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## Assessment of the needs and opportunities in post-harvest systems of non-grain starch staple food crops

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*Assessment of the Needs and  
Opportunities in Post-Harvest  
Systems of Non-Grain Starch Staple  
Food Crops*



98

# Assessment of the Needs and Opportunities in Post-Harvest Systems of Non-Grain Starch Staple Food Crops

U. Kleih, P. Digges and A. Westby

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# Contents

	Page
Abbreviations	v
Introduction	1
Section 1 Participatory needs assessment techniques	2
Rationale	2
Principles	2
Triangulation	3
Flexibility	3
Multi-disciplinary team work	3
Serendipity	3
Investigating exceptions	3
Participation	4
Section 2 Planning and conducting a Participatory Rural Appraisal (PRA) needs assessment survey	6
Objectives	6
The survey team	6
Team selection	6
Team training	7
Team size	7
Number of survey teams	7
Team dynamics	7
Team introduction to village	8
Common base for survey teams	8
Site selection	8
Stratification	9
Site selection in practice	9
Flexibility during planning and implementation	10
The issue of group interviews	10
Group or individual interviews	10
Group composition	11
Group size	11
Time considerations	11
Note taking and report writing	12
Section 3 Tools and techniques available	13
Review of secondary sources	13
Direct observation	14
Background information	14
Methods for direct observation	14
Semi-structured interviewing (SSI)	14
Background information	14
Types of SSI	15
Guidelines for SSI	16
Use of a checklist	18
Scoring	18
Ranking	21
Strengths of ranking	21
Guidelines for ranking	21
Preference ranking	21
Pairwise ranking	22
Direct matrix ranking	23
Wealth ranking	24

Construction of diagrams	25
Overview	25
Drawing maps	26
Transects	26
Seasonal calendars	28
Time trends	29
Historical profile	31
Daily routine diagram	31
Flow diagram	32
Venn diagram	32
Case studies	33
Guidelines for case studies	33
The importance of combining tools	34
<b>Section 4 Introduction to Rapid Market Appraisal (RMA)</b>	<b>36</b>
Background	36
Identification of the marketing chain	36
Tools applied and location of interview	36
Key informants	37
<b>Section 5 Possible dangers and shortcomings of PRA and RMA</b>	<b>38</b>
<b>Appendices</b>	<b>39</b>
Appendix 1 References and further reading	39
Appendix 2 Checklists used for needs assessment survey in Ghana	40
Appendix 3 Key informants in Rapid Market Appraisal: advantages and disadvantages as informants	46

## **Abbreviations**

NGSS	Non-Grain Starch Staples
NRI	Natural Resources Institute
ODA	Overseas Development Administration
PHDU	Post-Harvest Development Unit of the Ghana Ministry of Food and Agriculture
PRA	Participatory Rural Appraisal
RMA	Rapid Market Appraisal
RRA	Rapid Rural Appraisal
SSI	Semi-Structured Interviewing
TFNC	Tanzania Food and Nutrition Centre



# Introduction

This manual provides information on methods which can be used for assessing needs and opportunities related primarily to non-grain starch staple (NGSS) post-harvest systems. Between 1993 and 1995, case studies were carried out in Tanzania and Ghana to validate these methods. The results and experience derived from the studies were used as a basis for national and regional training workshops organized by the Natural Resources Institute (NRI) in collaboration with the Tanzania Food and Nutrition Centre (TFNC) in March 1994, and the Post-Harvest Development Unit (PHDU) of the Ghana Ministry of Food and Agriculture in February 1995.

The preparation of this document forms part of the ODA-funded project entitled 'Transfer of needs assessment methodologies and post-harvest technologies for non-grain starch staple food crops in sub-Saharan Africa'.

The information provided in the manual focuses on the rationale and principles of using a Participatory Rural Appraisal (PRA) approach to needs assessment, describes tools and techniques for rapid, cost-effective information gathering, and examines the methodological issues associated with the planning and implementation of a PRA survey. Owing to the strong market orientation of NGSS crops in many parts of Africa, Rapid Market Appraisal (RMA) techniques are also introduced.

In addition to the case studies carried out in Tanzania and Ghana, the manual draws on a number of references. These will be indicated sparingly because of the nature of the manual. However, the following were used extensively: Gilling and Cropley (1993) in the section on practical issues, Holtzman *et al.* (1993) in the section on Rapid Market Appraisal, and Theis and Grady (1991) in the section on tools and techniques. Other references were used to a lesser extent. Appendix 1 provides a list of references and selected reading which may be useful when carrying out NGSS needs assessment surveys.

The purpose of this document is to provide a guide for researchers, scientists, extension officers and other practitioners working on NGSS food crops, particularly post-harvest aspects. Although it may also be used for other rural development projects, the emphasis is on how to assess the post-harvest needs of NGSS food crop systems.

The first section provides some background information on informal survey methodologies such as Rapid Rural Appraisal (RRA), PRA and RMA. The practical aspects of planning and conducting a needs assessment survey are then examined before discussing the use of specific tools and techniques. The main part of the manual concludes with a discussion of the possible dangers and shortcomings of informal data collection. The Appendices also include checklists for NGSS needs assessment surveys and an overview of key informants who can be used in RMAs.

# Section 1 Participatory needs assessment techniques

## RATIONALE

If national programmes are to accomplish successful development projects and make sound planning and policy decisions, they must acquire a certain level of information about the locality concerned. Historically, information gathering exercises have been protracted, expensive, narrow in their focus, and heavily biased by preconceived ideas.

Although many of the techniques used for informal surveys are not new, they began to be seen as legitimate approaches to research in the late 1970s for a number of reasons. By questioning the record of rural development, the methods of obtaining information came under scrutiny, and the need for closer contact between rural communities and researchers was recognized. The data needs of planners were not being met by existing research, the available data were not always useful for planning, and much of the information required was not being collected. This provided an additional impetus for diversifying survey methods.

Even when they are well designed, formal surveys can only produce some of the information needed by policy makers and development planners, and the allocation of resources has often been based on quick visits to rural areas by government officials and project staff.

In his critique of rural development practices, Chambers (1983) associated the problems often encountered with six areas of bias.

1. *Spatial bias* such as rural surveys led by hotel availability, road conditions etc.
2. *Project bias* in which there is a tendency to concentrate only on certain (often positive) projects.
3. *Person bias* including elite, male, and user/adopter bias which means that the poorer parts of the population, female households, and those who are not the potential users of a technology, are likely to be neglected.
4. *Dry season bias* in which there is a tendency to carry out surveys during the dry season even though rural populations encounter more difficulties during the wet season.
5. *Diplomatic bias* in which the poorer (i.e., the more needy) parts of the population may be neglected in order to avoid offending the influential groups of the village.
6. *Professional bias* whereby practitioners focus attention on their own disciplines and select interviewing partners accordingly.

In the early 1980s, the Rapid Rural Appraisal (RRA) approach to initial project preparation was developed. A range of RRA methods and approaches was available by the end of the decade, and these gave rise to PRA at the beginning of the 1990s. Although RRA and PRA have many features in common, a few elements have been added to PRA which were not always prominent in RRA. These include placing more emphasis on participation, trust between project partners, and sharing of information.

A needs assessment often starts with an approach which is closer to RRA, particularly if the target area is large (an entire region or country) and the exercise is in its early stages. This occurs when it is essential to gain an overview of the issue quickly. However, during the course of the survey, the scope will become narrower and once potential project sites and target groups have been identified, the methods should become more participatory.

A semi-structured informal approach to primary data collection (such as RRA and PRA) offers the potential for improving the quality of information and therefore allowing intelligent decision making. This enables the applied research effort to be more focused and appropriate technical intervention needs to be identified.

## PRINCIPLES

RRA was defined by Conway (1986) as 'a systematic, but semi-structured activity carried out in the field by a multi-disciplinary team designed to acquire rapidly information on, and hypotheses about, rural life'. Although PRA shares these principles to a large extent, the participatory element of informal data collection is stressed.

Some of the key features of both RRA and PRA are set out below.

### **Triangulation**

RRA and PRA intentionally collect information from several different perspectives. In the absence of extensive sampling, this helps to check the validity of the information and improve accuracy. It is referred to as triangulation and can be achieved in the following ways.

1. *Team composition*: members are chosen for their ability to approach a research question from different perspectives.
2. *Selection of units of analysis*: the information is sought at different levels such as the village, household and individual. This checks for accuracy and allows for the expression of conflicting views. Although these conflicts may not be resolved, decisions can at least be taken in the knowledge of their existence.
3. *Methods*: the same information is sought by various techniques so that it will either converge, providing confirmation, or diverge, suggesting inaccuracies and bias.

### **Flexibility**

The word 'iterative' is often used to indicate that an RRA has been carried out in a flexible manner rather than rigidly pre-planned and executed without deviation. Flexibility is expressed in two ways.

1. The researcher can change the techniques or questions at any point during the investigation. He learns rapidly, as much during data collection as at the final analysis stage.
2. In the absence of a standard protocol, there is greater freedom to combine diverse methods to fit the unique situation of every research project.

### **Multi-disciplinary team work**

As farmers work in a complex environment, individual disciplines or specialist knowledge have little meaning. A research team with members from several disciplines is in a much better position to understand all aspects of a situation. As well as technical disciplines, staff with a background in the social sciences should be included in a survey team.

### **Serendipity**

Serendipity means recognizing or creating situations in which the researcher can take advantage of chance. Unlike formal surveys (with a fixed timetable, predetermined respondents and a standardized questionnaire), the researcher can pursue a different line of enquiry in response to an interesting individual or an unexpected situation.

This type of opportunism has seldom been seen as an important feature of 'scientific' research, but chance and accident can often be productive. Serendipity is, by nature, unpredictable although it can be made more likely by using techniques and patterns of thought which encourage openness.

### **Investigating exceptions**

Another fruitful principle of RRA/PRA is the following up of exceptions and lack of agreement. Village meetings in particular are likely to lead to discussions among group members, providing the practitioner with the opportunity to explore sometimes sensitive issues in greater detail. However, a considerable amount of facilitating skill is required to stimulate these discussions.

Investigating exceptions may provide a wealth of the information needed to understand complex socio-economic situations in rural environments more fully. It is important to observe who, or which part of the population, is at the origin of an exception. Although women's views may appear to be exceptions when expressed during the course of a group meeting dominated by men, the information they provide may be crucial to the success of the project; it may in fact be the women who are the real beneficiaries of the project.

Examples of exceptions and lack of agreement may include practical issues such as why certain, relatively small parts of the population use storage or processing facilities which are not used by the majority of the village.



**Figure 1** PRA and the project cycle  
**Source:** Theis and Grady (1991)

### **Participation**

Although RRA included participation of the target population in needs assessment and other exercises related to the project cycle, it was recognized that this method was often primarily extractive. Outside professionals went to villages, collected information and took it away for processing and analysis so that those who actually provided the information rarely saw or heard of the results. This was partly attributed to the 'rapid' element of RRA which was often seen as an enticement to 'quick and dirty' jobs.

By contrast, more emphasis has been placed on participation in the PRA approach. As a result, the target population has a more significant role in the information collection exercise. Interviewing consists more of discussions during which the interviewees can express themselves on equal terms. In another advance, the rural population is invited, as much as possible, to facilitate the investigation, analysis, presentation and learning themselves so that they may be the eventual owners of the information. For the outsider, this often means beginning a process and then allowing it to proceed without interruption.

A strong participatory element in a survey method requires a re-thinking on the part of practitioners; they need to relax during surveys instead of pushing, acquire self-critical awareness, share information and ideas with the rural population, and embrace error as an opportunity to learn and do better.

As already indicated, the early stages of a needs assessment survey may often contain a strong RRA element before its scope has been narrowed down. It is unlikely that a return to all the villages visited during the course of a survey will be possible. However, if the target population or beneficiaries of a project have already been identified, their active participation can be sought. In such a context, it is easier to build the required trust between the partners of a project.

During the course of PRA exercises, more time will be spent with the target population in rural areas than during RRA exercises. Practitioners often stress the need to spend a night in the village. Farmers are more likely to have time available in the evening, and practitioners are in a better position to make direct observations over a longer period. However, survey teams should be careful to avoid putting villagers under unnecessary pressure regarding the availability of time, food and accommodation. If it is permitted by local custom, survey teams should bring food which can be shared with the villagers, and provide the equipment necessary for an overnight stay.

It has already been noted that PRA avoids removing all the information from the target population (i.e., leaving them with no access to it after the departure of the survey team). However, this means that the purpose of the visit must be clearly stated at the beginning of the exercise. In addition, information gathering should be participatory, i.e., villagers should be encouraged to take an active part. The tools used will therefore have to be explained to the farmers so that they can use them. Records of the information gathered and already analysed with/by farmers should then be left in the village.

Figure 1 illustrates the importance of participation in the project cycle in either a rural or an urban setting.

## Section 2 Planning and conducting a Participatory Rural Appraisal (PRA) needs assessment survey

### OBJECTIVES

Deciding on the objectives is one of the most important parts of survey planning. Before embarking on a needs assessment exercise, it is necessary to set the objectives of the survey, the subjects to be covered, the type of information required, the desired accuracy of information, and the timing.

Informal needs assessment methods such as Rapid Rural Appraisal (RRA) and Participatory Rural Appraisal (PRA) are as sensitive to the failure to set objectives as the more conventional approaches. RRA and PRA are less structured than formal surveys and often, decisions on who to interview, and on which subjects, are taken spontaneously in the field. Even when checklists have been formulated, as they should be in all cases, there is a tendency not to follow the guidelines. If objectives are not discussed and determined beforehand, the PRA may suffer from unfocused, arbitrary questions and result in feeble conclusions and a failure to investigate key areas.

If there are no clear objectives for collecting data, it is impossible for practitioners to monitor the effectiveness of the tools they are using. The possibility of making changes in the field is therefore limited, and any self-corrective capacity is rendered ineffective.

The objectives of the study should also determine which tools and techniques to use. Lack of objectives means that there is a potential danger of the inexperienced practitioner using the various PRA tools as an end in themselves rather than as a means of obtaining information.

The tools available for RRA and PRA will be considered in detail in a later section.

### THE SURVEY TEAM

#### **Team selection**

The selection and 'mix' of the team members is of crucial importance when determining the likely success of a survey which relies on informal approaches. The following points should be considered.

