4
Assessment Techniques

Most poor households in drylands need clean water, land, medical care, improved sanitation and nutrition, increased income, and control over decisions affecting their lives. An assessment helps communities organize themselves to address their needs by identifying those needs and the community's ability to meet them. The potential for collaboration with outside organizations is also considered. Assessment of progress while a project is being implemented can help development programs reach community goals, and not be diverted to serve the special interests of a powerful, rich minority, outside development organizations, or governments.

An assessment also helps outside project workers learn enough about the local situation so that they can support community members in their own efforts. Project and field workers should understand what gardens are and what the potential contribution of gardens to improving well-being is, including the possibility that gardens may not be the best investment of time and resources. To ensure real benefits, it is important for an assessment to be as accurate as possible. So that project goals are not based on false preconceptions, the assessment has to be grounded in the values of the local people, as well as an accurate evaluation of obiective factors.

4.1 Summary

An assessment gathers information about local conditions, needs, and resources and is a vital part of planning for any project. In addition, assessments are valuable for monitoring projects while in progress and for evaluating their impact after completion.

Different individuals and groups have different perspectives on local conditions and different ideas about how projects should be done. All perspectives are useful but the views of community members, especially those who will be directly affected, are most important.

Careful observation and participation in day-to-day activities give the field worker insights into local conditions and help to establish understanding and friendship. This includes gardening using only local resources. Existing gardens provide a wealth of information for any assessment.

Interviews are useful for assessment -- careful design improves their accuracy and acceptability to those being interviewed. Reports, censuses, and other outside sources can also provide useful information. When collecting and analyzing information on climate, work, health, and availability of resources it is important to consider how these are affected by seasonality.

Patterns of food distribution and consumption, maps of community resources and landmarks, and long-term social and environmental trends are other types of information that can be useful when conducting an assessment and planning for a project.

4.2 Assessment, Monitoring, and Evaluation

We define a ***project assessment*** as the gathering and analysis of information for planning future activities and evaluating present and past ones. An assessment is a learning tool that helps a community organize itself to address its needs, and helps project workers understand a community. Assessment should be a part of all development projects, but collecting information takes time and money which are often scarce resources. When resources are limited, assessments must be short and narrowly focused. The larger the project area, the more money being spent, or the greater the project's impact, the more thorough the

assessment should be. In this chapter we discuss useful assessment techniques with an emphasis on information relevant to projects including gardens.

In many ways the best people to conduct an assessment are the community members themselves. They speak the local language and have a strong personal interest in any project that will follow the assessment. Yet, for some of these same reasons, when local people conduct an assessment their membership in a particular faction or kin group and their personal interests can bias the design of the assessment, the community's response to it, and their own interpretation of it. A community has a great challenge in selecting open-minded, fair, and respected members to conduct an assessment. Where local elites have a long-established and powerful hold on the community, such as in irrigation districts in northern Pakistan, the only way to insure an assessment reflecting the needs of the majority is to have outsiders conduct it. Perhaps the best assessment is one in which outsiders and locals are equal collaborators.

We have written this chapter about assessment as though the people doing the assessment were from outside the community, although many of the concepts and techniques are also appropriate for assessments by community members. Whoever conducts an assessment must try to be as open and objective as they can. For an outsider, the best way to begin is by observing and participating in daily activities like hauling water, preparing food, gardening, and weeding the fields. The project worker should listen, offer support, and develop trust and friendships. This makes it possible for the community to get to know the project worker's intentions and decide if they can trust her. Similarly, the project worker can learn more about the community, which helps her focus information gathering on the most important topics. After this, formal methods (section 4.5) can be used to gather information, if necessary.

Community members usually have many questions to ask and should be encouraged to voice opinions and ideas. One way to do this is through group discussions about needs and how to solve them.[1] This can begin with the group making a list of all the members' comments about local problems. Similar comments are grouped together into categories, the cause of each category is explored by the group, and the group then decides which category or issue requires response. The first assessment conducted before starting the project itself is sometimes called a ***feasibility study.*** Its purpose is to see whether a project is needed in an area, and whether it is possible. A ***baseline survey*** may be done as part of the feasibility study, or after it. A baseline survey documents conditions in the community before the project begins. Data from the baseline survey are what future assessments will be compared with to see if any changes have occurred.

Assessment done during a project is often referred to as ***monitoring.*** Monitoring is useful for keeping projects responsive and flexible, ensuring that the participants do not lose sight of the project goals. This is important because unforeseen situations often arise during a project. For example, project plans can be upset by transportation difficulties, personality disputes, climatic change, a sudden drop in market prices, money being spent twice as fast as planned, or men expressing an interest in gardens meant for women. Adjustments are needed so that the project continues to work toward its original goals, or the goals need to be adjusted by the community.

Post-project assessment is called ***evaluation.***[2] An evaluation determines whether a project has accomplished its stated goals by comparing conditions at the time of the evaluation to those before the project began. Evaluations can be done after the project is completed, or during the project when specific goals were scheduled to be completed. An evaluation asks the questions, "Have the goals been reached?" and "Are these long-lasting, sustainable changes?" Community opinion is a critical part of any evaluation.

Attempts have been made to establish formal guidelines for garden evaluations.[3] Their basic approach has been calculating efficiencies, that is output/input or benefit/cost ratios. In the most common benefit/cost analysis this means calculating market value of garden produce and dividing by project and production costs. Indicators of nutritional status can also serve as outputs when converted to economic terms. Output/input ratios are important considerations and these guidelines can be useful for stimulating thinking about garden evaluations especially for large-scale projects. However, these guidelines tend to be narrowly focused and do not take into account the social and ecological complexity of gardens or communities. In addition, the cost of collecting the detailed quantitative data they require would be far too expensive except for the largest projects. For most garden projects of the kind we recommend, based on indigenous knowledge and local resources with minimal external inputs and project costs, an alternative to formal benefit/cost analysis might be to let the gardeners themselves calculate benefit/cost ratios. They will do this

very quickly, and the results will be obvious as evidenced by whether or not project participants continue to garden, or continue the changes recommended by the project. Evaluation efforts could then focus on whether changes promoted by the project meet overall goals of improving well-being.

