SSP, there is limited local availability of cowpea seeds	<p>a) The lack of rain at the start of the sowing season severely reduced the harvest; not everyone was able to save seed.</p> <p>b) Pest problems in the cowpea stores may result in losses of stored seed.</p> <p>c) Weak local markets in Zone A (due to the distance from large cities, poor roads and lack of transport) means that physical access to seed from the large grain markets is limited.</p>	Make cowpea seed locally available for the following sowing season.	<p>a) Identify and promote cowpea varieties that are resistant to drought and which are acceptable locally.</p> <p>b) Resolve seed storage problems.</p> <p>c) Strengthen local markets.</p>	Provide one-off loans so that small groups of local traders and/or farmers are able to visit distant grain markets to buy sufficient quantities of appropriate varieties of seeds. These can subsequently be sold to local farmers at seed fairs and through seed voucher programmes.	<p>a) Work with INIA and other organizations in testing new varieties of cowpea with farmers.</p> <p>b) Make sure that farmers have access to suitable containers for seed storage.</p> <p>c) Handicap International is already supporting local markets by financing rotating credit systems and local stores.</p>

Further examples of interventions related to specific objectives are listed in the two sections below. The first section examines the short-term objectives and interventions and the second section deals with long-term objectives and suggested interventions. Each section also offers advice for planning different types of intervention based on experiences in Mozambique and other countries. It is important to remember that the advice given here is only a suggestion, and that other interventions not included in these tables may also be appropriate.

### Examples of short-term objectives and interventions

Objective	Possible interventions
Make seed for specific crops available (for situations when seed is unavailable)	<ul style="list-style-type: none"> <li>• One-off loans to a small number of traders and / or farmers enabling them to buy appropriate seed in distant markets.</li> <li>• Distribution of appropriate varieties of seeds for specific crops.</li> </ul>
Improve the local availability of seed for specific crops (when the availability of seed is limited).	<ul style="list-style-type: none"> <li>• Distribute food aid for consumption before the sowing period to allow farmers to keep their existing seed reserves.</li> <li>• Reduce storage losses by providing access to chemical seed treatment (with instructions for use) if a specific crop is vulnerable to attack from pests during storage.</li> <li>• One-off loans to a small number of traders and / or farmers enabling them to buy appropriate seed in distant markets.</li> <li>• Seed distribution.</li> </ul>
To ensure that the poorest farmers have access to locally available seed.	<ul style="list-style-type: none"> <li>• Distribution of money to poor farmers.</li> <li>• Seed vouchers to allow the poorest farmers to buy seeds.</li> <li>• Seed vouchers and seed fairs.</li> </ul>
Improve the quality of seed saved by the farmers.	<ul style="list-style-type: none"> <li>• Improve the containers or granaries used to save seed.</li> <li>• Reduce pest damage of farmer-saved seed by providing access to chemical or traditional treatments, with appropriate usage instructions.</li> <li>• Use fairs to provide access to farmers' preferred seed saving containers.</li> </ul>

### 3.3 Planning for short-term interventions.

The suggestions presented here are aimed at short-term interventions. Planning needs to be done in such a way that there will be a clear understanding of activities to be implemented, and co-ordination will be more appropriate and better organized.

It is important that short-term interventions do not put at risk the long-term development strategies to strengthen seed security. When planning short-term interventions it is important to consider their potential impact on long-term strategies.

#### 3.3.1 Interventions to address seed availability

##### Loans

Loans or credit to enable traders or farmers to buy seed are most appropriate when seed is not available locally but may be bought in distant grain markets which are inaccessible to farmers because of transport costs.

The method of repayment or paying installments for the credit or loan should be previously agreed. Local communities can plan this type of intervention. The communities should select two or three traders or farmers who will be responsible for buying seed of the preferred crops and varieties and bringing them to the community. It is important that the traders or farmers who go to buy the seed discuss the preferred crops and varieties with other farmers in the community so that they know exactly what they should buy. It is also important to discuss how the seed will be distributed to local farmers.

The purchased seed can also be sold to local farmers, either for money or through a system of credit notes which can be prepared as part of the intervention. Repaying the loan or credit should be done according to the agreement previously made between the traders and companies.

##### Food Distribution

Food distribution is appropriate where the availability of locally produced seed is limited. Distribution should be done before the sowing season. NGOs can distribute food in this way as part of their own community-support initiatives. This may help farmers to conserve the small quantity of seed that they might have saved.