- (a) It is essential to include at least one team member who is experienced in both the planning and conduct of an informal survey. Issues of site selection, which activities to undertake, the timing of each activity, and what is possible and not possible, are of crucial importance to the overall success of the survey.
- (b) Where possible, participants should be identified before field planning sessions so that their skills can be judged before training and pre-testing begins. Unlike formal surveys where relatively unskilled workers can be trained as enumerators, informal surveys require technical specialists and innovative, enquiring minds.
- (c) The members of the needs assessment team should have different skills and backgrounds. The different viewpoints of team members will compliment each other and provide a more comprehensive picture (principle of triangulation). In this way, the team will approach the topic of the survey from different perspectives, and this should provide new and deeper insights. The nature and objectives of the survey will determine which disciplines to include.
- (d) Intensive use of skilled personnel, and the competing demands placed upon them, has the potential to disrupt even the best plans. It should be recognized that the availability of specialists for extended field-work will often be an issue. It may be necessary to include several team members during the planning stages, notably during the formulation and pre-testing of the checklist, and to reduce the numbers for the bulk of the survey. In this way, expertise is included at least during survey planning and pre-testing, if not in actual data collection.

### **Team training**

Sufficient time is needed to train the participants in informal collection techniques, with particular emphasis on interviewing skills; inadequate training will limit their effectiveness as team members. The amount of time allocated to this will depend on the background of the various team members, but it should allow for flexibility and be judged in this context.

Pre-testing in the field is also desirable. The necessary hands-on field practice should be provided to develop and enhance field skills. A high trainer/participant ratio is necessary to take full benefit from planning and training exercises.

A training and planning exercise should include the formulation and pre-testing of a checklist as well as a hands-on demonstration of the other principal PRA techniques to be used (e.g. ranking, scoring or diagramming).

### **Team size**

The experience of the Social Sciences Department of the Natural Resources Institute (NRI) has shown that the optimal group size is two or three researchers.

There is often a tendency for over-large teams to take part in field studies during the early stages of PRA. This is usually a consequence of trying to combine training with the execution of the survey, which results in additional staff being sent into the field to observe. It leads to a number of problems. Villagers generally find large groups intimidating and disrupting, particularly if foreigners are included. This will compound the tendency for village officialdom to take over the proceedings, and make it more difficult to consult a representative cross-section of the community.

Large teams can also present logistical problems for the survey. Apart from transportation, finding overnight accommodation can be difficult in towns and even more so in villages.

### **Number of survey teams**

If large numbers of people are involved in a survey, there will be a tendency to form more than one team. Although this may extend the coverage of the survey, it also has the significant potential disadvantage of requiring a more structured approach. A semi-structured survey allows teams to follow disparate approaches, with the result that the coverage of key factors is not homogenous across all survey sites. If the survey is more structured, the advantages associated with this flexible approach are compromised.

One solution is the so-called *Sondeo* approach by which participants form small, inter-disciplinary, two person sub-groups with a regular exchange of members between them. The exchange ensures some harmony in approach between groups.

There are other advantages and disadvantages associated with using more than one team. With a large number of teams transport can be a limiting factor. On the other hand, multiple teams have advantages at busy times of the farming calendar when it is desirable to reduce the amount of time spent in a village. In addition, the multiple team approach is that it might enable a team to by-pass the more formal initial group interviews. This added element of flexibility facilitates a breadth and depth of understanding of the issues under investigation.

### **Team dynamics**

The use of an interpreter is sometimes required when undertaking a survey and may be particularly important when conducting an informal survey. However, the precise procedure and method of relaying information is often neglected and poorly established. This can have serious repercussions for the effectiveness of the interview, the worth of the information collected, and the relationship between team members.

A system which has been found to work well entails the leader/interviewer relaying answers from interviewees after they have finished talking and after the leader has made notes. The system is relaxed and allows a smooth process of asking and answering questions. This, in turn, enables team members not conversant with the language to participate. However, a potential drawback is the length of time it takes for the translator to

communicate the answers to the other team members. This may give the impression of being unprepared and can lead to interviewees becoming distracted and losing interest. A trade-off therefore exists between effective participation of all team members and the time spent in communicating.

Separating the questioner and translator can lead to a number of problems. For example, two team members may talk simultaneously, interviewees and the questioner may become distracted, and the translator may find it difficult to follow the line of questioning, responses and discussions.

Team size can have important implications for both the degree of communication and the level of participation of each team member. The advantages of small teams with the preferred two or three members have already been noted. Potentially disruptive factors include the following: the presence of juniors and their seniors on the same teams; conflict within technical disciplines; the presence of foreigners; derogatory attitudes towards women; and intolerance of field hardships.

In terms of the pros and cons for using teams of two members or three, a needs assessment survey carried out by the Tanzanian Food and Nutrition Centre in collaboration with NRI and others in Tanga Region showed that two member teams usually predominate. However, it is often argued that a third team member can be advantageous. The task of translating, asking questions and taking notes is tiring and may not allow the translator sufficient time to think and provide a meaningful input. A survey team of three would mean that the job could be shared and this potential drawback could be largely overcome.

In studies in Ghana, the survey team was divided into two sub-groups comprising three members each. The tasks of facilitating discussions and taking notes were rotated as much as possible.

Therefore, in terms of team dynamics and input from individual team members, the relative merits of having two or three team members is not always clear cut. It may be best to leave the final decision to the team conducting the study in the field.

### **Team introduction to village**

Care should be taken not to mislead the villagers about the intentions of the survey. If the impression is given that the survey is concerned with a particular crop, or with providing definite outcomes such as storage or processing facilities, villagers will tend to tailor their responses towards this apparent concern as expectations will have been raised. It may also be necessary to clarify that the survey has nothing to do with revenue collection.

A problem which may be encountered is that of unfulfilled expectations from previous visitors (outsiders). This potential barrier can be exacerbated if incorrect messages as to the purpose of the visit are relayed by district staff. A possible solution is to give the district worker a letter from the survey team which clearly states the intention of the visit.

### **Common base for survey teams**

If participants have been sub-divided into more than one survey team, the sharing of a common base, where possible, offers a number of advantages. It allows the interchange of team members, facilitates discussion of survey findings and methods used, and enables any necessary changes to be made to the checklist. This, in turn, introduces an element of standardization to the methodology and makes it easier to assimilate and compare findings. The interchange of team members also enables those who are less conversant with interviewing skills to observe members who are more familiar with the technique.

During the NGSS needs assessment studies in Ghana where the survey group was split into two sub-teams for most of the time, evening sessions proved to be particularly useful for creating a common base. These sessions allowed time for discussions of the methodology used and comparison of data collected.

## **SITE SELECTION**

Appropriate decisions taken at the site selection stage will determine the quality of the information collected. It is particularly important to consider the significance of bias when selecting sites. For example, survey teams have been criticized for exhibiting spatial and seasonal bias, choosing locations which are nearest to roads and most easily reached during the dry season (see above).

Practitioners of RRA/PRA acknowledge the effect of bias and basic texts usually note the explicit recognition of bias as a fundamental characteristic. However, recognition and avoidance of bias are not the same. It is important to be aware of the common sources of bias and, where practicable, balance them with other perspectives.

Ironically, this awareness can in itself lead to bias in site selection; zealous researchers often go out of their way to find sites which are difficult to reach during the times of the year when travelling is least practicable. This has two potentially damaging effects: (a) the sites selected are mainly atypical, although this is not usually the basis for site selection; (b) it can have a negative effect on team morale and the time available for the survey.

In addition to the tendency to seek out difficult sites, there is a propensity for selecting only what are perceived to be typical sites. This also is an unsound basis for site selection as it excludes exceptions which may possess interesting aspects and help to explain inter-relationships between variables.

### **Stratification**

Stratification is often used in site selection. It is a means of improving sampling efficiency by dividing the population into sub-sets within which the variability of key factors is expected to be lower. A sub-set exhibits greater homogeneity than the entire population. A typical example is agro-ecological zoning by which an area is divided into sub-sets based on homogeneity of rainfall, farming systems or even crop yields.

A secondary reason for stratification is to ensure adequate coverage of major variables. In this context, 'major' may be defined as a hypothesized relationship between variables. For example, a hypothesized link between village cassava output and distance from urban markets would provide a *prima facie* case for stratification by distance from urban markets. In the absence of such stratification, researchers may fail to pick up the effects of market distance on output simply by failing to observe a cross-section of sites at different distances from urban markets.

Stratification has particular relevance for informal rapid surveys when time is limited. Well-chosen stratification strategies can help to ensure that perceived linkages between key variables are investigated in the most effective manner.

The success of stratification depends on the quality of the data. This may be important when stratifying by population density if no recent population studies have been undertaken.

If the sample has not been formally stratified at the planning stage, appropriate adjustments could be made in the field. However, if the sample has been randomly selected, any adjustments would negate the results if they were to be used for generalizing about the population.

Stratification is also used to identify the individuals or population sub-groups to be interviewed during the survey (see also below).

### **Site selection in practice**

In practice, the survey team usually relies on project counterparts or locally-based collaborating institutions for site selection. These can include extension services, NGOs, or the staff of parastatals. In all cases, the purpose of the proposed exercise needs to be fully explained to any outsiders who may join the team in the field. It is then the task of the practitioner to guide the site selection process. Detailed maps of a region or district are useful for facilitating stratification and for the final identification of sites.

In order to prevent bias, it is important to understand the rural environment. For example, a balance has to be found between villages with easy and difficult market access. Extension officers are apt to select better performing villages or farms, and although these may be interesting, the team would also have to visit less successful communities in order to obtain balanced information.

## FLEXIBILITY DURING PLANNING AND IMPLEMENTATION

It is important to recognize the need for flexibility during the planning process, and to respond to needs and constraints as they arise. For example, the time required for training will depend on the background of the various participants. If they are familiar with informal survey techniques, the time allocated for training may be reduced so that more effective use can be made of the limited time available.

The need to be flexible is equally important during the implementation of the survey. Although a plan of action is required to guide the survey (for example, number and location of villages), a rigid schedule can restrict and impede the effectiveness of the study.

Those inexperienced in the planning and conduct of a survey are often over-optimistic with regard to the number of sites which can be visited in the time available. The 'pressure' of encompassing as many villages as possible, often viewed incorrectly as a measure of the validity and worth of the survey, can lead to an unnecessarily rigid schedule. This may not only impede the effectiveness of the survey, but also reduce the worth of the information collected. The problem is particularly evident in studies which aim to examine the wider marketing system, the various markets and traders of which may not be apparent in the planning stages. A degree of flexibility may therefore be required during the site selection process in order to adapt and respond to the needs and constraints of the survey as they arise.

## THE ISSUE OF GROUP INTERVIEWS

### **Group or individual interviews**

The difficult choice of whether to interview individuals or groups depends principally on the type of information required and the means available to obtain it.

Group discussions are particularly useful if the information required, such as the varieties of crops grown or the storage techniques used, is not expected to vary significantly between households. Also, if the issue under discussion is not too sensitive in nature, a group interview may provide an easy overview of likely variables, such as field sizes or crop yields. A group of farmers should be able to supply information about the whole range of field sizes and an approximation of average yield.

Discussions, which can generate a wealth of information, are more likely in a group environment. The group also provides a means of cross-checking and probing the information obtained.

Individual interviews are more appropriate when the information sought is descriptive, widely known and uncontroversial (e.g. types of school and health facilities, number of cassava processing units etc.) or when it is too sensitive to be discussed openly (e.g. money and income issues, size of stocks, taboos).

Trader interviews are often more fruitful if carried out on an individual basis or in small groups of up to four traders. Although the information collecting exercise may begin with a larger introductory meeting of market traders, the traders' time constraints are likely to prevent in-depth discussions.

Apart from the time constraints, the sensitive nature of marketing questions (e.g. information on prices, quantities, trading practices) means that individual trader interviews are preferable. These can often be carried out during business activities, thus allowing direct observations as well.

Meetings with several sub-groups of the same village may be useful if class differences between households have to be established. A stratification exercise (e.g. wealth ranking) whereby more or less homogenous sub-sets of the population are grouped together according to perceived key variables, may be required before the start of group discussions.

The choice of group or individual discussions is also influenced by the tools to be used for data collection. For example, diagrammatic tools or ranking exercises are usually more effective when they are used in groups because they allow for group interplay.

## Group composition

When considering group interviews, the issue of group composition must be addressed. Even if village leaders and district extension officers have been asked to provide a wide cross-section of farmers, the resulting group may not be truly representative. The groups often consist predominantly of men, and there may be bias in the socio-economic characteristics of the farmers who attend. This gender and person bias (elites) may influence the validity of the results.

If particular sections of the community are prevented from expressing their views in a group discussion, alternative formats with individuals or sub-groups should be used. Male domination of village groups can be countered either by asking permission for a survey team to interview only women, or by including a female interviewer in the team (this can help communication), or by asking specifically about the activities undertaken by women.

## Group size

Smaller groups of up to 15 interviewees have generally been found to be better than larger groups of 20 or more. Members of smaller groups tend to feel more comfortable and relaxed, and this will often be reflected in the larger proportion of participants who will contribute during the interview.

Smaller groups are also easier for the interviewing team to manage. Individuals can be brought into the discussion more easily, and questions can be addressed to particular members of the group.

## TIME CONSIDERATIONS

Four important time factors need to be considered when planning an informal needs assessment survey:

- overall time availability
- time allocation for each stage of the survey
- timing of the actual survey
- duration of interviews.

The overall time allocation for RRAs is sometimes too small for a profound survey and analysis of rural development-related issues. This may be because the 'rapid' element dominates over the other aspects of the study, particularly when budgets and time are limited. The PRA approach overcomes this problem by stressing the importance of sufficient time right from the beginning.

A balanced time allocation between the different stages of a survey is an important pre-condition for its success. Sufficient time is required not only for the field visits but also for preparation, including the review of secondary sources, and the writing of the report. Unfortunately, this pre-condition is often disregarded so that too little time is allowed for survey preparation or the analysis of data which were collected at considerable expense in terms of energy and funds.

A minimum of six to eight weeks should be allocated for a successful survey, depending on the nature of the issue under consideration and the experience of the survey team. About one to two weeks should be spent on preparation, four weeks on carrying out the actual field survey, and three weeks on writing and presenting reports.