Evaluation findings are compared with project goals and for change, in comparison with the baseline survey. For example, if a project goal was to improve the nutrition of weaning-age children by encouraging households to grow nutritious weaning-food ingredients in gardens, the evaluation should focus on those children, their diets and nutritional status, and the gardens.

Evaluations should be sensitive to unanticipated positive and negative effects of the project. For instance, was the garden produce sold at the market instead of being used for weaning foods? Another evaluation months or years later will help determine if the project created long-lasting changes.

Evaluations can shed light on the relationship between different project goals, and can provide guidelines for future projects. For example, we visited a one-and-one-half-year project in rural Egypt which was devoted to starting household gardens to improve nutrition. Twenty gardens were established during the project and one year later only a few of those were still in existence. Those gardens were in the households of wealthy community members, some of whom hired servants to do the gardening. The evaluation showed that the number of households who adopted the project's gardening advice was low, and even more importantly, showed which households continued to garden and why. The project defined household gardens as being near the house, and most poor households were not interested as they did not have spare land near their houses in the densely populated village.

4.3 From Whose Point of View?

It is important for anyone involved in an assessment to realize that there is no such thing as a completely "objective" or "impartial" assessment. No matter how objective or "scientific" an assessment is, it will always reflect the biases and values of those who conduct and interpret it. This is true because science itself is embedded within the cultural values of society. A "good" assessment is one that honestly acknowledges these biases and values, and strives to fairly reflect the interests of the community, while at the same time being as objective as possible.

4.3.1 Assessment and Collaboration

Meetings of existing community groups such as women's groups or village elders can be a good place to announce and discuss a survey. When community members and leaders have been involved in the assessment from the beginning and have helped design the survey, it will be easier to obtain the cooperation of all the households included.

Project field workers should be sensitive to the relationship between the community and those identified as leaders. Leaders are often respected and recognized authorities in their communities, especially if they hold traditional positions. But in some cases leaders may not represent their community and are disliked or mistrusted. Perhaps the most extreme examples of this are the "leaders" created by colonial powers to implement their policies among local populations. This has occurred all over the world. The goals of such figureheads do not reflect the best interests of the community and these "leaders" are not trusted. Field workers and projects that align themselves with such leaders will have a difficult time being accepted and working effectively with the community.

4.3.2 Representativeness

Individuals and groups within a community often have different values, needs, and interests. Assessments should be ***representative,*** that is, they should include households from all segments of the community, such as different religious and ethnic groups, castes, economic levels, occupations, and geographic locations. It is also important to make sure that the needs of different individuals within the household are represented in the assessment. The different members of a household, including men and women, adults and children, or in-laws and blood relatives, often have very different responsibilities and power. A representative assessment may require talking to household women, not just the male "head of household," and making special inquiries about children, the handicapped, and the elderly. Cooperatives, community elders, local clinics, traditional healers, and women's, farmers' and students' organizations are examples of specialized community groups whose ideas are valuable for a representative assessment.

Whenever possible people should speak for themselves. There are always some people who are easier to talk to than others and in some cases certain groups of people may be less accessible or less accustomed to

having their viewpoint valued. However, it is still important for their voices to be heard, and not have them represented by the opinions of other people, no matter how good those other people's intentions are.

4.3.3 Insiders and Outsiders

There can also be significant differences, as well as agreement, between the perspectives of local people and outsiders, such as project field workers. Either way, discussion helps insiders and outsiders understand each other and come to an agreement on the community's most pressing needs and ways of addressing them. For example, local people may have many uses for the "weeds" growing in their gardens, while an outsider may only see these plants as a factor causing decreased garden production. On the other hand, an outsider may be able to see needs of which the local people are not aware, and help them find ways to meet those needs. For example, an assessment that includes testing of the local water supply may find that it contains a lot of disease-causing bacteria, very likely responsible for much illness and some deaths in the community. While local people will recognize the illness as a problem, they may attribute it to other causes. In this case there must be discussion with the community explaining the connection between their problem and its cause, and addressing their questions and concerns. A project should never proceed without community understanding, support, and participation.

4.3.4 Participant Observation

Living, eating, working, talking, and relaxing with people is the best way to gain some insight into their world as they perceive it. This ***participant observation*** is a vital part of any assessment and includes conversation and informal interviewing, as well as observations of physical surroundings, people, and activities.[4] Relaxed social settings encourage candid and open discussions. Feelings of goodwill, trust, and mutual respect, so essential in community development work, are established through this sort of interaction.

Good observation involves clearing the mind as much as possible of preconceptions and expectations, focusing on the environment, and asking questions about what is seen, heard, smelled, tasted, and felt. Making brief notes in the field and later expanding on them may help improve the powers of observation. However, it is very important not to let note-taking in the field come between the field worker and the people she is working with. If people seem uncomfortable or offended, it is wise to stop taking notes.

We feel very strongly that the first thing any garden project field worker should do is try to grow a garden just as the people in the community do. If there are no local gardens then the field worker's garden should use only resources that are readily available to local households. By doing this she gains an understanding of gardening conditions in the area, including local resources, skills, and problems. She also demonstrates that local people are the focus of the project and that she recognizes their skills and knowledge. Only then will she begin to appreciate local conditions and be able to work with gardeners or those interested in gardening to support and improve gardening in the community.

An excellent way to start understanding indigenous gardens is by making a list or catalog of local garden plants. Such a catalog should include a sample or drawing for identification, the local name, how the plant is grown, and how it is used. These catalogs are also very useful for learning about indigenous knowledge regarding other topics including soils (section 9.2.1), water, garden pests and diseases, and food.

4.3.5 Gardens for Whom?

Project objectives can be greatly influenced by the assumptions of the development organization.[5] Such assumptions may not be stated explicitly and project workers are often unaware of them. However, these assumptions affect how needs are identified and how they are addressed. For example, if a development agency assumes that the solution to vitamin A and C deficiencies is increased production of dark green leafy vegetables (DGLVs), they may overlook important factors such as food preparation, distribution, and consumption. Among poor households the extra produce may be sold to obtain money for debt payments, and so will not contribute to improving household nutrition.