## Seed Distribution

It may be necessary to distribute externally obtained seed to all the families in affected communities when seed is not available in neighbouring areas or in more distant grain markets. The seed should be appropriate and should be provided in time for sowing. The situation demanding this type of response is rare. Food distribution, as described above, should be done at the same time as seed distribution if there is a shortage of food. Seed may also be distributed when a limited quantity of seed is available.

### 3.3.2 Interventions to enhance access to locally available seed

#### Seed vouchers

Seed vouchers are appropriate when seed is locally available but some people do not have the means to acquire it. It is necessary to inform local traders, seed companies and farmers who have seed or planting material that the seed vouchers have a monetary value, which will be redeemed by the implementing agencies. The vouchers should be distributed to those who need help. Farmers can use the vouchers to acquire seeds of their choice from traders or other local farmers who have seed available.

#### Seed fairs

Seed fairs are appropriate when seed is available locally from local traders or other farmers. It is important to give traders and farmers prior notice about the seed fair to ensure that local seed and other propagation materials are brought to the fair on the agreed day. Seed vouchers may also be prepared, so that they can be distributed at the seed fair. In this way, all the vouchers will be distributed and used on the same day. Further detailed advice on planning seed fairs is provided in the manual *Organizing Seed Fairs*, published by ICRISAT \ INIA Mozambique, 2002.

### 3.3.3 Interventions to address the quality of seed

#### Appropriate storage containers

The containers that farmers prefer for storing seed, such as bottles and tins, should be made available locally from local traders. It is important to find out what type of containers the farmers prefer so that the right kind is made available. If it is not possible to find an adequate supply of suitable containers (such as glass bottles, tins, etc.) it may be possible to contract metal workers to make appropriate containers for storing and conserving seed. If it is necessary to make new containers, it is essential that samples are made and presented to the farmers to ensure that the farmers approve of them and that they are technically appropriate.



## Seed treatment

Training in seed treatment, whether traditional (using wood ash, chili etc.) or chemical (such as Actellic). Some farmers are probably already using some kind of traditional seed treatment, and in this case it may be possible to identify the most experienced farmers to instruct less experienced ones in the effective treatment of different kinds of seeds. If the traditional seed treatment method is ineffective, then chemical treatment may be considered. The chemical product should be supplied by local traders at prices that the farmers can afford. Training should be carried out by rural agricultural extension workers or by NGOs. It is advisable to train the local traders who will supply the farmers.

### 3.4. Suggestions for planning long-term interventions

In order to respond to some specific problems, it is advisable to devise long-term strategies aimed at strengthening the local seed system and ensuring seed security. Some suggestions are given in this module but other strategies that are not presented here may also be suitable. Many of these strategies need the support of INIA researchers or advice from other institutions.

#### 3.4.1 Increase the availability of seed by increasing productivity

Removing the local constraints indicated in SSP (Module 1) may increase agricultural production, and thus the availability of seed. The interventions could include identifying and promoting appropriate strategies to control pests, diseases and / or improve soil fertility. Where drought is a chronic problem it is advisable to identify and promote drought-tolerant crops and varieties with assistance from INIA.

## Examples of long-term objectives and interventions

	Objective	Possible interventions
Crop systems	Focus on addressing specific production constraints (e.g. pest management, disease control, improving soil fertility).	Testing new crops and new technologies in the communities.
	Increase the range of crops and varieties that farmers grow, by identifying and promoting crops that are suitable for local conditions.	Testing new crop varieties in the communities
Varieties used	Introduce improved varieties that are resistant to specific threats.	Promote the exchange of varieties between farmers through 'variety fairs'.
	Identify and / or develop improved varieties that are locally acceptable.	
Seed production, selection and storage	Increase local seed production.	Increasing local seed production is best achieved by dealing with the constraints to production (see above) and by improving the production of high yielding crops. Local seed companies may be useful for certain crops.
	Improve the quality of farmer-saved seed by promoting the selection of good seed.	Promote appropriate seed selection techniques and seed-saving practices.
	Reduce pest damage during seed storage.	Promote specific training in techniques of using chemical seed treatment.
	Promote access to the farmers' preferred storage containers.	Make containers available through seed fairs and local markets.
	Improve infrastructure for storing seed.	Promote improved granaries.
Acquiring seed	Strengthen local grain markets	Improved market storage and transport infrastructure
	Promote access to improved varieties of locally available seed.	Invite seed companies to seed and / or variety fairs.
	Supply commercial seed markets and retailers at the local level.	Contract farmers to produce seed.
Poverty	Alleviate poverty to allow access to seed for farmers.	Most of the interventions suggested above may help to alleviate poverty indirectly. Every intervention should take the needs of the poor into account, but this does not necessarily mean that the poor are the only target group for every intervention.