The correct timing of a survey requires some knowledge of the localities to be visited. Practicalities related to transport issues are a minor consideration in this respect. It is important to remember to avoid bias, such as the tendency to visit rural areas exclusively during the dry season. When visiting farming communities, it is also important to be aware of seasonal and daily agricultural activities. Although a field survey of cassava post-harvest issues may be more appropriate during the main harvesting and processing season, a survey team may find it difficult to locate farmers during short visits in the principal agricultural season. Therefore, it is often recommended that at least one night, and probably more, should be spent in the village. The extra time for discussions is likely to result in a deeper insight into the villagers' activities and constraints. Visits to farmers' fields, storage and processing sites are also good opportunities for collecting first-hand information and making direct observations. At the same time, the survey team should minimize disruptions to the villagers' lives.

The actual length of an interview or discussion will vary considerably according to local circumstances, language skills, individual character, and expertise in informal survey methods. Although they usually take longer, lively, open-ended discussions tend to be more fruitful than 'closed' interviews, but there are upper limits beyond which the quality of the information obtained deteriorates with the extra amount of time spent. It is sometimes recommended that interviews should be limited to about one and a half hours. However, the survey team is generally responsible for judging when an interview or discussion is becoming too long for the participants. Needless to say, well-prepared interviews are more interesting for both the researcher and the farmers or traders involved.

Although it is recommended that a certain amount of time should be spent in a village, this practice may also be limited by the farmers commitments and time constraints. It may sometimes be better to return to a village at intervals in order to engender a sense of trust between the research team and the beneficiaries of the project. Only when this trust has been established are discussions likely to be more open and fruitful.

## NOTE TAKING AND REPORT WRITING

Provision of the time and opportunity for conversations and discussion should be regarded as an integral part of the study. The unsatisfactory conclusions produced by some studies may be partly explained by a lack of communication between team members, and an insufficient time allocation for analysis. A joint review and analysis by the survey team allows the study to become more focused and promotes an in-depth understanding of the issues involved.

It is essential to establish the exact procedures for note taking before the start of the exercise in order to avoid disrupting an interview or losing information. Clear procedures are particularly necessary if the survey teams consist of more than two members.

It can be very useful to reserve evening sessions or even whole days for brain-storming and discussing the information collected. This also allows time for the data to be completed and organized for the report.

It is important to write at least a preliminary report on the findings of a village visit while the information is still 'fresh'. Hand-written reports produced immediately after an interview/discussion can be used by the team leader as the basis for the final document. It may sometimes be possible to draft a preliminary report using a portable computer in the field.

A well-presented report comprising the three principal sections of introduction, presentation and analysis of results, and summary and recommendations, will give decision makers the right impression. Decision makers facing time constraints may appreciate a report which begins with the summary and recommendations.

A survey report based on informal data collection cannot present its findings as statistically 'correct'. For those unfamiliar with informal techniques, it may be necessary to repeat this in the introductory section. On the other hand, some decisions makers, particularly those who favour 'hard' facts, may need reminding of the positive aspects of participatory appraisal techniques and the qualitative value of data collected in this way.

## Section 3 Tools and techniques available

In this section, an overview is presented of the tools and techniques most commonly available for Rapid Rural Appraisal (RRA) and Participatory Rural Appraisal (PRA) exercises. (This section draws extensively on Theis and Grady, 1991.) They include

- review of secondary sources
- direct observation
- semi-structured interviewing
- group discussions
- photographs
- scoring
- ranking
- construction of diagrams
- mapping
- seasonal calendars
- transect walks
- case studies

Most of these tools can be divided into sub-versions and these will be explained in some detail.

### REVIEW OF SECONDARY SOURCES

The use of information from previous work (secondary data) can improve the efficiency of studies by:

- (a) preventing the effort of gathering the same information twice;
- (b) raising the explanatory value of the study;
- (c) allowing researchers to focus their observations, select the most appropriate sites, and identify key variables in advance;
- (d) providing background information to enable researchers to place field studies in context;
- (e) allowing historical data to be used in conjunction with contemporary studies to highlight the changes characteristic of dynamic farming systems in the developing world.

Researchers with responsibility for collecting and compiling secondary data need to define the information required as clearly and explicitly as possible. Researchers belonging to different disciplines may be unaware of what kind or form of information is required by other disciplines. This may lead to the omission of potentially useful information, or the collection of data at inappropriate levels of aggregation or disaggregation.

Secondary sources of information relevant to the area or subject of the planned PRA are available in published or unpublished form (e.g. reports, statistics, maps, aerial photographs, films).

Secondary sources form the background to any information gathering exercise, and a lot of time can be saved by knowing which data already exist and therefore do not need to be collected again. Secondary sources are also useful for clarifying the RRA topic; hypotheses can be formulated by reviewing what has already been said or written about the topic and what has been missed.

Secondary sources should be reviewed before beginning the fieldwork and should be prepared as

- diagrams
- tables and lists

## TOOLS AND TECHNIQUES AVAILABLE

- brief summary paragraphs
- copies of maps and photographs.

### *Cautions*

- Do not spend time reviewing secondary sources if it could be better spent in the field.
- Be sceptical and critical.
- Look out for what has been missed.

## DIRECT OBSERVATION

### **Background information**

One of the dangers of RRA is being misled by myth, rumour or gossip. Beliefs about values and activities do not always correspond to reality. Investigation of a custom frequently reveals that its practise has either lapsed, or never actually took place at all. It is therefore essential to support and cross-check findings by direct observation of important indicators. These indicators can also be used to generate spontaneous questions for community members without preparing formal questionnaires.

### **Methods for direct observation**

- *Measurement*: tapes, scales, or other devices can be used for direct measurements in the field (e.g. field size, weight of harvests) or on the farm (e.g. dimensions of yam storage constructions, volume of fuel-wood used for cassava processing).
- *Indicators*: objects, events, processes or relationships which can be directly observed can be used as indicators of other variables which may be more difficult or impossible to observe (e.g. house type as an indicator of the wealth of a household); indicators should be valid, specific, reliable, relevant, sensitive, cost-effective and timely.
- *Recording*: data can be collected in notebooks and record sheets, as diagrams and photographs, or as samples of objects (e.g. pest-infected crops, processed cassava products).
- *Sites*: observations can be made on farms, fields, markets, means of transportation (trucks, buses etc.), processing sites, storage sites, homes and places of entertainment.
- Observation checklists should be used to ensure that observations are made systematically and that those from different sites are comparable.
- All the senses should be used during observation; where appropriate, community activities should be shared, smelt, heard, touched and tasted.
- When observing a complex event (e.g. gari or agbelima processing), the team should plan and divide roles to provide multiple viewpoints; different observers should concentrate on different groups, such as women, men or children.
- Variations in dress should be observed as these can indicate status, class and wealth, and ethnic, religious or political affiliations.

## SEMI-STRUCTURED INTERVIEWING (SSI)

### **Background information**

Semi-structured interviewing (SSI) is one of the main tools used in PRA. It is defined as a form of guided interviewing in which only some of the questions are predetermined and new questions are usually generated during the interview. At most, PRA interviews use a checklist of questions as a flexible guide rather than a formal questionnaire. In contrast to the formal survey questionnaire, many questions will be formulated as the interview progresses (as in a journalistic interview). SSIs tend to take the form of discussions, during which both interviewer and interviewee learn from each other.

If it becomes apparent during the interview that some of the questions are irrelevant, they can be omitted. Questions are usually generated by the interviewee's response, the use of scoring or ranking methods, observation of the surroundings, and the PRA team's own background and experience.

## **Types of SSI**

### *Individual interview*

Individual interviews are used to extract representative information. The information is more personal than that obtained from group interviews. It is also more likely to reveal conflicts within the community as respondents will speak more freely if their neighbours are not present.

An opportunity sample of purposely-selected individual respondents is interviewed. An opportunity sample of farmers would include farmer leaders, innovative farmers who have tried recommended technologies or who have successfully developed improved technologies, women farmers who are both members and heads of households, farmers who represent major cropping systems in the area, poor farmers who have very limited resources, and traditional farmers who have resisted new technologies. Interviewing several different farmers about the same topic will quickly reveal a wide range of opinions, attitudes and strategies. Gender bias must be avoided by interviewing women as well as men. Individual respondents should be asked about their own knowledge and behaviour rather than that of others.

Many communities have at least one 'trouble-maker' who will disagree with everything. However, their responses can provide valuable cross-checks and insights which may not have been gained from the other interviews.

Random interviews with passers-by (e.g. during cross-walks) may also reveal useful information and unexpected points of view.

### *Key informant interview*

Key informant interviews are used to obtain specialist information. A key informant is anyone with special knowledge of a particular topic (e.g. an extension agent on cropping practices, a private entrepreneur on business practices, a bank employee on credit systems, an NGO employee on a particular project etc.). Key informants are expected to be able to answer questions on the knowledge and behaviour of others and especially about the operations of the broader systems. Although the risk of being misled by their answers necessitates cross-checking, key informants are major sources of information in PRA. Valuable key informants may be 'outsiders' who live in the community (such as school teachers), or members of neighbouring communities (outsiders with inside knowledge), including those who have married into the community. These outsiders usually have a more objective perspective on community affairs than the community members themselves.

### *Group interview*

These are used to extract information at the community level. Group interviews have several advantages. They allow access to a larger body of knowledge and provide an immediate cross-check for information as it is received from others in the group. However, if the groups become too large (more than 20), they are more difficult to manage and tend to divide into smaller groups.

Group interviews are not useful if sensitive issues are being discussed, and they can be seriously misleading if the questioner is believed to have the power to control benefits or sanctions. Group interviews may reveal ideals rather than reality, but triangulation of methods and cross-checking of information should provide the full picture. The interviewers should encourage the expression of alternative views and opinions and probe to avoid group pressure. Informal conversations after the meeting may provide an opportunity for obtaining information from those who were unable to express their opinions during the formal procedure. Group interviews require more advance planning and preparation than individual interviews.

### *Focus group discussion*

This enables a discussion of specific topics in detail. A small group of people (6-12) who are either knowledgeable about, or interested in, a specific topic, is invited to participate in the focus group discussion. A facilitator is chosen to ensure that the discussion does not digress too far from the original topic and that no participant dominates the discussion.

## Guidelines for SSI

### *Before the interview*

1. Be prepared for the interview. Be well-informed about the topic and be able to ask relevant questions and show an interest in the interviewee's responses. Writing a checklist is a good way of preparing for an SSI.
2. When selecting an appropriate team of interviewers, be aware of the impact that the age, gender, class, ethnicity etc. of team members may have on the quality of the information collected (e.g. in many societies, female interviewers are better suited to interviewing women than males).
3. Design a rough outline for the SSI. The outline can be refined during fieldwork. Begin with general inquiries about a particular topic and add more detail and depth as the fieldwork progresses.
4. When sampling, choose interviewees according to knowledge, age, gender, status, ethnicity etc. appropriate for the topic of the PRA. Obtain a broad overview of the socio-economic stratification of the community by selecting a community member or community development worker who can draw a map indicating the different quarters and socio-economic, ethnic, and religious groups. Wealth ranking provides a more detailed socio-economic stratification. Select a number of interviewees from each category (male, female, old, young) according to availability (opportunity sample).
5. Keep as low a profile as possible by using a small team, small notebooks and few vehicles (walk as much as possible). Avoid the 'opinion poll syndrome' whereby the researcher drives up to the farmer in the field and jumps out of the vehicle with notebook in hand ready to interview. The best strategy is to blend into the local environment as much as possible.
6. Be aware of the daily schedule of the community members. Time the interviews so that they will not interfere with the respondents' important activities. Use time between interviews for other PRA activities (e.g. observation, mapping, analysis).

### *During the interview*

7. Be sensitive and respectful. If possible, sit at the same level as the interviewee rather than above, and begin the conversation with locally-acceptable polite talk. It may be impossible to avoid preferential treatment (e.g. being offered a chair) when visiting a rural community for the first time, but during subsequent visits, survey teams should try to adhere to the same seating arrangements as the informants. Any indication of contempt or disbelief, such as smiling between team members or even criticizing responses, must be strictly avoided. Inappropriate behaviour may result in inaccurate information.
8. Use the same (colloquial) language as the interviewee to reduce barriers. Include community members in the team to ensure that questions are relevant and phrased in a meaningful and sensitive manner. Use role play to determine the right language.
9. Conduct the interview as a dialogue or process by which important information is obtained through casual conversation. Build trust by expressing an interest in what is important to the respondent. The quality of the information will depend largely on the rapport between the interviewer and the informant.
10. Observe patterns, behaviours, differences, and anything unusual. Observe non-verbal indicators such as facial expressions, use of space, body language, tone of voice, touch and eye contact; these may reveal a great deal about the respondents' concerns or reservations, and provide valuable clues when interpreting responses. In practice, observation and interviewing will usually be simultaneous. However, when recording observations, clearly distinguish them from the informant's responses for easy analysis. This can be done by dividing the pages of the notebook into one column for responses and one for observations.
11. Collect local classifications, terms, drawings (e.g. of processing equipment or techniques), folk tales, sayings and proverbs.
12. Build the questions to be asked around
  - a list of sub-topics and key questions
  - existing information on the community (reports and statistics)
  - visual material e.g. maps, aerial photographs and other diagrams
  - direct observation.