Some agencies and people working for them may be unwilling to endorse an assessment that excludes them from future project activities. For example, an agency specializing in irrigation may be reluctant to recognize an assessment that indicates improved health care and nutrition education as the priorities. Agencies and project workers must thoughtfully examine their assumptions to make sure that these do not interfere with the goal of involving people's well-being.

When answering strangers' questions, many of us tend to give the answers we think the interviewer expects. This is also a common problem when outsiders talk to people about gardens. The local people being interviewed may assume that outsiders are only interested in industrial-style gardens, an accurate assumption based on the approach taken by many garden projects (section 1.2). We have visited villages where residents had cultivated fruits and vegetables for their households for many years. However, local extension agents believed there were no gardens and went to great efforts to persuade the residents to learn less appropriate, industrial gardening methods[6] (Figure 4.1).

A major reason for these problems is that the Western, industrial-style garden has come to dominate the definition of' gardens in development. Emphasizing a functional definition of gardens as we describe in

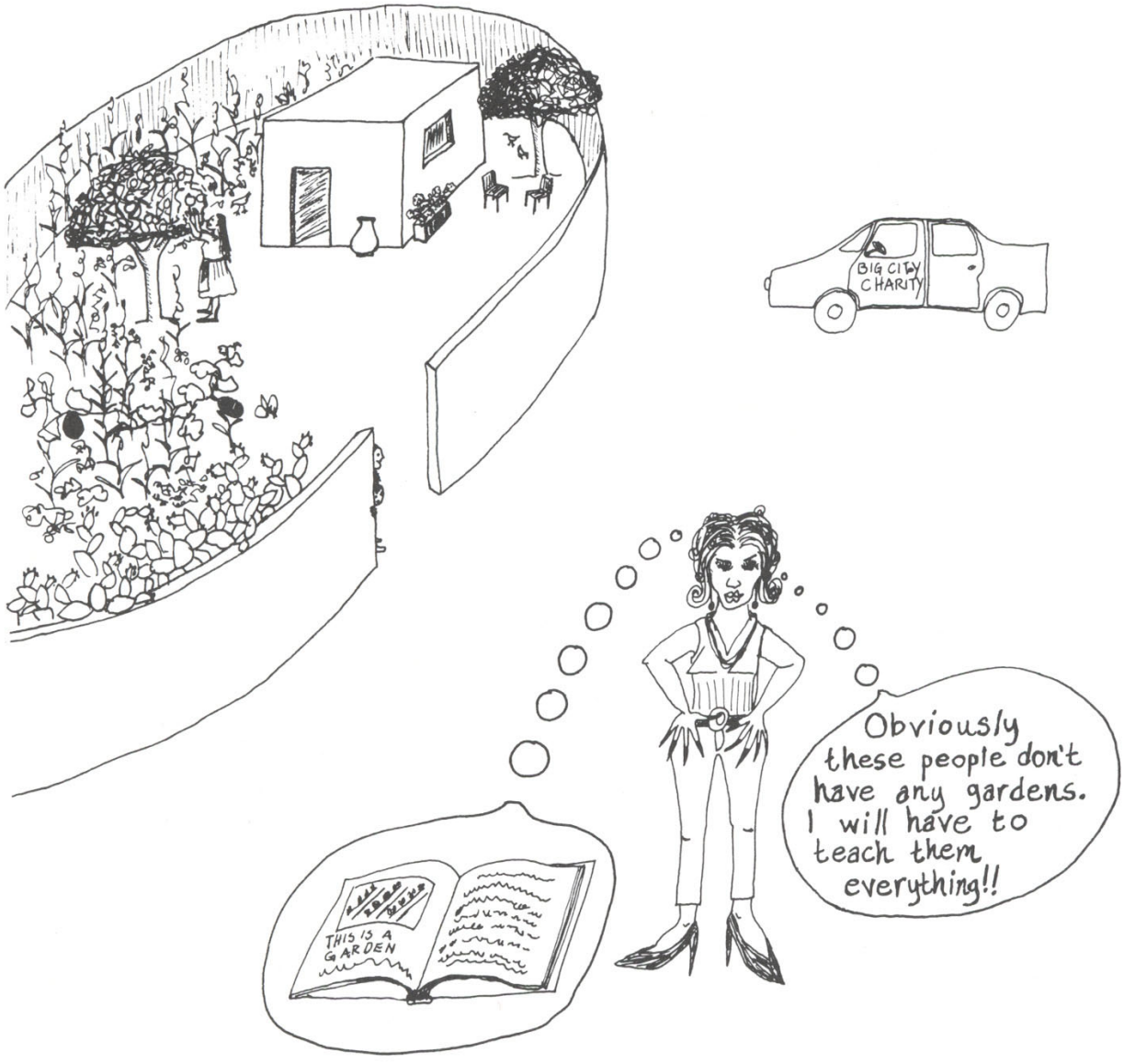

Figure 4.1 Assumptions About What Gardens are Have a Big Effect on Garden Projects

section 1.1 can help overcome this stereotype. Defining gardens can be further complicated by problems of translation. In Egypt we found that some bureaucrats and nutritionists used an Arabic term for gardens which meant formal pleasure gardens. Obviously poor villagers did not have anything that would fit that description, and an interview using this word to ask if people had gardens would get "no" for an answer. However, many poor households do cultivate small quantities of fruits and vegetables for their own consumption, fitting our functional definition of gardens.

4.4 What Do Existing Gardens Tell Us?

The first and most important step in assessing the need for gardens is understanding how gardens function in the households that already have them, why those households have gardens, and why other households do not have them. Answers will come through keen observation, patient listening, and by asking relevant questions in conversation and formal interviews. Nothing should be assumed. How the gardens work, and how they contribute to the household and community should be investigated. If there are no gardens in the community the project worker must find out why. Local gardening, or lack of it, can be compared with gardening in nearby communities, or even in more distant ones, if they are similar to the one being assessed.

Not only is understanding existing gardens an important first step when considering a project in a community, it is also essential throughout the process of assessment and project implementation. At each step, and for every topic, project workers need to ask questions like, "How is this task accomplished in existing gardens?" and "Do existing gardens meet this need or address this problem?" (Box 4.1).