### 3.4.2 Identify and promote new crops and varieties

The identification and promotion of improved varieties of local crops requires advice from INIA and seed companies.

On-farm trials of improved varieties should be undertaken by better-off farmers who are interested in new varieties. Once the improved, appropriate varieties have been identified, demonstrations should be carried out to make other farmers aware of the new varieties. The demonstrations should be simple and clear and made under local conditions. It is advisable to make an initial distribution of small packets of seed for the new varieties. When distributing these small quantities of seed it is better to try to recover costs, or as a last resort ask farmers to pay a nominal amount. Special agreement may be made with the poorer farmers who are unable to buy the seed.

#### Small seed packets

This is a way for farmers to acquire small quantity of quality seed of improved varieties which they can test themselves. The production and sale of these packets of seeds is best left to local traders or other commercial organizations. The seed for such packs should be subject only to basic quality control (e.g., purity and germination), not certification.

#### Revolving seed stocks

Many projects distribute small quantities of seeds of new varieties to farmers with the objective of obtaining part of the harvest for future distribution. In other cases, farmers are asked to give or sell part of their harvest to others. This kind of activity is very often accompanied by training in seed-production techniques. In general, seed distribution for varieties that are in demand is a good way of ensuring that the seed is diffused. However, plans for maintaining seed stocks (or seed banks) are often difficult to administer and are susceptible to poor-quality seed. Training in seed production is a way of maintaining a particular crop or variety by focusing on specific problems or issues which need to be considered during selection.

### 3.4.3 Improving seed quality and storage

Long-term interventions to improve seed quality may include:

1. Training farmers in seed selection techniques.

If a number of farmers already have a detailed understanding of seed selection techniques, it is possible to identify farmers who are able to train others.

2. Improving seed storage techniques

Researchers from INIA and other institutions should be consulted to identify specific seed storage problems and possible solutions. Improved storage techniques need to be evaluated by INIA or other institutions to ensure that they are suitable and within the reach of local farmers. Demonstration can be held to diffuse the improved storage techniques.

### 3.4.4 Local markets and commercial seed

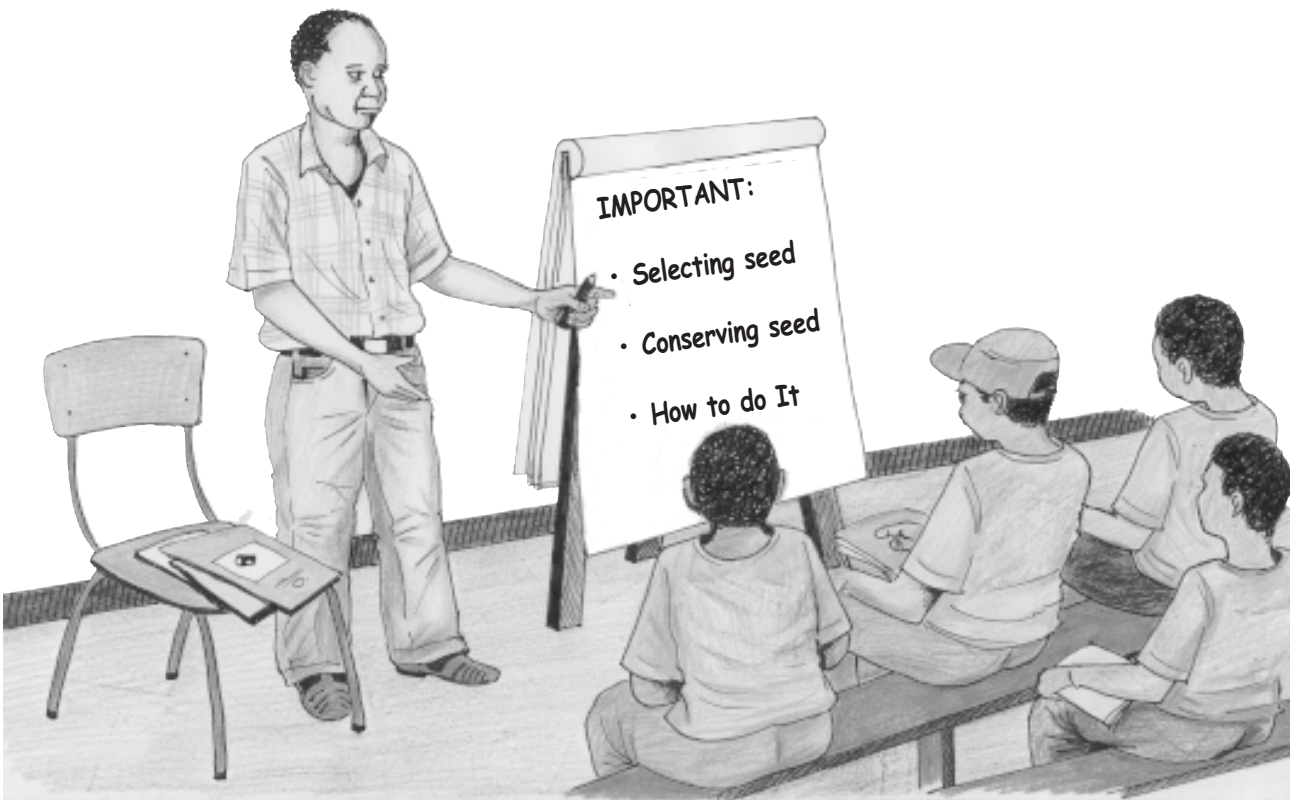
Since many of the suggestions below are best planned at a provincial or national level, it will probably not be possible to initiate such interventions at the district level, but it may be useful to be aware of the possible approaches.