13. Introduce questions with the words who? why? what? where? when? or how? to help establish the basic situation. Not all of these will necessarily be relevant, but the interviewer should review them frequently to ensure that nothing of importance is left out. They can generate a lot of information if used appropriately.
14. Always pose questions in a way which demands an explanatory response (open-ended questions) rather than a "yes" or "no" answer.
15. Formulate questions clearly and only ask one at a time.
16. Open most interviews with a broad question to allow the respondents to discuss the topic in their own terms rather than those of the interviewer. Narrow questions predetermine the frame in which the topic is to be discussed and can restrict the possible answers. Follow the opening question with a series of specific questions to extract more detail and depth. For example, the question "Can you give us an overview of which roots and tuber crops are grown in this area and what they are used for?" may be followed by specific questions about crop utilization. However, interviews about sensitive issues, or on subjects about which the interviewee has strong feelings, should be opened with a narrow question; opening with a broad question may result in all subsequent answers being biased according to the first answer.
17. Use "why?" questions sparingly; they may put the informant on the defensive and limit the flow of information.
18. Make questions short and easy to understand but always aim to draw out more detail.
19. Do not ask leading questions; be objective and avoid value judgements. Leading questions make it much more difficult to probe for further details and subsequent answers may be less reliable. For example, instead of asking "Do you plant cassava in July?" ask "When do you plant cassava?"
20. Avoid making conclusions for the interviewees, or helping them to finish their sentences, even if they appear to have difficulty in expressing themselves. Keep personal comments, knowledge and conclusions separate from the information obtained from the interviewee. Guard against the strong natural tendency to rephrase the interviewee's response.
21. Avoid lecturing and advising; the purpose of the interview is to learn, not to teach.
22. Lead up to important or sensitive questions carefully. If necessary, visit an informant several times to build up a rapport before discussing more sensitive issues.
23. Choose proxy indicators for sensitive questions (e.g. lists of household expenses and sources of income can be used as proxy indicators of total household income).
24. Probe (cross-check) each sub-topic during the interview to obtain more detail and depth on the subject of study. In order to probe, listen closely to what is being said, challenge answers (where appropriate), and ask for back-up information and more details. Failure to probe an important topic during the interview means back-tracking and re-questioning the informant until the issue is clearly understood. Probing should take the form of subtle cross-checking rather than cross-examination. Experiment with different probing strategies
  - show interest and encourage by nodding or saying "Yes"
  - pause to allow the interviewee time to add more information but avoid making the pauses so long that they cause embarrassment
  - repeat the question in slightly different ways
  - use neutral questions such as "Could you tell me more about that?", "Could you give me an example?" or "Could you explain that to me?"
25. Weigh responses and use an adequate number of informants. First impressions are often wrong. Use or describe an issue, term or concept in subsequent discussions and interviews to test whether it has been correctly understood. The informant will probably correct any misunderstanding.
26. Have a mental checklist of questions but be open to new ones.
27. Prepare a list of key questions and key probes which should generate a series of new questions (e.g. "What sweet potato varieties have you experimented with in recent years?").
28. Use case studies, stories, household histories and profiles to analyse how a conflict was resolved, what coping strategies were used in a crisis etc.
29. Use contrast comparisons. Ask group A why group B is different or does something differently, and *vice versa*.
30. If fixed questionnaires have to be used, keep them short and use them only at the end of an interview for a clear and narrowly-defined purpose.
31. Use sequences or chains of interviews (e.g. alternate between group, individual, and key informant interviews).

32. For each interview, note general information about the informants as a basis for interpreting responses (age, gender, number of children, marital status, religion, socio-economic status). Add the name of the interviewee if possible.

### *Notetaking*

33. Number questions and mark answers clearly. Good, detailed, and comprehensive notes are essential for PRA. Assign the task of notetaking to one member of the interview team (but rotate it). This allows the other team members to concentrate on the interview rather than being distracted by writing. Design recording tools which facilitate later analysis of the data. Examples are
- blank forms or tables (diagrams), for each tool and topic, which can be arranged and sorted by topic/sub-topic.
  - field notes written chronologically in a duplicate book (carbon paper); the second copy can be arranged by topic/sub-topic and the first copy can be kept for later reference
34. Record verbal responses and personal observations. Do not confuse these records with personal interpretations.
35. Use literal quotations in notes and reports as they are more accurate and give flair.
36. In situations where notetaking is difficult or impossible, write a few quick notes immediately after the interview or observation to aid memory. Write complete and detailed notes later the same day before the information is forgotten.
37. Finish the interview politely. Thank the interviewee.

### **Use of a checklist**

It is recommended that a checklist should begin with points of a more general nature before approaching sensitive issues. Although a checklist should never be used on a step-by-step basis, it is important to keep the subject of the interview in focus by grouping questions into sections. The checklists which were used for assessing needs in NGSS food crop systems in Ghana in 1994 are reproduced in Appendix 2. However, it is suggested that these should only be used as examples. The preparation of a checklist is a good way of developing an understanding of the issue to be tackled.

At the outset of a survey when participants are familiarizing themselves with the issues of the study, a checklist can provide a valuable means of focusing and guiding an interview. However, as team members become more familiar with the issues involved, there is a danger that they will rely too heavily on the 'comfort' of the checklist. This can lead to a tendency to follow it step-by-step which, in turn, leads to the interview becoming too structured and repetitive. Probing and exploratory questioning, which are essential for gaining a deep insight and understanding of a topic, can be impaired if they become routine. In order to counter this possible danger, it is probably advisable to discard the checklist as soon as the team members are familiar with the issues involved. This will also allow more scope for discussion during the interview.

Alternatively, it is often helpful to begin an interview/discussion from a different angle and perspective (a different topic on the checklist). This facilitates questioning and above all, stimulates thought. There is a danger in both these approaches that the interview will lose its sense of purpose and direction, and that the chance of repetition will increase. However, the potential benefits of adopting a more flexible and innovative approach are thought to outweigh these possible shortcomings.

## **SCORING**

### *Strengths of scoring*

Scoring not only puts needs, priorities etc. in order of importance, but also provides evidence of the relevant weight accorded to them. Although a pure ranking exercise may reveal, for example, that processing constraints are more important to farmers than storage constraints, it will not allow an exact comparison.

Scoring methods include

- verbal scoring
- list scoring
- matrix scoring.

Scoring using a list of priorities was found to be a useful tool when carrying out the NGSS needs assessment in Ghana.

### *Steps of list scoring*

1. Discuss all the major issues of the farming system. If post-harvest issues are the primary area of interest, concentrate on harvesting, storage, utilization, processing and marketing. However, also try to obtain an overview of pre-harvest aspects such as varieties cultivated, size of production etc.
2. At the end of the general discussion, which will probably be based on a semi- structured checklist, ask the farmers to identify all agriculture-related constraints.
3. Make a list of the constraints.
4. Represent the constraints by symbols, preferably drawn by the farmers themselves, on pieces of paper. It may sometimes be more appropriate to draw the symbols perhaps on a blackboard, on the ground, or on a concrete floor.
5. Explain the purpose and method of the scoring exercise.
6. Give 100 maize grains, palm-kernels or other locally-available material to the farmers for scoring. Fewer grains can be used if the list of constraints is short.
7. Allow the farmers to perform the exercise themselves and do not interrupt unless they ask for clarification of the procedure. The exercise usually leads to lively discussions among the villagers and can often take up to half an hour.
8. Count the scores given by the farmers to each constraint and record the results.
9. Make sure that the farmers also count and record the results.
10. Discuss the constraints with the farmers and allow them to suggest improvements. Try to look more closely at any aspects of particular interest (e.g. yam storage).
11. Summarize the results of the scoring exercise for each homogenous group (e.g. villages belonging to the same farming system or administrative unit). Convert the results to the same basis (e.g. scores out of 100) if the quantity of counting material differed.

### *Example of list scoring*

<i>Summary of needs expressed by farmers in four villages in Central Region, Ghana</i>	
	Total scores out of 400
1. Financial constraints (e.g. lack of credit facilities)	101
2. Inputs (high costs and availability)	60
3. Gari grating machine	45
4. Low prices for produce	43
5. High labour costs	33
6. Lack of yam staking material	29
7. High transport cost	26
8. Shed for marketing	24
9. Land tenure system	15
10. Storage (facilities and technology)	12
11. Rodents and insects	7
12. <i>Afobia</i> weed	5

### Steps of matrix scoring†

1. Decide what should be scored (e.g. NGSS food crops, processed cassava products, sweet potato varieties, yam storage technologies).
2. Find a willing and knowledgeable group of farmers or key informants and conduct an open-ended discussion about the issue concerned.
3. If the topic under investigation is storage construction, ask the villagers to decide which constructions are of interest and worth considering.
4. Construct a matrix (e.g. on the ground or on a large piece of paper) and display storage systems on the horizontal axis.
5. For each of the storage systems in turn, ask first what is good about them (what else? . . . what else?) and then what is bad (what else? . . . what else?).
6. On the vertical axis of the matrix, list the criteria identified under step 5. Represent negative criteria in a positive way (e.g. 'attracts rodents' should be written as 'does not attract rodents'). Use symbols to help illiterate villagers to understand.
7. Ask the villagers to assess each of the storage structures according to the list of criteria. Structures may be scored on a scale of 5–10 using locally-available materials such as grains, palm-kernels or stones.
8. Ask other questions such as "Which criteria are most important?" or "If you could have only one storage technique, which would you prefer?".
9. Count the total score for each construction. The highest score will indicate the structure which is most preferred.
10. Additional tips
  - Find original ways of performing this exercise and allow others to invent theirs.
  - Only use personal criteria if they are clearly separated from those of the villagers.
  - Listen and learn rather than lecture.
  - Probe for further criteria.
  - Follow up points of interest.
  - Carry out the exercise with people from different socio-economic backgrounds.

### Example of matrix scoring

<i>Preferences for yam storage structures</i>			
Criteria	Structure A	Structure B	Structure C
Low construction costs	**	***	*****
Availability of construction material	*	****	*****
Durability of structure	*****	****	*
Peace of mind	****	****	**
Ease of handling	****	***	***
Does not attract rodents	****	*****	***
Total score	20	23	19
Rank	B	A	C

**Notes:** 5 = maximum score; different items (in this case, storage structures) can have the same score.

† Adapted from: J Mascarenhas, Participatory rural appraisal and participatory learning methods: recent experiences from MYRADA and South India; Forests, Trees and People, Newsletter No 15/16.

## RANKING

Ranking means placing things in order. Analytical tools such as ranking complement semi-structured interviews by generating basic information which leads to more direct questioning. They may be used either separately or as part of an interview. Pairwise ranking, for example, helps to identify the main problems or preferences of individual community members and their ranking criteria, and enables the priorities of different individuals to be easily compared.

### Strengths of ranking

- Ranking is useful for sensitive information, particularly income or wealth. Informants tend to be more willing to provide relative values regarding their wealth than absolute figures (i.e., “Rank your sources of income according to importance” achieves a more favourable response than “How much do you earn?”).
- Ranking scores are easier to obtain than absolute measurements.

Ranking methods include

- verbal ranking
- preference ranking (ranking by voting)
- pairwise ranking
- direct matrix ranking
- wealth ranking.

### Guidelines for ranking

- Allow informants to carry out the exercise in their own way.
- Use the informants' own units of measurement.
- Use the informants' own names for whatever is to be ranked.
- Try to adapt local games for ranking.
- Probe the reasons behind the order of the ranking.
- Be prepared.
- Be patient.

### Preference ranking

Preference ranking allows the PRA team to quickly determine the main problems or preferences of individual villagers, and enables an easy comparison of the different individual's priorities. Voting is a form of preference ranking.

#### *Steps of preference ranking*

1. Choose a set of problems or preferences to be prioritized. This could be, for example, problems related to agricultural production or cassava processing.
2. Ask the interviewee to provide a list of favoured items, in order of priority, from this set of problems. A list of three to six items should be obtained from each interviewee.
3. Repeat this procedure with several interviewees.
4. Tabulate the responses.

*Example of preference ranking*

<i>Constraints to gari processing</i>								
Problem	Respondents						Total Score	Ranking
	A	B	C	D	E	F		
Lack of fuelwood	5	5	3	5	4	5	27	A
Lack of equipment	3	4	4	1	3	3	18	C
Low gari prices	4	3	5	4	5	4	25	B
Heat and smoke	2	1	2	2	2	2	11	D
Labour shortage	1	2	1	3	1	1	9	E

Note: 5 = most important, 1 = least important

**Pairwise ranking**

*Steps of pairwise ranking*

1. Choose a set of problems (or preferences) to be prioritized. This could be, for example, preference for NGSS over other crops.
2. With the help of the interviewee (or using information gathered from previous discussions with a key informant), choose six (or fewer) of the most important items in this set (e.g. types of crops).
3. Note each of the six items on a separate card.
4. Place two cards in front of the interviewee. Ask him to select which of the two he regards as the bigger problem (more favoured preference) and why. Note his response in the appropriate box of the priority ranking matrix.
5. Ask whether the non-selected problem (preference) is more important (more popular) than the selected one in any respect. Note the criteria in the ranking criteria matrix.
6. Present a different pair of cards and repeat the procedure.
7. Repeat steps 4 to 6 until all possible combinations have been considered (all boxes of the matrix have been filled).
8. List the problems (preferences) in the order in which the interviewee has ranked them by sorting the cards into order of priority.
9. Check with the interviewee whether any important problems (preferences) have been omitted from the list. If any have been, place them in the appropriate position in the ranking table.
10. As a useful cross-check to the responses, complete the ranking session by asking the interviewee about the biggest problem (or most favoured preference) in the list (e.g. ask 'If you could grow only one plantain variety, which one would you choose?'). This question is also useful if two or more items in the list have equally high scores.
11. Repeat the pairwise ranking exercise with a number of individuals and tabulate their responses.

*Example of a pairwise ranking matrix*

Cassava	Plantain	Sweet Potato	Maize	Rice		Score	Rank
	P	SP	M	C	Cassava	1	d
		SP	P	P	Plantain	3	b
			SP	SP	Sweet Potato	4	a
				M	Maize	2	c
					Rice	-	e

*Example of a ranking criteria matrix*

	Favourable	Unfavourable
Cassava	Drought resistance High yields Low prices ...	Perishability ...
Plantain	High prices	
Sweet Potato	...	
Maize		
Rice		

**Direct matrix ranking**

Direct matrix ranking allows the PRA team to identify lists of criteria for certain subject areas. It also helps the team to understand the reasons for local preferences over such issues as crop varieties or processing techniques. The criteria are likely to vary from group to group, and women may have different criteria for choosing certain techniques than men.

*Steps of direct matrix ranking*

1. Choose, or ask the informants to choose, a subject area which is important to them (e.g. NGSS crops, cassava processing techniques, different kinds of processed foods).
2. List the most important items (three to eight items).
3. Elicit criteria by asking the questions "What is good?" about each subject, "What else?" (continue until no more replies are forthcoming), and then "What is bad?" about each subject, "What else?" (continue until there are no more replies).
4. List all criteria. Make negative criteria positive by using opposites (e.g. change 'vulnerable to pests' to 'resists pests').
5. Draw up a matrix.
6. For each criterion, ask the questions
  - "Which is best?" then "Which is the next best?".
  - "Which is worst?" then "Which is the next worst?".
  - "Which is the better of the two that remain?".
7. Follow these questions with "Which criterion or factor is most important?".
8. Force a choice by asking "If you could only have one of these, which one would you choose?".