4.5 Interviews

A ***survey*** is a tool for assessment in which information on the same topics is recorded for each household, garden, or other unit in the sample (section 4.5.3 discusses samples). Information can be gathered by observation or an interview, which can be either formal or informal. When the questions are numerous or complicated, or a large number of people are to be interviewed, a formal survey is better. Formal interviews should only be done after participant observation has established a good relationship between field workers and the community, and informal surveys have identified topics on which more information is needed. In this section we focus on formal surveys.

The value of a formal interview is that it provides a structured, standard format for making observations and asking questions. Because of this the information gathered can be summarized, subgroups identified,

Box 4.1
Useful Information from Existing Gardens

The following questions about existing gardens can be answered by casual observations and conversations, as well as with formal surveys or interviews.

- Which households are gardening? Do they belong to a particular social, economic, ethnic or other group?
- Where are these households? Are their gardens next to their houses, in their fields, along canals, in a community garden area?
- Who controls access to land and water for gardening?
- What are the age and sex of household members who garden the most?
- How long have they been gardening?
- How much time do they spend gardening? Does this differ by age or sex?
- What is the daily and seasonal garden schedule?
- How large are the gardens? Is there a relationship between household size and garden size?
- What is grown and when? Are there differences between wet and dry season gardens?
- Where do the planting materials (seeds, cuttings, etc.) come from?
- What other resources are used? Where do they come from?
- What foods from the garden are eaten? By whom? How are the foods prepared?
- Is any produce sold, traded or given as gifts? By whom?
- Who controls the income? What do they use it for?

and comparisons made between them. For example, if information about individuals' land resources is gathered for a community, women's access to land can be compared with men's and the implications discussed. In some parts of Mali where men have easy access to land for onion gardening but women do not, the lucrative business of onion marketing is not available to most women.

Formal interviews should be accurate and representative of various groups in the community. It is better to collect a small amount of useful, good-quality information rather than a large amount of information that is difficult to analyze or use because of its size and inaccuracies. The interview should be kept short (no more than one page long, at least for the first survey) and should be designed to obtain practical information for the assessment and the project (Figure 4.2). Another reason to keep interviews short is because people are busy and long interviews are tiring and irritating. The longer the interview, the less likely the interviewee will be to give accurate, thoughtful answers. It also becomes less likely that they will want to talk with the interviewer again, let alone consent to another interview in the future.

The following steps for a survey using a formal interview will be briefly discussed: composing questions, translating and back-translating, sample size and selection, pretesting, administering the interview, and coding, checking, and analyzing.

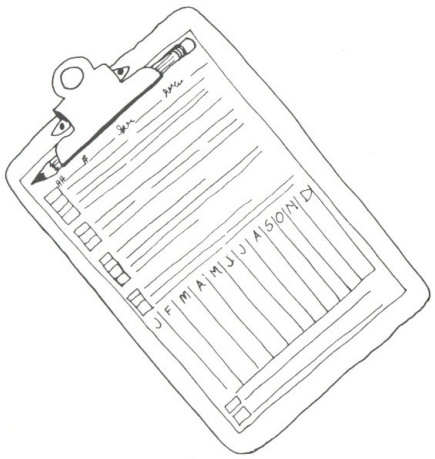

Figure 4.2 A Formal Interview

4.5.1 Composing Questions

There are several types of questions that can be used for a formal interview:

- Yes/no questions, for example, "Do you have a garden?"
- Precoded selection of responses, for example, "During which month does the household have the least food?" l=January, 2=February ..... 12=December.
- Open-ended questions which may prompt a long, unstructured response, such as, "Why do you think people in this village do not have gardens?"

Yes/no questions are easiest to obtain answers for, and open-ended questions the hardest. Answers to yes/no or precoded questions can be summarized or coded along one margin of the questionnaire form. Coding makes it easier and quicker to tabulate and analyze the information. All questions should be as clear as possible, and should not be offensive. For example, it is considered rude in northern Ghana to ask how much food a household has stored, or to ask too many details about a person's health. All cultures have such areas of sensitivity. In the United States it is considered rude to ask people how much money they make. Answers to such questions may not be accurate, and these types of questions may make the respondent reluctant to answer other questions.

Questions should be composed so that a bias or expectation on the part of the interviewer does not interfere with the response. For example, using male pronouns (he, his) to refer to gardeners may indicate to the person being interviewed that the interviewer is not interested in knowing about women gardeners, or vice versa. Similarly, expressing an interest in, and approval of, local crops encourages people to discuss them, and not just the new commercial varieties being sold in the area. Each question needs to be reviewed for clarity and relevance. Can the question be understood? Will the answers provide information that will help make decisions about household gardens?

4.5.2 Translating and Back-Translating

If the interview will be given in a language other than the one it was composed in, several people should translate it independently, and their results should be compared to eliminate effects of personal biases and limitations in language skill. A separate set of people should then translate the interview back into the original language to make sure that the original meaning

has not changed. This is called back-translating. For example:

Translation: a) English --> b) Hausa

Back-translation: b) Hausa--> c) English

Do a and c match? The wording should be corrected and adjusted until they do. Failure to back-translate is the cause of much inaccurate information being gathered.

4.5.3 Choosing a Sample

Deciding on which people are to be interviewed depends on the specific purpose of the garden project being considered. A ***population*** is the whole group of people that the survey is about. For example, the population could be all households in a community or neighborhood, or a particular category of people such as all women of child-bearing age in the district of Kowanga. When it is not possible to interview everyone or every household in a population a ***sample*** or subgroup representative of that population is selected.

The size of a sample will depend on a number of factors. Limited project time and resources often have a big effect on the size of the sample taken. A useful principle to keep in mind is that the larger the total population, the smaller the proportion of the population included in the sample needs to be for obtaining accurate, representative information. For example, in a community of 3,000 households, a 10% sample would be 300 households, enough to obtain information that is not dominated by the extreme or unusual responses of just a few households. If 150 households in the sample (i.e., 50%) say they are interested in market gardening it is said that 50% of the population may be interested in market gardening.

However, in a community of 20 households, a 10% sample would be only 2 households and the findings could be easily skewed by the opinions or experience of 1 household. For example, if only 1 household said they were interested in market gardening this would be 50% of the sample. A sample of 50% or even 100% of this community would provide much more representative information. In order to be confident that the results of the sample can be legitimately applied to the whole population, it is important to have an adequate sample size. Sampling is a complex topic, and anyone who is planning on conducting a large survey should consult with an experienced statistician (Box 4.2).