#### Strengthening the local grain market

The markets are very often the source of grain used as seed. Innovations in the markets (such as grain storage or transport) that increase the movement of grain in the local market may help to increase the quantity of seed and stimulate demand for crops. At the same time it may increase the amount of certified seed on the market.

#### Strengthening the commercial seed sector

New varieties resulting from research (e.g. by INIA) must be supplied to companies and seed traders so that they can promote and sell improved varieties to farmers.



### Possibilities for local seed enterprises

Local seed enterprises based in the community have few opportunities for obtaining new varieties. This makes it difficult to keep such enterprises viable, even on a small scale. Experience shows that this type of enterprise usually fails due to financial problems. Reasons include: lack of publicity, inadequate quality control, lack of access to processing technology, lack of storage facilities and poor access to sources of seed. One way of improving farmers' income is helping them to sell their own grain rather than turning them into seed entrepreneurs.

### Contracts between seed producers and seed companies

Contracts to produce seeds may be a means of increasing some farmers' incomes, but it is usually the better-off farmers who have the skills and experience needed to run the risks involved. Contracted seed production is only common in places that are accessible to seed company supervisors and where there is above-average agricultural production.

## REFERENCES

ICRISAT - INIA, Seed Fairs Manual, Manual de Feiras de Sementes em Situações de Emergência, Moçambique, 2002.

Dominguez, C., Sistema Informal de Sementes: Causas, Consequências e Alternativas, 2ª Ed., P206, Moçambique, 2001.

Longley, C., Richard Jones, Mohamed Hussein & Patrick Audi, Seed Sector Study of Southern Somalia: Final Report Submitted to EC Somalia UNIT, ODI & ICRISAT, 2001.

Notes

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## About ICRISAT

The semi-arid tropics cover parts of 48 developing countries, including most of India, South-West Asia, a strip that crosses sub-Saharan Africa, most of east and equatorial Africa and parts of Latin America. Many of these countries are among the poorest in the world. About one sixth of the world's population lives in semi-arid tropics, which are characterized by their unpredictable climate, limited and irregular rainfall and soils lacking in nutrients.

The crops that ICRISAT researches are sorghum, pearl millet, finger millet, corn, chick pea, pigeon pea and peanut: six crops which are fundamental to the lives of people living in the semi-arid tropics, where population rates are continually rising.

ICRISAT's mission is to research ways of perfecting these crops and improving the management of the semi-arid tropics' limited natural resources.

ICRISAT disseminates information about technologies so that they can be developed through courses, networks, training, library services and publications.

ICRISAT was founded in 1972. It is one of the 16 non-profit making centers dedicated to research and training, created by the Consultative Group on International Agricultural Research (CGIAR). CGIAR is an informal association with approximately 50 public and private donors, supported by the United Nations Food and Agriculture Organization (FAO), the World Bank, the United Nations Development Programme (UNDP), and the United Nations Environmental Programme (UNEP).

In 2001, ICRISAT and the Government of Mozambique, represented by the Ministry of Agriculture and Rural Development, signed a convention that authorized ICRISAT to establish a representation in Mozambique from which it develops its activities.