*Example of direct matrix ranking*

Criteria	Cassava	Yam	Plantain	Sweet potato
High yields	4	3	1	2
Drought resistance	4	3	1	2
Pest resistance	2	4	1	3
Low labour requirements	1	2	4	3
Good market prices	1	2	4	3
Long shelf-life	1	4	2	3
Total score	13	18	13	16
Rank	C	A	C	B

**Note:** 4 = best, 1 = worst. The exercise can be carried out with a group of farmers or with individuals. In the latter case, it should be repeated with several interviewees.

## Wealth ranking

In every community there are inequalities in wealth. These inequalities influence or determine behaviours, strategies regarding processing, marketing and storage, and views. Wealth ranking allows the PRA team to:

- investigate perceptions of wealth differences and inequalities in a community;
- discover local indicators and criteria for wealth and well-being;
- establish the relative position of households in a community.

This type of socio-economic community profile may be used as a basis for the sampling of households for later interviews, to identify and target project participants (e.g. the poorest, training candidates), and to determine whether those families which participate in a project can improve their scores over time compared with those who do not. It can also be a useful introduction to the discussion of coping strategies, opportunities, problems, and possible solutions.

### *Principles*

- Outsiders and community members have different perceptions of wealth, well-being, and inequality. Local perceptions are crucial for obtaining a deeper insight.
- Different members of a community (men, women, merchants, labourers) may use different criteria for wealth.
- Investigating the range of socio-economic situations in a community is useful in PRA.

Wealth ranking is based on the assumption that the community as a whole will have a good sense of which members are more or less wealthy. It should be remembered that this is the community's own perception of the situation. It is therefore good practice to cross-check using another method (e.g. direct observation checklist) to verify the results.

### *Steps of wealth ranking*

1. Make a list of all the households in the community and assign each household a number. The name of the head of the household and the number from the master list are written on a separate card or piece of paper.
2. Ask a number of key informants, who have lived in the community for a long time and who know all the households, to sort the cards into piles, independently of each other, according to wealth categories (using their own criteria). If the informant is illiterate, read the name on the card, hand it to him, and let him choose the pile on which to place it.
3. Use numbered baskets or small boxes. This helps the sorter to remember which is which and makes it easier to record the scores without mixing the baskets. Shuffle the cards between sortings so that each sorter starts with a random pile of unsorted cards.
4. After sorting, ask the informant which wealth criteria he chose for each pile and what the differences are between the piles. Assure the sorters of confidentiality, and to avoid bad feelings within the community, do not discuss the ranks of individual families. List local criteria and indicators derived from the ranking exercise and examine differences between informants.
5. When the informant has sorted all the cards into piles, record the score for each household on a score sheet according to the number of the pile. If a household cannot be placed because the family is unknown to the sorter or the sorter cannot decide to which group it belongs, leave a blank by the household's name for that informant. Ask at least three informants to sort all the households in the community independently to ensure that the results are reliable.
6. If the number of wealth categories used by the informants differs, divide each household's score by the number of wealth categories used by the particular sorter and multiply by 100. For example, a household in the third out of five piles would receive a score of 60 ( $3/5 \times 100 = 60$ ). This procedure is necessary for comparing the scores of different sorters with each other (unless they all use the same number of wealth categories).
7. When the scores of each informant have been recorded on the form, add them and divide the total by the number of sorters. For example, if one of four sorters could not place one of the households, that household's total score is divided by three instead of four. Check the sorters' scores for consistency. If one sorter's results differ widely from the others, he may have misunderstood his instructions or reversed the baskets. In this case, disregard that sorter's scores and ask another informant to do the sorting.

8. Finally, arrange households according to wealth categories. If the sorters used different numbers of piles, take the average number of wealth categories (e.g. if four informants have four, four, seven and six piles, respectively, divide the community into five wealth groups).
9. Using this system, rich households in the community will have low scores and the poorest households will have high scores.

The basic concept of this form of ranking can be used whenever the 'best' and the 'worst' need to be identified. For example, older women could indicate which women would be the best candidates for a vocational training course. The system is most effective in groups or communities with about 50–150 members. The data require relatively little time to tabulate and analyse and the system is very flexible.

### *Cautions*

This method of collecting data is simple and can usually be carried out in one day with a great deal of community participation. However, it does not work well in heavily populated areas as it is too difficult to assemble all the names and find sorters who know every family. The system also becomes cumbersome if too many names are included.

As different communities may have very different self-images, scores between villages cannot be compared. Some relatively wealthy communities may rate themselves less well off than very poor communities. In communities with an egalitarian ideology, wealth ranking may not be feasible and villagers may object to being divided into different wealth groups. In communities accustomed to receiving benefits from development organizations, wealth ranking may produce unreliable answers because the sorters may try to 'play down' the villagers' wealth.

## CONSTRUCTION OF DIAGRAMS

### **Overview**

A diagram is any simple schematic device which presents information in a condensed and readily understandable visual form. It is a simplified model of reality.

Diagrams summarize data in such a way that they can be used at all stages of a PRA for planning, field discussions and analysis. They are most useful for helping to identify problems or opportunities in specific areas, time periods, or activities, and for clarifying issues during discussions with the team and community members. Diagrams can be drawn on almost anything, for example on paper, overhead transparencies, blackboards or sand, depending on the situation. Diagramming is one of the most inventive, experimental, and dynamic methods used in PRA. New diagrams are constantly being developed.

It is important to draw the diagrams (e.g. maps and seasonal calendars) in the presence of different categories of people (women and men, young and old etc.) as their perceptions, viewpoints and information will often vary. A comparison of the diagrams drawn by different people can lead to a deeper understanding of the diversity of opinion and decision making processes in a community.

### *Value of diagrams*

- They greatly simplify complex information.
- The act of constructing them is an analytical procedure.
- They facilitate communication.
- They stimulate discussion.
- They increase consensus among team members.
- They are an excellent way of involving community members, and determining their views and categories, by encouraging them to draw diagrams on their own.

### *Possible diagrams*

Concept	Diagram
Space:	map, transect
Time:	seasonal calendar, daily routine chart, time trends, historical profile
Relations:	flow diagram, livelihood analysis, systems diagram
Decisions:	decision tree, Venn diagram

### **Drawing maps**

1. Before visiting the field, obtain maps and/or aerial photographs of the area.
2. Prepare simple outline maps showing key features and landmarks.
3. Mark in roads, rivers, canals, schools, mosques, churches, government offices etc.
4. In the field, obtain a spatial overview by general exploration, viewing from a high vantage point (e.g. water tank, hill, tree, high building) and conducting group interviews.
5. Determine local place names.
6. Revise the map and add more detail during the fieldwork as new information is obtained.

Maps can be drawn for many topics including:

- demography
- social and residential stratification (wealth, ethnicity, religion)
- location of storage or processing sites in a village
- a village's use of natural resources
- fields and land use
- spatial arrangement of a house/use of space by different social groups
- mobility
- water
- soils.

### **Transects**

A transect is a diagram of main land use zones. It compares the main features, resources, uses, and problems of different zones.

#### *Steps in the preparation of a transect*

1. Find knowledgeable community members who are willing to participate in a walk through their village and surrounding areas.
2. Discuss the aspects to be incorporated into the transect (crops, land use, trees, soils etc.) and which route to take.
3. Walk the transect.
4. Observe, ask and listen but do not lecture.
5. Discuss problems and opportunities.
6. Identify the main natural and agricultural zones and sketch distinguishing features. For each zone describe:
  - soils
  - crops
  - livestock

Example of mapping

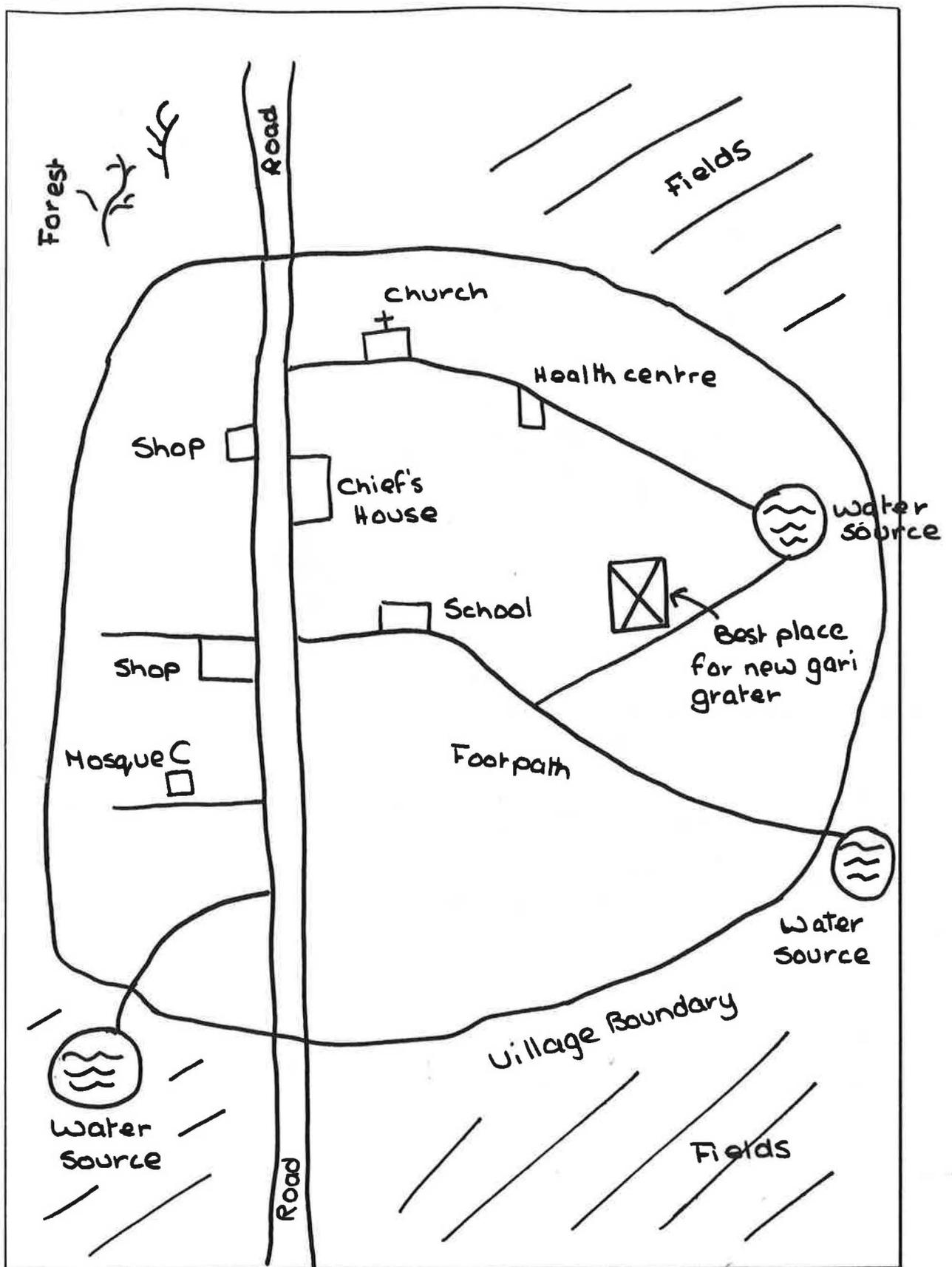


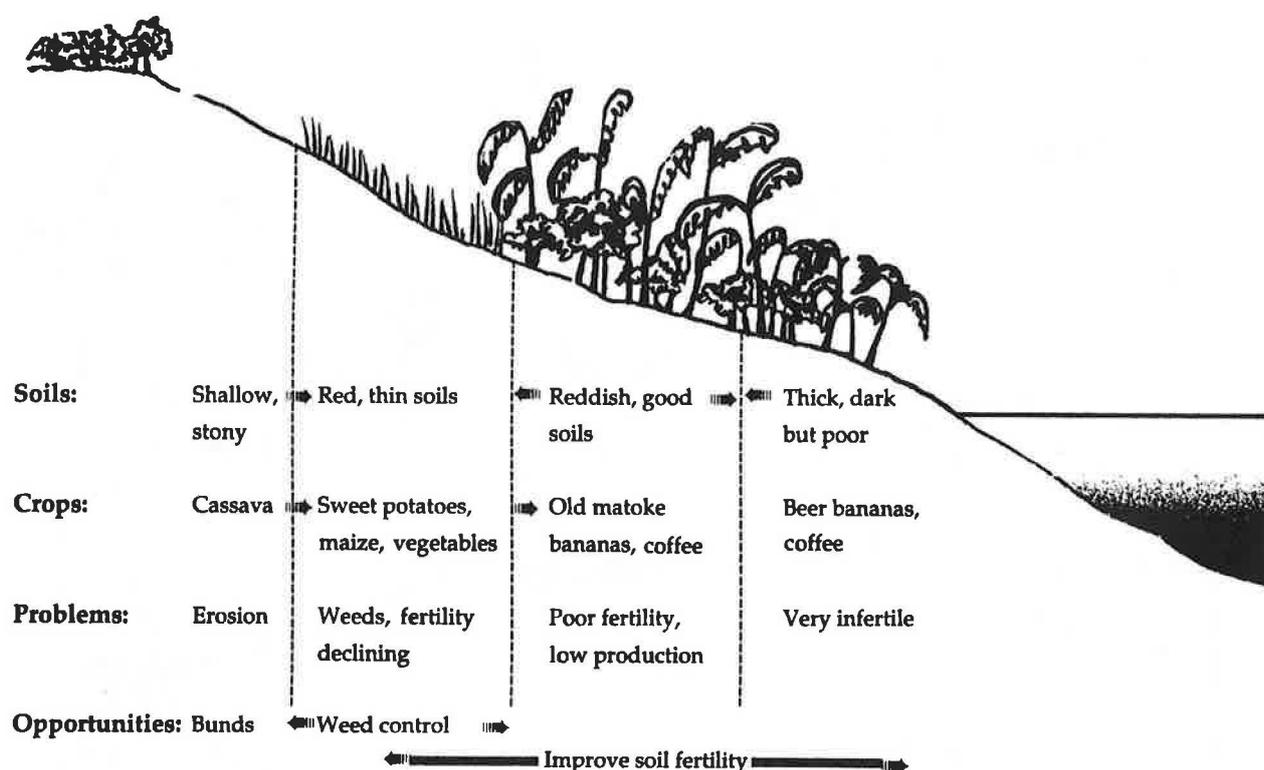
Figure 2 Village map indicating where a new gari grater should be located

## TOOLS AND TECHNIQUES AVAILABLE

- problems
  - solutions
  - opportunities.
7. Draw the transect.
  8. Cross-check the transect with key informants.