A ***random sample*** is one in which all members of the population have an equal opportunity to be selected. This ensures that the resulting sample will be representative of the range of persons or households in the area being sampled. For example, a sample chosen from one location in a village will not be representative of the whole village if residence in a community is itself nonrandom. That is, the section of the community a person lives in may depend on her social status, economic level, caste, or ethnic group. These different groups within the community may be distributed according to features like roads, schools, markets,

Box 4.2
Statistics and Probability

Statistics has two broad functions.[7] The first is to describe something by summarizing information about it. This helps us to see important characteristics and makes the information more usable. Giving the percentages of households in a village survey that eat fresh fruit once a day, once a week, and less than once a week is an example of how statistics can be used to describe something.

The second function of statistics is ***inductive***. That is, it allows us to make generalizations based on a sample or to compare two groups to see if they are really different in regard to the characteristic we are interested in, or if they can be considered as the same. Surveys of a whole community provide data that can be used to describe the community. If only a sample of the community is surveyed, statistical tests can be used to decide what inferences can be made about the whole population based on the sample. If comparisons are being made between different samples from groups, for example, households with and households without gardens, then statistics can be used to decide if any differences between the groups are ***significant,*** that is whether they can be accepted as real differences, or whether they are due to chance and do not reflect differences between the groups from which the samples are drawn.

Inductive statistics depends on the theory of ***probability,*** which allows us to tell whether the patterns being observed in the data occur by chance, or whether they are "really" there, that is, whether they are significant. (Section 11.4.1 gives an example of the use of probability in predicting rainfall.)

mosques, shrines, pumps, or the best garden land.

An easy way of selecting a random sample is to give each household or person in the population a consecutive number, beginning with "1," writing each number on a slip of paper, folding the slip in half, placing all the slips in a container, mixing them up, and drawing out the slips one at a time without looking at them until the desired sample size is reached (Figure 4.3).

Random samples may not be appropriate in communities with more than one distinct economic, cultural, or ethnic group. In this case a ***stratified sample,*** one which intentionally selects a specific number of representatives of different groups, is better. A stratified sample can be selected in two ways. Let us say a survey is being done on a sample of 100 households in a community where 25% of the households are Moslem and the rest follow local religious practices. In this case a ***proportional*** stratified sample would randomly select 25 households from the Moslem part of the community and randomly select 75 households from the non-Moslem part of the community. This provides a more representative sample than random sampling for a population composed of distinct subgroups.

If comparing the differences and special needs of each subgroup is a goal of the survey, then a ***disproportional*** stratified sample can be used, selecting 50 households from each subgroup. For example, in parts of Burkina Faso villages may have both Moslem and non-Moslem residents. This religious difference may be reflected in social differences that have a significant effect on household income and food supply.[8] Since Moslem women cannot make or sell sorghum beer due to religious prohibitions on alcohol, other income-earning activities including gardening may be of greater importance to those women than to their non-Moslem neighbors.

It is a good idea when selecting a sample to make it somewhat larger than will actually be needed, so that if some people or households do not participate for any reason, they can be easily replaced by others. In addition, some extra people or households should be selected to use when pretesting the survey.

4.5.4 Pretesting

Before the interview is given, it should be pretested with people from the same population who are similar to those in the sample. Pretesting identifies problems with the interview -- if questions are unclear or inappropriate, or if the interview is too long it can be changed before giving it to the sample.

Figure 4.3 Selecting a Random Sample

4.5.5 Conducting the Interview

Whether they are community members or not, interviewers should be able to listen patiently, have a good sense of humor, respect those being interviewed, be interested in the project, and have neat handwriting.

Even when an assessment is being carried out in collaboration with the community, many may not have participated directly in the planning. Therefore, the first step when conducting interviews is to discuss the purpose directly with those being interviewed. This should be done before each interview and any questions should be answered at that time. The confidentiality of interview responses should be explained and maintained at all times. Each person or household interviewed can be given a code number and only that number needs to appear on the form. The key to the code should be kept in a safe place, separate from the interview forms.

The interview should be timed to least interfere with the schedules of those being interviewed. Every effort should be made to minimize the disruption

caused by the interview and to show how it will contribute to improving the interviewees' situation. If this is not done people will be reluctant to be interviewed and some may refuse. If someone cannot be convinced to participate in a survey they should never be forced to do so. Instead, another person or household should be selected from the population.

When conducting interviews, the values of the community and its members should be respected. For example, in many Moslem countries permission of the male household head is required before interviewing women. This permission may only be granted if the interviewer is a woman, if the interview is conducted in the presence of a male household member, or both. It may be culturally appropriate to offer a gift when visiting a household. In northern Ghana we gave kulikuli (fried peanut balls) to children and kola nuts to adults.

4.5.6 Coding, Checking, and Analyzing

Finished questionnaires should be reviewed as soon as possible after completing the interview. This means coding all answers that can be coded, and checking for any obvious errors, misunderstandings, or missed questions. Returning to check an answer with an interviewee should be done as soon after the interview as possible.

Tabulating the information is one of the simplest methods of analysis. It involves counting the number in the sample with one response to a given question and comparing it to the number with different responses, often expressed as percentages. For example, a sample of 30 mothers of young children were interviewed to discover if they used DGLVs in weaning foods. Twelve said they did and 18 said they did not. These results showed that 40% (12/30) of the mothers in the sample used DGLVs in weaning foods and 60% (18/30) did not. More sophisticated analyses of the data can be made, and someone experienced in statistics should always be involved (Box 4.2, section 4.5.3).

The survey results should answer the questions with which the community and the field worker started. These results are then the basis for further discussion and, combined with any other information gathered, will help the community and field worker decide what actions they will take, and whether gardens will be included in a project.

4.6 Seasonality

The marked seasons that characterize drylands mean that availability of resources changes through the yearly cycle. In an assessment it is very important to find out how the situation differs from season to season. For example, changes in the availability of water have a big effect on the need for, and supply of, food and income. In many drylands, food is in shortest supply during the rainy season before the harvest. This is also a time of increased demand for agricultural labor, and water-borne diseases such as malaria are common.

Gardens also change with the seasons. For example, rainy season gardens may be located near the home compound, while in the dry season they are grown in dry streams and depressions where soil moisture is highest. Cool season crops can differ substantially from those grown in the same garden during the warm season.

A good way to understand seasonality is to make an annual calendar showing variations through the year. Figure 4.4 is an example of an annual calendar for northeast Ghana. It is best to begin by quickly gathering preliminary information, entering it on the calendar, then deciding what additional information is needed (Box 4.3). This is a good safeguard against wasting time making a calendar much too elaborate for practical use. A number of smaller calendar forms can be used for taking notes, and the information can be put together later on a larger sheet of paper.

Scales on the vertical axis of the calendar can be absolute values, for example, 0-300 mm (0-12 in) of rain, or total household income, for example, 0-500 rupees/month. Or the vertical axis may illustrate relative values such as no rain, some rain, much rain, or no income, less income than needed for basic needs, or more income than required for basic needs. Estimates of a probable range of values are better than nothing. As more information is gathered these estimates can be adjusted.

As the project becomes more focused, calendars addressing specific people or crops can be made. For example, if women are interested in expanding gardening into the hungry season a calendar of women's activities could be created. This would help field workers understand and discuss the idea with local women.

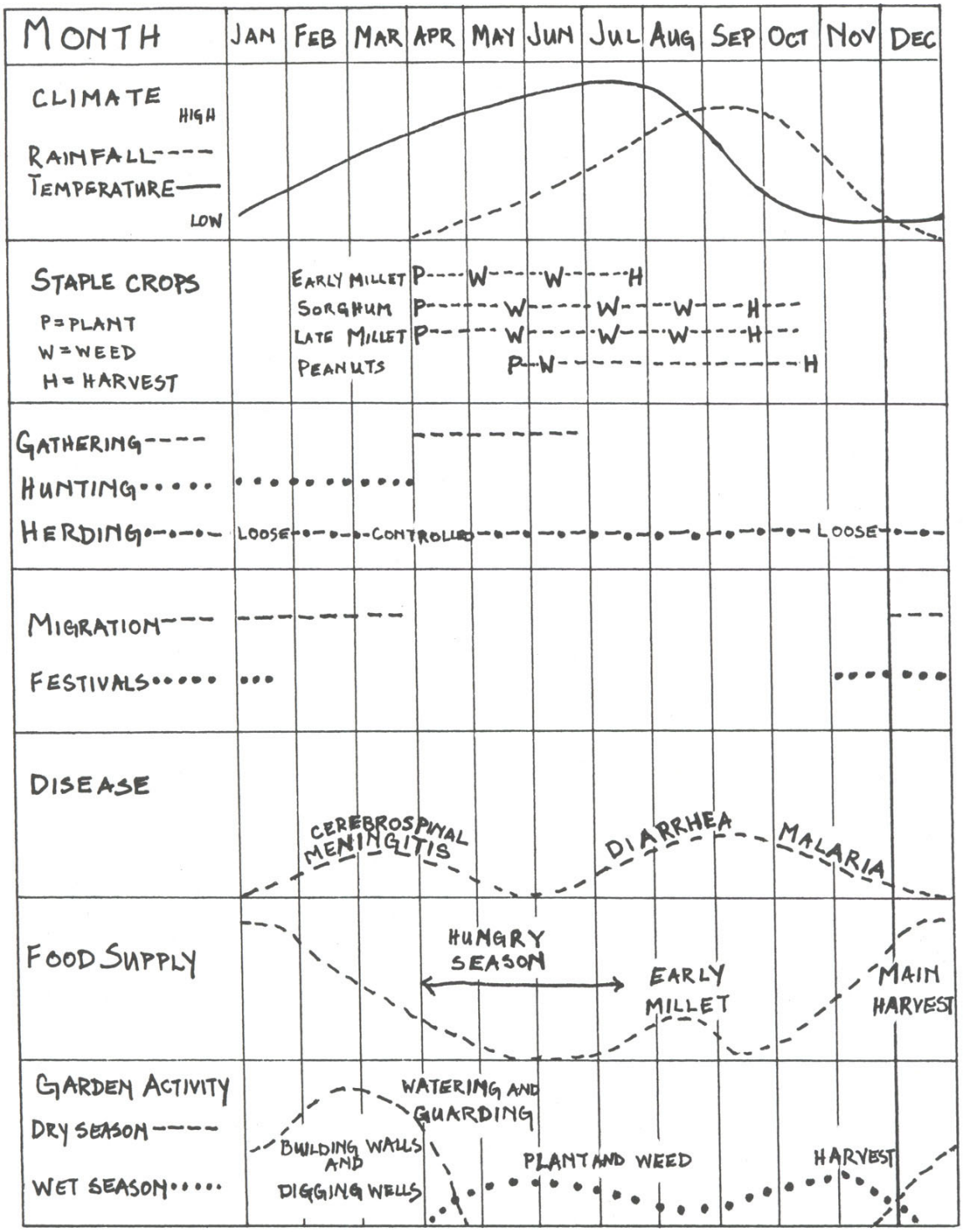

Figure 4.4 An Annual Calendar for Northeast Ghana

Box 4.3
Possible Topics for an Annual Calendar

I *ENVIRONMENT*
- Rainfall
- Temperature
- Availability of water for irrigation
- Major agricultural pests and diseases
- Availability of material for fencing, shades, trellises, mulches
- Availability of soil amendments: manure, sand, compost
- Availability of land, as influenced by cropping pattern

II *PEOPLE'S ACTIVITIES*
(These can then be divided into women's and men's activities)
- Field crops: sowing, weeding, pest management, harvesting, processing
- Other food-producing work: gardening, gathering, hunting, fishing
- Wage labor
- Animal herding, including seasonal migrations
- Market activity
- Labor migration
- Ceremonial activities
- School attendance

III *NUTRITION AND HEALTH*
- Actual or potential availability of garden foods
- Availability of staple foods
- Availability of wild, gathered foods
- Availability of market foods
- Hungry season
- Disease incidence

IV *MARKETS*
- Actual or potential availability of garden produce for marketing
- Shortages of income for the household and individual members
- Path and road conditions
- Availability of transport
- Market demand for garden produce

4.7 Food Distribution and Consumption

Food supply and consumption patterns offer insights into nutritional needs. Market surveys listing the kind, quantity, and cost of foods in the market at different times of year can be done quite easily and are important for understanding local food supplies and for assessing the potential for marketing garden produce. However, they are just part of the food system and should never be used by themselves as indicators of nutritional status. Food in the market is often not available to those who need it most because they cannot afford to buy it. In dryland West Africa we have seen markets full of food while villagers a few kilometers away were hungry but unable to translate their needs into buying power. If they could, the markets would have soon been emptied.