### Method

- (a) Use squared paper and outline topography at the top.
- (b) Generalize impressions; do not be too detailed.
- (c) Include a rough measurement of the scale of the transect.
- (d) Revise the transect throughout the fieldwork.



**Figure 3** Example of a transect walk  
**Source:** Nabasa *et al.* (1995)

### Seasonal calendars

This is a calendar showing the main activities, problems and opportunities which occur throughout the annual cycle, in diagrammatic form (it is really a series of different diagrams on a single sheet). It helps to identify the main harvesting, storage or processing months in the agricultural calendar of a village. Among other things, a seasonal calendar can be used to summarize:

- climate (rainfall and temperatures)
- crop sequences (from planting to harvesting)
- main harvesting months
- main processing months
- main storage months

- price fluctuations
- marketing activities
- crop pests and diseases
- income generating activities
- labour demand for men, women, children
- human diseases
- income and expenditure
- debt
- quantity or type of food consumed (diet)

### *Steps in the preparation of a seasonal calendar*

1. Use squared (graph) paper.
2. Draw a 12-month or 18-month calendar as appropriate. The map need not start in January and should reflect the indigenous seasonal categories. *Note:* Do not impose the calendar; in some parts of the world, the Western calendar is not used, and non-monthly intervals are appropriate.
3. Obtain information from secondary sources and interviews.
4. Obtain quantitative information qualitatively. For example, for labour demand, first determine the four busiest months by asking the informants a series of questions such as:
  - 'What is your busiest month?'
  - 'What are you doing then?'
  - 'What is your next busiest month?'
  - 'What are you doing then?'
  - 'How does it compare to the busiest month? Is it three-quarters, half, or a quarter as busy?'
  - 'What is the next busiest month?'

Then determine the four least busy months by a similar sequence of questions but starting with the least busy month. Finally, determine the four middle months by questions such as:

- 'How does March compare with May? Is it busier, the same, or not as busy?'
  - 'By how much does it differ?'
5. Similarly, if no rainfall data are available, determine the four wettest months, then the four driest, and then the four middle months.
  6. Alternatively, the community members can use seeds, small fruits, stones, goat droppings, or other small and reasonably uniform counters to quantify the data. Sticks can be broken to different lengths and used to indicate relative magnitude. In this way, an entire seasonal calendar can be constructed with sticks, stones and seeds on the ground.
  7. Indicate the range(s) of planting and harvesting dates.
  8. Combine all seasonal patterns in one diagram to show correlations between different variables and to identify the times of problems or opportunity within a year.
  9. Cross-check and refine the seasonal calendar during the fieldwork. Be aware of seasonal and non-seasonal variations.

### **Time trends**

Time trends show quantitative changes over time and can be used for many variables, including:

- yields
- area under cultivation
- livestock population

Examples of diagrams

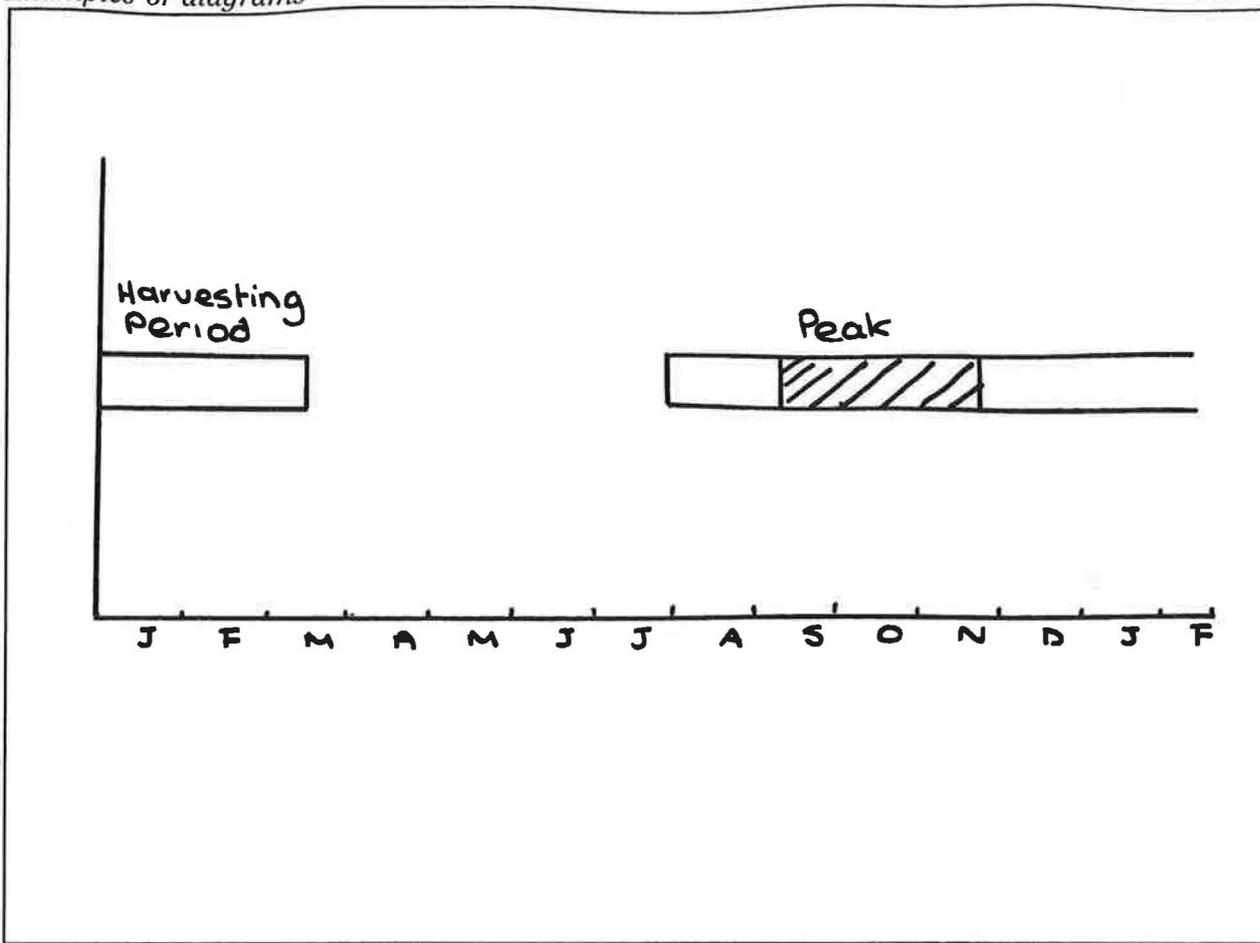


Figure 4a Main harvesting months for plantain

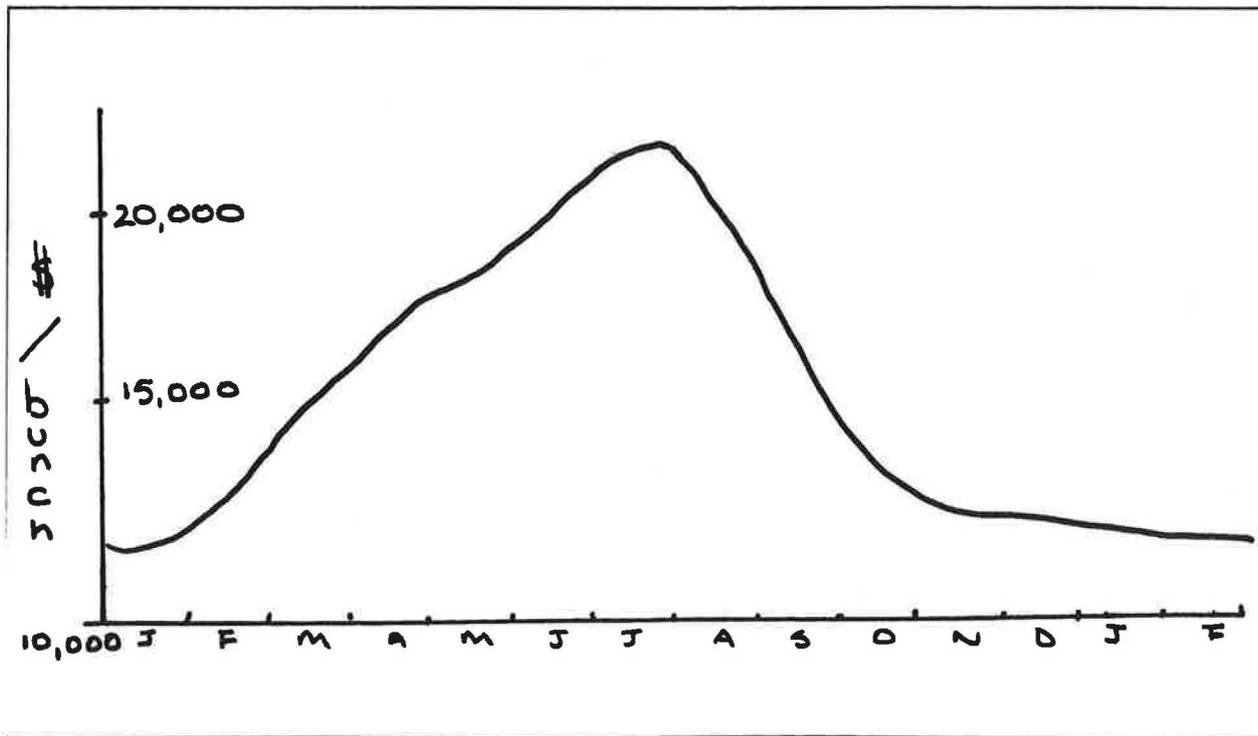


Figure 4b Price curve for plantain

- prices
- interest rates
- migration
- time and distance travelled for the collection of fuelwood and fodder
- population size and number of households
- project expenses
- rainfall.

### *Method*

- (a) Use squared paper (or other materials).
- (b) Try to obtain data for at least 10 years.
- (c) Plot interactions of two or more variables on the same sheet.
- (d) Obtain information from secondary sources and interviews.
- (e) Ask community members to draw their own time trend diagrams.
- (f) If numbers are unavailable, show trends qualitatively, or use qualitative methods to obtain quantitative data (*see* step 6 of Preparation of a seasonal calendar).

### **Historical profile**

Historical profiles reveal information which is important for the understanding of the present situation in a community (e.g. building a road or changing to a more marketable cassava product). They provide a summary overview of the importance of key historical events in a community. These may include:

- the building of an infrastructure (roads, schools, canals, railroads)
- the introduction of new crops
- epidemics
- droughts and famines
- changes in land tenure
- changes in administration and organization
- major political events.

Information is collected from secondary sources (books, reports, archives) and from interviews with key informants (e.g. old people, leaders, school teachers).

### **Daily routine diagram**

A daily routine diagram assists in the collection and analysis of information about the daily patterns of activities of community members. It also enables a comparison of the daily routine patterns for different groups of people (e.g. women, men, old, young, employed, unemployed, educated, uneducated) and seasonal changes in these patterns. Community members should be encouraged to draw their own daily routine diagrams.

A daily routine diagram is similar to a seasonal calendar in that it helps to identify time constraints (shortages) and opportunities. For example, it can be used to determine the most appropriate time of day for a women's training course.

The daily routine for an individual can be established by an interview, direct observation, or both. It is useful to cross-check results by using more than one method.

### *Daily activity profile*

The daily activity profile adds a spatial dimension to the daily routine diagram and shows the mobility of an individual during a typical day. Those who spend most of their time at home will plot their activities closest to the time line whereas those who spend little time at home will plot their activities away from the time line. This allows the activities of different people to be easily compared and illustrates movement in and around the community.

### **Flow diagram**

A flow diagram illustrates relationships between key variables. Examples include:

- the flow of commodities in a marketing system
- the production cycle for a major commodity
- the relationships between the economic, political, cultural, and climatic factors which cause environmental degradation
- the effects of major changes or innovations (impact diagrams)
- organization charts.

### *Steps in the preparation of a flow diagram*

1. Select the processes or relationships to be analysed.
2. Obtain information from secondary sources and key informants.
3. Keep the diagram simple with fewer than 20 boxes.
4. Use boxes for key variables and arrows to connect them.
5. Write prices and/or quantities next to the arrows in production cycles.
6. Use plus (+) or minus (–) signs in impact diagrams to indicate positive or negative relationships.
7. Ask community members to draw their own flow diagrams.

### **Venn diagram**

A Venn diagram (named after its creator) indicates the key institutions and individuals in a community and their relationships and importance in decision making.

### *Steps in the preparation of a Venn diagram*

1. Identify the key institutions and individuals responsible for decisions in a community or organization.
2. Determine the degree of contact and overlap between them in terms of decision making. Overlap occurs if one institution asks or tells another to perform a task, or if two institutions need to co-operate in some way.
3. Obtain information from secondary sources, group interviews or key informants.
4. Cut out (or draw) circles to represent each institution or individual.
5. Use the size of the circle to indicate importance or scope.
6. Arrange the circles as follows:
  - separate circles = no contact
  - touching circles = information passes between institutions
  - small overlap = some co-operation in decision making
  - large overlap = considerable co-operation in decision making.
7. Draw the Venn diagram in pencil first and adjust the size or arrangement of circles until the representation is accurate. Then over-draw the pencil with a marker pen for easier reading. Experiment with different materials.
8. Encourage community members to draw their own Venn diagrams.