Eating with a household gives insights into what they eat, how food is prepared, and how it is distributed. However, the field worker is often considered an honored guest and, at least the first few times, larger quantities and more special foods may be served (Figure 4.5). These are unusual circumstances and should not be used in an assessment. In addition, the field worker must be careful not to overburden the household which may feel obliged to provide these special meals.

Understanding local diets and nutritional needs means finding out what people eat, how often they eat it, and how this changes at different times of the year. Interviewing a sample of households to find out their source for major types of foods at different times of year can help a field worker understand the seasonality of diets in the community. Adding this information to the annual calendar (section 4.6) will show where dietary change fits in with other seasonal fluctuations.

Collecting information on the frequency with which different foods are eaten, how they are prepared, and who eats them gives a rough idea of what nutrients might be lacking in the diet at different times of the year. This does not provide precise figures on nutrient deficits, or the quantity of nutrients needed to supplement the present diet, but it can give ideas for the kinds of crops to encourage in gardens.

Often the person responsible for preparing the food

Figure 4.5 Often Field Workers are Served Special Meals

will be able to provide the most reliable information for a food frequency survey. Useful questions include, "What do the people in your house eat in the morning?"(or during the day and in the evening) "Are there special days when the quantities of foods eaten are different?" and "How often do people in your household eat fruits?" (or vegetables, cereal and root staples, legumes, dairy foods, nuts and seeds, meats, and fish). The foods eaten and the ways they are prepared should be noted. It is very important to find out how this information varies for different people in the household.

Some important reasons why people have different diets and eating habits are because of individual preferences, cultural values, and geographic locations. Beliefs or customs about foods may have originated for reasons of health, to ensure distribution of valuable foods, because of local beliefs about the cause of illness, or for other reasons. Special diets that may affect health are often prescribed during sickness, pregnancy, and lactation. Some are beneficial, but others are harmful. Working with people to support their healthful beliefs about food and discussing why some beliefs can be harmful is a difficult process. Werner and Bower discuss ideas of how to do this.[9]

The following patterns in data gathered on food will help to understand the local nutritional situation:

- Patterns of food supply and consumption as they vary between rainy and dry, warm and cool seasons.
- Nutritional quality of the most common meals (Chapters 2 and 15).
- The variety of foods: staples, legumes, fruits and vegetables, dairy, meat.
- Sources of produced and purchased foods: field, garden, gathered, market, friends or relatives, food aid.
- Social and economic access to food: in the community (by class, caste, ethnicity, religion, other group), in the household (by age, sex, relation).

4.8 Maps

Making a sample map of an area with community members is a good way to become familiar with the location of natural and social resources. Most available maps will probably be on too small a scale to be useful for village-level information. Maps on a scale of about 1:50,000 (1 cm = 0.5 km or 1 in = 0.8 mi) are helpful guides for making larger scale maps of areas between 10 km^2 and 50 km^2. However, a simple map can be drawn easily by quickly making a preliminary sketch, and then deciding what, if any, additional information is needed. Later the location of resources can be added. Box 4.4 lists some useful information that can be shown on maps. Figure 4.6 is an example of a village sketch map helpful when doing an assessment.

Box 4.4
Useful Information that can be Shown on Maps

- Compass directions or orientation to major landmarks
- Water sources: rivers, streams, wells, pumps, springs, qanats
- Forests, quarries, clay pits, and other sources of garden building materials
- Prevailing winds (may differ with season)
- Residences, including those of local leaders
- Agricultural lands, including gardens and fields
- Places where wild foods are gathered
- Grazing areas, animal enclosures, sources of manure
- Medical resources: local healers, midwives, clinics
- Roads, markets, stores
- Sacred and ceremonial areas
- Seasonally flooded areas

4.9 Long-Term Trends

Identifying and understanding long-term trends in an assessment helps to ensure that changes made by the project will continue into the future. Awareness of these trends helps the community and its projects foresee and plan for changes.

For example, a common trend in the rural Third World is environmental degradation. In many regions deforestation is a serious problem which leads to soil erosion and desertification. The social implications of deforestation are equally serious and include big increases in time and energy spent collecting fuel wood, destruction of agricultural lands and their productivity, and loss of wild food sources for people and their animals. Frequently women bear most of the increased work burden because they are often responsible for providing their households with both fuel and wild, gathered foods.

Overall this trend may show the need to redistribute resources, lower consumption by some, and find sources of energy and income that will not destroy local resources. In terms of garden projects this may mean people have less time and energy for gardening. However, it could also mean gardens will be increasingly important as a source of fruits and vegetables, and income for purchasing fuel.

Other long-term trends that affect dryland community development efforts, including gardens, are dropping water tables, soil salinization, changes in land tenure such as increasing privatization, out-migration of young people, and changing eating patterns.

4.10 Outside Sources

For many areas information has already been collected that can be useful for an assessment. Frequently this information may be difficult to obtain, for example because it is only available in the capital city, or from people or organizations outside the country. Even so, finding it may be worth the effort, and may save time and resources. As with all other information gathered for an assessment, printed or published information must be assessed for representativeness, accuracy, and objectivity. Box 4.5 lists some types of outside information useful for assessment, and possible sources of that information.

4.11 Resources

Many resources about assessments and how to do them are long lists of "Questions to ask." These can stimulate thinking, but too often discussion of how to go about actually doing the assessment and what to do with the information is lacking. To some extent this is unavoidable because methods and questions must be tailored each time to meet the special circumstances of each community and project.