## CASE STUDIES

Although they do not represent a data collection technique as such, case studies are often mentioned as one of the tools available for PRA surveys. They are helpful for illustrating complex issues, particularly when larger amounts of information have been summarized.

### Guidelines for case studies

1. Case study data are collected with the usual PRA tools starting with SSI and direct observation. They can also be the results of mapping or ranking exercises.
2. Although they often relate to individuals or households, they can also chart the history of a processing co-operative or a particularly interesting storage technique for example.
3. They can help to illustrate a particularly complex issue.
4. They can make a document more interesting to read.
5. They should be clearly indicated in the document; shaded boxes are often used to highlight them.
6. If they contain sensitive information, names or locations may be omitted.

#### Box 1 Example of a case study

##### Cassava chip processor in Ghana

###### Background

The processor began chip processing in 1993 and hopes to continue the business if the prices offered for his products are reasonable.

###### Raw material used

The processor is a cassava farmer and therefore provides his own raw materials. Although the farmer could not give the exact area or size of his farm, it was estimated to be between 12 and 15 acres [about 5–6 ha]; 90% of his produce (fresh cassava) is used for cassava chips. He could not state the exact volume or quantity of fresh cassava processed each week, nor could he give the ratio of fresh cassava to processed chips. However, he indicated that he could produce 5–10 bags (of 50 kg) every week for more than 3 months during 1993 and 1994.

He stated that as the price of cassava was high, he did not buy from other farmers for processing because he would have made losses. The cassava grown is the very high yielding 2-year type. Normally, only freshly harvested roots are used for the chips and cassava is not stored before processing.

According to the processor, chip production involves the following steps:



Chipping is done by hand (with an ordinary kitchen knife) on a bench or a long table. Raised platforms covered with black-painted palm mats are used for drying. Plastic sacks with relatively large holes are used for bagging.

*Continued on p.34*

*Costs of processing*

- Hired labour for harvesting and carting of cassava. For a field of 60 × 60 ft [about 20 × 20 m], he has to pay about 5 basketsful of cassava (1 basket costs about C 1500).
- Chipping is mostly done with the help of children or relatives.
- Packaging materials (plastic bags) as well as the drying platform are supplied by the buyer.

*Processed products*

The processor only produces dried chips. Processed chips are not graded.

*Storage of cassava chips*

Cassava chips are not usually stored for long as the buyer comes to the village regularly. However, on rare occasions, there were problems with boring insects when the chips were stored for more than two weeks. Despite this, the same price was obtained for the chips. The processor could not quantify the extent of the losses.

*Marketing*

The sole buyer is Transport and Commodity General Ltd, a company based in Accra which deals in the export of cassava chips. In the beginning, the price for 50 kg of chips was C 1500. This was later increased to C 3000/bag.

*Problems stated by processor (in order of importance)*

- Lack of vehicle to facilitate visits to his scattered fields;
- Capital to expand both farming and chipping business;
- Due to the land tenure system, farmers find it difficult to obtain a large area of land in one location;
- High input costs (cutlasses etc.);
- Low price of cassava chips;
- Inadequate platform for drying;
- Unavailability of mechanical chippers

The processor suggested increasing the price of dried chips from C 3000 to C 7000 per 50 kg bag.

Source: Kleih *et al.* (1994)

## THE IMPORTANCE OF COMBINING TOOLS

As already indicated above, the objectives of an assignment determine which tools and techniques will be used for data collection. Less experienced practitioners will tend to maximize the number of tools employed with the result that some of the information presented in the final report is irrelevant. Apart from the cost and time implications for the project, unnecessary data are also collected at the expense of the farmers' valuable time.

Needs assessment is one of the early stages of a project. It is often the first step towards deciding what, where and when particular activities can be carried out. It may also mean that some villages will not be revisited. For this reason, and also because a feeling of trust may not yet have been established between the farmers and the project team, the survey may need to be limited to SSI, direct observation, and, if time allows, a ranking or scoring exercise.

As a result, needs assessment surveys often show RRA characteristics and neglect the participatory element to some extent. If this is found to be the case, there should definitely be more participation during the subsequent stages of the project cycle. It should also be remembered that needs assessment is an on-going process and should not necessarily be limited to the first baseline study. For example, once an area or a number of villages has been identified for project implementation, a mutual trust will be built between the project staff and the potential beneficiaries. This will facilitate further data collection exercises, such as participatory mapping, carried out to determine where, for example, an item of processing equipment should be located in the village.

With reference to the importance of combining tools and techniques, SSIs and direct observation can be combined with all the other methods (Nabasa *et al.*, 1995), but in order to avoid the pitfalls indicated above, the survey team should be more selective in the use of time-consuming methods such as ranking, mapping or the construction of diagrams. However, these latter tools are an important part of participatory informal surveys and, selectively employed, are powerful means of data collection and analysis.

The abundance of scoring, ranking and diagramming tools means making a choice. This will be based not only on the objectives of the study, but also on the experience of the team, the availability of time and the circumstances encountered in the rural community. For example, if a 'pairwise ranking' exercise is capable of providing the necessary depth of information, more complicated ranking techniques are unlikely to be needed. Some tools, such as wealth ranking or Venn diagramming, may only occasionally be needed for post-harvest needs assessments; others tools are more appropriate for this stage of data collection.

Although flexibility plays an important part in PRA by allowing tools to be changed during a survey, it may be helpful to select just one or two particular ranking, scoring or diagramming techniques in order to facilitate comparisons and summaries.

## Section 4 Introduction to Rapid Market Appraisal (RMA)

### BACKGROUND

As marketing plays an important role in the post-harvest systems of NGSS crops in many parts of Africa, it is important to extend the post-harvest needs assessment analysis beyond the producer level to the trader and processor levels. This section provides survey guidelines based on Rapid Market Appraisal (RMA) techniques. As RMA draws heavily on the Rapid Rural Appraisal (RRA) approach, there is no need to explain (repeat) the background of the technique in any great detail.

### IDENTIFICATION OF THE MARKETING CHAIN

For an RMA survey, it is useful to include in the study team members who are familiar with the marketing systems under consideration. Their experience may be essential for identifying the entire marketing chain and the various operators before beginning the actual survey.

The identification of the marketing chain before beginning the survey is an important part of the planning procedure as it allows time and resources to be allocated more efficiently. It also enables the survey team to concentrate on the important operators with respect to data collection (e.g. wholesalers at the end of a marketing system). If an overview of the marketing chain is not obtained, too much time may be spent on less relevant marketing channels.

### TOOLS APPLIED AND LOCATION OF INTERVIEW

Semi-structured interviews (SSI) and verbal ranking are among the most useful tools for needs assessment at the market level, particularly in the early stages of a survey. When addressing more complex issues such as the location of marketing facilities (i.e., stores, sheds, weighing facilities), mapping exercises may be required.

The best way to identify traders is to visit the markets in which they trade. However, they are usually very busy and may not have a lot of time for interviews. Therefore, the points to be asked/discussed need to be prepared well in advance. Occasionally, it may be advisable to enter the market without notebooks or written guidelines and to discuss only the important issues; traders may be wary of answering questions too openly, either because they do not know the interviewer, or because they have not fully understood the purpose of the visit. Under these circumstances, the interviewer needs to have a clear understanding of the issues before visiting the market. Notes can be taken after the survey.

Interviews with traders, particularly if they are in the process of conducting their business, tend to be shorter than those with farmers. It is therefore important to focus the discussions on the essential questions. Checklists also tend to be shorter. Side issues should not be addressed until the major points have been discussed.

Verbal ranking is probably the most useful of the different ranking and scoring tools available for RRA-type surveys. Visual methods are usually too time-consuming for interviews in the market. If there are not too many points, it may be possible to include scoring of needs.

Meetings with traders, on an individual or group basis, can also be convened at other times if it is difficult to obtain all the relevant information during business hours. For example, meetings could take place during the afternoon in the traders' association office or at the trader's home. If the information required is of a confidential nature, it may be more appropriate to meet at a place where the trader can talk more openly.

## KEY INFORMANTS

Two groups of key informants are used during RMAs: sub-sector participants and knowledgeable informants. As the name implies, sub-sector participants are those who are active in the trading business at one or more level. Some traders may have a better overview of the whole sub-sector (e.g. wholesalers) whereas others may only know about the aspects of the business related to their own activities (e.g. small retailers or country buyers).

By contrast, knowledgeable informants include those who do not actively trade but who know the business very well. Extension staff responsible for market data collection, or managers of NGO projects, may belong to this category.

Appendix 3 provides a list of informants (i.e., sub-sector participants and knowledgeable informants) and indicates the advantages and disadvantages of using them to provide information on the marketing chain.

## Section 5 Possible dangers and shortcomings of PRA and RMA

There are several dangers and shortcomings associated with informal data collection, but even if these dangers are known, only an open questioning approach will overcome them. Without such an approach, the whole collection exercise will probably confirm bias, preconceptions and stereotypes. Ill-conceived and poorly executed PRAs may not only mislead decision makers but may also damage the reputation of participatory appraisal methods in general.

The specific shortcomings associated with poorly planned and conducted PRAs and RMAs are as follows:

- rigid and over-optimistic schedules during both planning and implementation
- poorly defined objectives
- inadequate use of secondary data
- bias in site selection
- inappropriate stratification
- difficulty in finding the right team
- inadequate training in informal data collection techniques
- tools becoming an end rather than a means of obtaining information
- over-large survey teams
- poorly defined procedures and methods when using an interpreter
- desire for the security of a fixed questionnaire or excessive reliance and use of a checklist
- difficulty in asking the right questions
- poor questioning techniques (closed and leading questions)
- difficulty in identifying the target population
- generalizations based on inadequate information or too few informants
- insufficient time for review, analysis and report writing
- drawing workable conclusions from confusing data
- raising expectations in the community
- the 'rapid' element dominating over the 'participatory' element
- superficiality resulting from excessive haste
- controversial issues leading to false information
- presentation of statistical results using data collected by informal methods.

# Appendices

## APPENDIX 1 REFERENCES AND FURTHER READING

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*Notes:* Project reports marked\* are outputs from the ODA Regional Africa Technology Transfer Project on Non-Grain Starch Staples and are available from the Project Manager, Dr Andrew Westby, at the Natural Resources Institute.

APPENDIX 2 CHECKLISTS USED FOR NEEDS ASSESSMENT SURVEY IN GHANA

**NGSS post-harvest system: checklists for semi-structured interviews**

**Farmers—group meetings**

(\* Crucial questions)

General information

1. Village: Name  
District  
Size/Inhabitants  
Agro-climatic zone
2. Number of participants in group meeting (M/F)
3. What are the villagers' main economic activities?  
Please rank in order of importance.
4. What were the main changes in the economic system within the last five years?

Agricultural production

5. Type of farming system and changes within past five years?
  - 6.\* What are the main crops planted?  
Please rank in order of importance.
  7. Crop\*            Area            Quantity            How much sold\*  
                         Planted            harvested
- (It may be appropriate to speed up discussions on this question if farmers have difficulties agreeing on numbers.)
8. Varieties of NGSS crops grown?
  - 9.\* What are the reasons for the main crops planted?

Harvesting of NGSS crops

10. When?
11. Who in the household harvests NGSS crops?
12. Harvesting techniques used?
- 13.\* Type and extent of loss due to harvest?
- 14.\* What are the constraints related to harvesting and what do farmers suggest?

Storage of NGSS crops

- 15.\* How are crops stored? Technologies?
16. Where are crops stored?
17. Who in the household is responsible for storage?
18. When are NGSS crops stored?
19. For how long?
- 20.\* Type and extent of loss occurring during storage?
- 21.\* What are the constraints related to storage and what do farmers suggest?

Processing of NGSS crops

- 22.\* Which NGSS crops do you process into what products?  
Please rank in order of importance.

23. Processing techniques?
24. Quantities of raw material processed?
25. What are labour requirements? What are processing costs?
26. Quantities of processed products obtained?
27. Are processed crops mainly for sale or home consumption?  
Please specify.
- 28.\* How are products stored? How long, where, by whom?
- 29.\* Does loss occur during and after processing?
- 30.\* What are the amounts lost?
- 31.\* What are the main constraints in processing NGSS crops?  
Please rank in order of importance.
- 32.\* What do you suggest to solve these problems?

#### Marketing of fresh and processed NGSS crops

- 33.\* Please explain the marketing systems of fresh and processed NGSS crops.
34. What are your main NGSS cash crops?  
Please rank and distinguish between fresh and processed.
35. Who do you sell to, what, where, when, how much at what price, and why?
36. How do prices change within the year?
37. How did prices change compared to the last three years?
38. Do you listen to the price broadcast on the radio?  
What is your information about other markets?
39. Do you grade the goods before selling them?
- 40.\* How do differences in quality influence the price?
- 41.\* How does age of product influence the price?
42. Do you package the goods before selling them? At what cost?
43. How do you transport goods to the point of selling? At what cost?
- 44.\* What are the main constraints in marketing NGSS crops?  
Please rank in order of importance and explain.
- 45.\* What kind of changes/improvements do you suggest?

#### Extension

46. Have you ever received any extension education?  
From whom, what kind of information, how often?

#### Needs assessment

- 47.\* What are the villagers' problems related to *agriculture*?  
Please ask the farmers to identify the constraints, then draw symbols on pieces of paper representing these problems.

In the next step, the farmers will be asked to score 100 maize grains against the constraints. In cases where the number of constraints identified by the farmers is small, a smaller number of grains may be used. Alternatively, palm kernels can be used.

After the scoring exercise, discuss with the farmers their needs, concentrating on NGSS post-harvest aspects.

### **Farmers—individual discussions after group meetings**

The discussion should focus on the post-harvest constraints identified in the course of the scoring exercises.

The constraints are likely to belong to the following areas:

- harvesting of NGSS crops
- storage of NGSS crops
- processing of NGSS crops
- marketing of fresh and processed NGSS crops.

If, according to the farmers, interesting storage structures, processing techniques etc. are used in a village, the survey team should try to have a closer look at them.