One of the best books to read when preparing to do

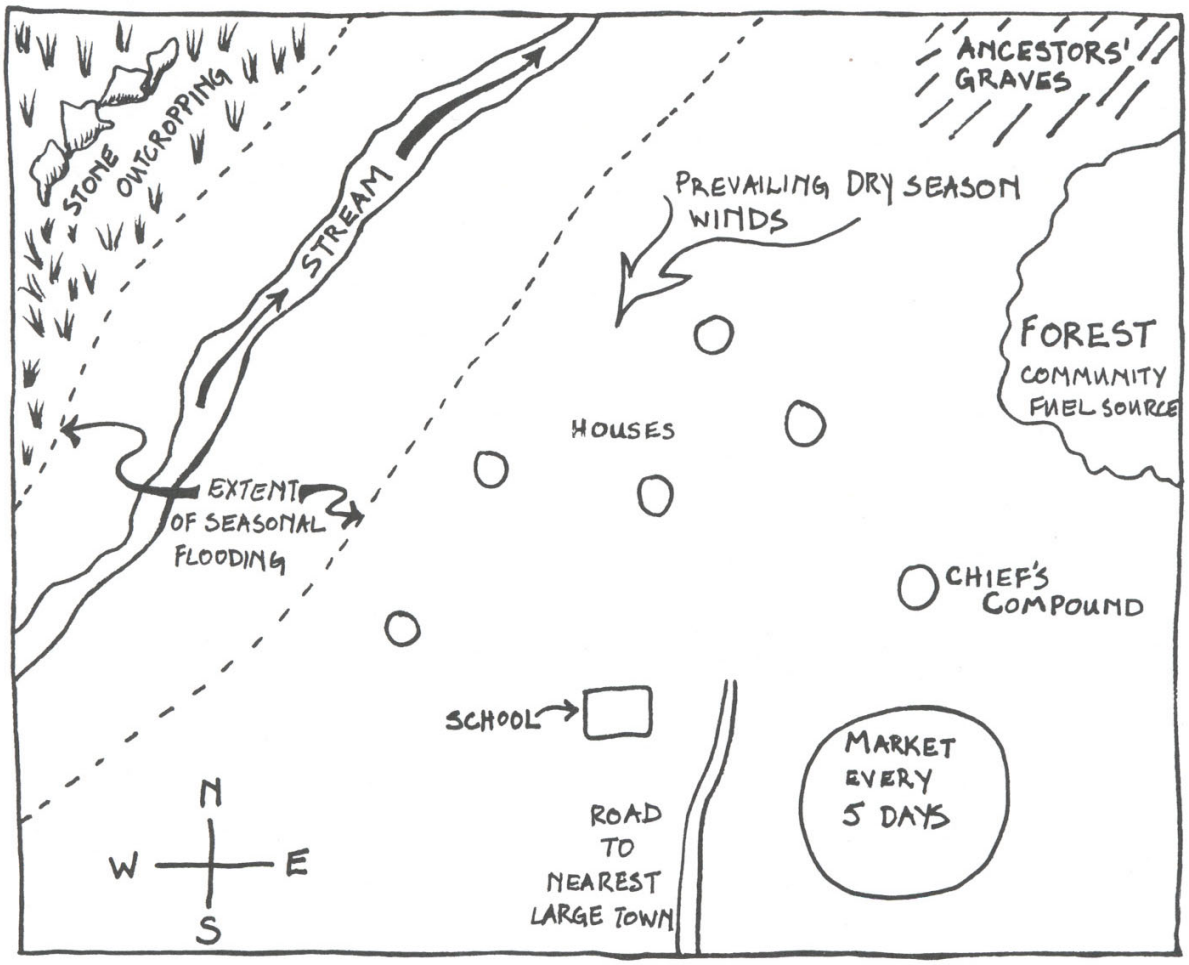

Figure 4.6 A Sample Sketch Map

Box 4.5
Outside Information

I *TYPES OF INFORMATION*

- Census reports of both population and agriculture
- Medical and nutritional surveys
- Soil surveys
- Surface and groundwater surveys
- Anthropological, historical, geographical reports
- Botanical surveys
- Agricultural experiment station reports
- Research papers by college and university
- students
- Project and planning documents and reports

II SOURCES OF INFORMATION

- Local and national clinics, health posts, hospitals
- Universities that have carried out local research
- Local, regional and national government departments of agriculture, health, nutrition, community development, census
- Libraries
- People who have previously worked in the area
- Local or international development organizations like ILIEA, Hesperian Foundation, Cultural Survival, and many others (Chapter 19 has brief descriptions of these and other organizations.)

an assessment is *Rural Development: Putting the Last First* (Chambers 1983). This is an easy-to-read discussion of why and how many development activities have tended to overlook those most in need. It also gives some brief suggestions of ways to overcome this problem in projects and project assessments.

We think the best outline for assessment is by David Werner and Bill Bower in their book *Helping Health Workers Learn* (1982). This is an excellent, inspiring book full of information useful for anyone working in community development. Werner and Bower constantly emphasize practical methods that support local control, while keeping in mind the goal of improved well-being for those most in need. The following sections are especially helpful for assessments: Chapter 6, "Learning and Working with the Community"; Chapter 7, "Helping People Look at Their Customs and Beliefs"; and the discussion of evaluations in Chapter 9, "Examinations and Evaluation as a Learning Process."

Anthropologists and other social science field workers have been struggling with the best ways to gather and use data from local communities for a long time. Spradley's books on participant observation (1980) and ethnographic interviewing (1979) are good, practical introductions which emphasize the need to understand the local situation from the people's point of view, and to do research with, and in the best interests of, local people. Bernard (1988) has published a helpful handbook on field methods in cultural anthropology, emphasizing quantitative measurement.

Part three, "Field Methodologies," in OXFAM's *The Field Directors' Handbook* (Pratt and Boyden 1985) provides a general introduction to assessment at the program level.

References

[1] Bunch 1982:61-63.
[2] Werner and Bower 1982:9-18 -- 9-22.
[3] Grün, et al. 1989; O'Brien-Place 1987.
[4] Spradley 1980.
[5] Pacey and Payne 1985:210-213.
[6] E.g., Cleveland 1986.
[7] Blalock 1972:3-8.
[8] Saul 1981.
[9] Werner and Bower 1982:Chapter 7.