### **Traders**

(\* Crucial questions)

#### General information

1. What type of trader (i.e., itinerant, wholesaler, or retailer)?
2. Where is she or he located in the market?

#### Interview

3. Which crops do you trade?
4. From whom do you buy and where?
- 5.\* At what price do you buy? How is price influenced by varieties, seasonality, size and quality of produce?
- 6.\* How much do you buy and sell per week? Has your business declined or expanded in the last three years?
7. How do you transport your produce?
8. What are your marketing costs (per unit)?  
Loading, off-loading, transport, tolls at loading and off-loading point, carting, income tax, watchman, special levies, labour for assembly and carriage.
- 9.\* How do you store and for how long? How much is lost after storage? Reasons?
10. Who are your customers?
11. How is price determined?
- 12.\* At what price do you sell? How is price influenced by varieties, seasonality, size and quality of produce?
- 13.\* How does price of produce decline on ageing?
14. Do you do any sorting and grading?
15. Do you listen to the radio price broadcast? How do you use it?
16. Do you get credit?
17. How is the market association?
- 18.\* What are your problems?  
Please rank (verbally).
- 19.\* What are your suggestions?

**Processors**

(\* Crucial questions)

**Introduction**

1. Name of interviewee, provided she or he wants to give it?
2. Location of business (name of village, any specific characteristics)?
3. Type of business?
4. Please explain the different processing steps in your business.
5. What changes have occurred in your business within the last three years?

**Raw material**

6. What is the source of raw material? What are the contractual arrangements with suppliers? How are prices and quantities set?
- 7.\* Quantities of raw material handled per week? Seasonal changes?
8. Maximum quantity of raw material you can process per day or per week (capacity)?
- 9.\* Quality of raw material (age)?
- 10.\* Varieties used?
11. Do you grade raw material before processing and what happens to the various grades?
12. Prices paid for raw material? Seasonal changes?
- 13.\* Storage of raw material? How and how long?
- 14.\* Problems related to raw material?  
Please rank.

**Processed products**

15. Which end-products are obtained?
16. Ratio of fresh to processed products?
- 17.\* Throughput per week? Volume of product obtained per week?
18. Do you grade your end-products? Criteria for grading?

**Processing costs***If processor is owner of equipment:*

19. Labour requirements per processing activity (including your own and hired labour)?
20. Expenditures for hired labour per day, week or year?
21. Fuel and lubricants costs per week?
22. Water costs per week?
23. Packaging costs?
24. Other operating costs?
25. Equipment costs?
26. Cost of facilities (shed, concrete floor etc.)?
27. How long can equipment and facilities be used?
28. Annual taxes and levies (if any)?
29. What do you charge for processing (per bag or other unit)?
30. Other uses of facilities?

## APPENDICES

31. Problems with processing?  
Please rank.

*If processor is not owner of equipment:*

32. How much do you pay for processing (per bag or other unit)?  
33. Labour requirements per activity (including your own and hired labour)?  
34. Expenditures for hired labour (if any)?  
35. Costs of transport to and from processing site?  
36. Packaging costs?  
37. Other operating costs?  
38. Annual taxes and levies (if any)?  
39. Problems with processing?  
Please rank.

### Storage of end-products

- 40.\* How and how long?  
41.\* Shelf-life (how long can it be stored)?  
42.\* Problems with storage?  
Please rank.  
43.\* Losses: causes, extent, control measures?

### Marketing of end-products

- 44.\* Customers: types, from where, what are their preferences (don't forget export)?  
45. Contractual arrangements (cash or sale on credit)?  
46. Quantities sold per week, month or year (seasonality)?  
47. Prices obtained (seasonality)?  
48.\* Where do you sell (seasonality)?  
49. Marketing costs (depending on season):  
    transport  
    tolls and fees  
    handling charges  
    other costs?  
50. Has your business declined or expanded in the last three years?  
51. Do you have a ready market for your produce? If you were able to produce more, could you sell it? If yes, why didn't you increase your production? Have you ever had requests in terms of quality and quantity from your customers which you could not meet? If yes, from whom, and why couldn't you fulfil these demands?  
52.\* Problems with marketing?  
Please rank.

### By-products

- 53.\* Use of by-products?  
54. Income obtained?

### Association

55. If there is an association, how is it organized? How many members does it have (male and female), etc.?
56. Problems with association?  
Please rank.

### Needs assessment

- 57.\* What do you think you need to make your business thrive?
- 58.\* What changes do you suggest?  
Please prioritize.

If the interview is carried out on village level with a group of processors, it is recommended that you do a scoring exercise as with farmers to give a better understanding of the priorities.

### Transporters

(\* Crucial questions)

1. Which commodities do you transport?  
(Let transporter explain the business.)
2. Model and make of the vehicle?
3. Capacity of the vehicle?
4. Who is the owner of the vehicle?
5. What are contractual arrangements between owner of vehicle and driver?
6. How far and to where does the vehicle go (radius covered)?
7. What kinds of roads do you use? How about conditions of the roads?
- 8.\* What are transport charges per unit (bag, heap, 100 tubers etc.) of NGSS product? Don't forget to ask from where to where and distance.
9. What are major cost components:  
fuel  
maintenance  
driver  
taxes and levies  
others?
- 10.\* In the case of fresh and processed NGSS crops, what is the extent of loss and spoilage during transport? What is the reason for loss and spoilage? Who is responsible for it (who bears the risk)? What could be done to avoid it?
- 11.\* Major problems encountered in the business?  
Please rank (verbally).

### Key informants

Apart from the above groups, key informants may include the following:

- extension officers
- staff of a regional project
- staff of an NGO
- people who know the area very well.

These so-called key informants may be interviewed provided they are knowledgeable about production, processing and marketing of NGSS crops.

Checklists for the key informants can be prepared on a case-by-case basis and do not necessarily require typing.

### APPENDIX 3 KEY INFORMANTS IN RAPID MARKET APPRAISAL: ADVANTAGES AND DISADVANTAGES AS INFORMANTS

Key informant	Advantages as informants	Disadvantages as informants
Wholesalers	<ul style="list-style-type: none"> <li>a) Located at system node which offers vantage point and system perspective</li> <li>b) Knowledge of production, stocks, flows and strength of demand in different rural and urban areas</li> </ul>	<ul style="list-style-type: none"> <li>a) Extremely busy and often difficult to interview for more than a short period</li> <li>b) Given the typical hostility of many governments, they may be unco-operative informants</li> </ul>
First handlers	<ul style="list-style-type: none"> <li>a) Detailed knowledge of exchange arrangements with producers and wholesalers</li> <li>b) Knowledge of market opportunities, production, stocks, and price in particular rural areas</li> </ul>	<ul style="list-style-type: none"> <li>a) Knowledge rarely extends outside circumscribed rural areas</li> <li>b) May have parochial perceptions and attitudes</li> </ul>
Managers of processing firms	<ul style="list-style-type: none"> <li>a) Located at system node which offers vantage point and system perspective</li> <li>b) Knowledge of production and prices in selected rural areas, and demand for processed products in urban markets</li> <li>c) Detailed knowledge of exchange arrangements and risk-sharing mechanisms with producers or producer groups and buyers of processed commodities</li> </ul>	<ul style="list-style-type: none"> <li>a) Given the typical hostility of many governments, they may be unco-operative informants</li> <li>b) May be unwilling to divulge details of exchange arrangements with producers</li> <li>c) Will often under-report throughput in order to avoid taxation</li> </ul>
Transports	<ul style="list-style-type: none"> <li>a) Knowledge of direction and magnitude of commodity flows</li> <li>b) Familiar with structure of commodity trade. Can often identify large-volume traders</li> <li>c) Can provide transport cost data (transport costs can represent a high proportion of marketing costs)</li> </ul>	<ul style="list-style-type: none"> <li>a) Do not actually participate in trade, so they lack knowledge of trading practices and strategies, and commodity prices</li> </ul>
Importers/exporters	<ul style="list-style-type: none"> <li>a) Knowledge of magnitude, timing and prices (seasonality) of imports and exports</li> <li>b) Detailed knowledge of import/export practices, procedures and regulations</li> <li>c) Some knowledge of wholesale/retail distribution system for products</li> </ul>	<ul style="list-style-type: none"> <li>a) May know little about how commodities are assembled for export or how they are distributed after importation</li> <li>b) Since smuggling and under-invoicing are common practices in many countries, they may be unwilling to report volumes or prices</li> <li>c) If rights to import/export are obtained through privileged access or rent-sharing arrangements, they may be unwilling to discuss business practices</li> </ul>
Representatives of co-operatives, trade associations	<ul style="list-style-type: none"> <li>a) Knowledge of numbers and sizes of membership firms and their output/throughput</li> <li>b) May effectively represent membership and its perceptions of constraints, opportunities</li> </ul>	<ul style="list-style-type: none"> <li>a) If representatives are appointed by the government, they may not effectively represent membership</li> <li>b) Membership may be restricted to larger firms and producers</li> </ul>
Bank loan officers	<ul style="list-style-type: none"> <li>a) May possess information about operations, throughput and returns of larger wholesalers, and large-scale processors, retailers, and importers/exporters</li> <li>b) Access to information about composition of bank loan portfolios</li> </ul>	<ul style="list-style-type: none"> <li>a) May not possess systems perspective. May make judgements on basis of narrow rate of return criteria and perceived risk</li> <li>b) May be unwilling to divulge confidential information about borrowers' operations</li> </ul>
Institutional buyers (e.g. supermarket chains, schools, hospitals, military)	<ul style="list-style-type: none"> <li>a) Often major buyers of high-value commodities, such as fruits and vegetables, livestock products</li> <li>b) May have negotiated contractual arrangements with large-volume wholesalers, processors or importers</li> </ul>	<ul style="list-style-type: none"> <li>a) As buyers of final products, they may have limited knowledge of upstream organization and operation</li> <li>b) Often constitute a small proportion of final demand for staple commodities in developing countries</li> </ul>

*continued on p.47*

*continued from p.46*

Key informant	Advantages as informants	Disadvantages as informants
PVOs, missionaries	<ul style="list-style-type: none"> <li>a) Well placed to describe difficult to observe phenomena and report on phenomena that others may be unwilling to discuss</li> <li>b) Sometimes provide extension, input supply and marketing services to rural clients</li> </ul>	<ul style="list-style-type: none"> <li>a) Usually have separate agendas that lead to parochial perceptions and attitudes</li> <li>b) May regard donor agencies or the government as adversaries</li> <li>c) May not participate directly in the commodity sub-system</li> </ul>
Extension agents	<ul style="list-style-type: none"> <li>a) May have detailed knowledge of farmers' production and marketing practices and strategies, producer—first handler exchange arrangements, and the structure of the first handler stage</li> <li>b) Knowledge of the size distribution, alternative technology utilization, the range of marketed surplus, and the food security situation of local farms</li> </ul>	<ul style="list-style-type: none"> <li>a) Agents may not be natives of the area they serve</li> <li>b) May have few funds and no transport for extension visits</li> <li>c) Low pay and difficult working conditions may induce poor performance</li> <li>d) May be a biased source of information regarding farmer production practices and technology utilization</li> </ul>
Managers of parastatal agencies	<ul style="list-style-type: none"> <li>a) Parastatals may buy a large proportion of marketed surplus and manage reserve stocks</li> <li>b) Parastatals are often major importers and exporters of commodities and inputs</li> <li>c) Parastatals are often important distributors of inputs</li> </ul>	<ul style="list-style-type: none"> <li>a) If possess legal monopoly powers, may know little of private competitors' operations and oppose them categorically</li> <li>b) If parastatal under pressure to divest, it may be very defensive and try to justify/rationalize parastatal function and role</li> </ul>
Agricultural producers	<ul style="list-style-type: none"> <li>a) Knowledge of sources of input supply, production practices and strategies, alternative technologies, prices and marketed surplus in own area</li> <li>b) May be able to identify largest and most productive farmers, as well as least successful farms with precarious food security situations</li> <li>c) Detailed knowledge of local marketing opportunities and outlets</li> <li>d) Able to identify constraints to increased production, marketed outputs, and input use</li> </ul>	<ul style="list-style-type: none"> <li>a) Primarily subsistence farmers may know little of current practices and marketing opportunities</li> <li>b) Some producers may have parochial perspectives and malign traders</li> <li>c) Few producers have a system perspective and knowledge of functions at other stages of the food system</li> </ul>
Urban customers	<ul style="list-style-type: none"> <li>a) Can discuss current and seasonal consumption practices and preferences</li> <li>b) Able to discuss pros and cons of alternative retail food outlets, and product packaging and presentation for sale</li> </ul>	<ul style="list-style-type: none"> <li>a) Individual consumers cannot speak for the full range of consumer groups</li> <li>b) Care must be taken to identify and interview nutritionally vulnerable groups</li> </ul>
Retailers	<ul style="list-style-type: none"> <li>a) Possess better knowledge of consumer wants and needs than other market system participants</li> <li>b) Knowledge of wholesaler-retailer exchange arrangements</li> </ul>	<ul style="list-style-type: none"> <li>a) Small-volume retailers in many countries are relatively homogenous, parochial, unprogressive and lack a systems perspective</li> </ul>
University or agricultural researchers	<ul style="list-style-type: none"> <li>a) Detailed knowledge of literature and secondary data sources and their reliability</li> <li>b) May possess an analytical framework that leads to better understanding of the food system and its constraints/opportunities</li> </ul>	<ul style="list-style-type: none"> <li>a) May have narrow disciplinary perspective and perceptions</li> <li>b) May lack detailed knowledge of the business objectives, practices and problems of participants at different stages of the system</li> </ul>
Input producers and suppliers	<ul style="list-style-type: none"> <li>a) Knowledge of input demand in different regions</li> <li>b) Knowledge of input supply, flows and prices at the wholesale level</li> </ul>	<ul style="list-style-type: none"> <li>a) Distributors may promote inputs without detailed knowledge of their technical characteristics and best uses, or without extension follow-up</li> <li>b) Any supplier or distributor who adulterates inputs (e.g. fertilizer) may be an unco-operative informant</li> </ul>

Source: Holtzmann, Martin and Abbott, 1993.

Non-grain starch staple food crops (cassava, sweet potato, yam, cocoyam and cooking banana/plantain) provide important sources of income and food security in many countries in sub-Saharan Africa. The accurate determination of the needs and opportunities in non-grain starch staple post-harvest systems is essential if research and development are to be correctly targeted and have impact. This manual provides the information and tools required to design and carry out a needs assessment study. It is designed for those involved in research and technology transfer projects where non-grain starch staples are important commodities.