FEED THE FUTURE

The U.S. Government's Global Hunger & Food Security Initiative

AGRICULTURAL EXTENSION

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Agricultural Extension

by Michael J. Gibbons and Richard Schroeder

The Peace Corps

July 1983 (revised December 2014)

Acknowledgements

Agricultural Extension replaces an earlier publication of the same name that was produced by the Peace Corps in 1983. This revision was done in 2014 under contract with EnCompass LLC, through Feed the Future funding from USAID. The Peace Corps review team included Agriculture Specialist Gordie Mengel and Expert Consultant Lee Lacy. The original manual was written by Michael Gibbons and Rick Schroeder. It was developed from material produced by Volunteers and staff members in Washington, D.C., and at Peace Corps posts throughout the world.

The most significant contribution to the original text was made by farmers who educated Volunteers about the process of change. The manual was based in part on the extensive Agricultural program manuals produced by Basico, Inc. for the Peace Corps in 1970.

Preface

As part of the United States "whole of government" effort to address food security in the developing world, the Peace Corps has edited and revised several existing technical manuals designed for use by Volunteers. Most of these materials were created in the late 1970s and early 1980s and were written by a number of different subject matter experts employed or contracted by the Peace Corps. They have been revised with funding provided to the Peace Corps by the U.S. Agency for International Development's (USAID) Bureau of Food Security under a food security agreement, known as "Feed the Future."

Given Volunteer and staff needs to access information on a wide range of topics related to food security, these manuals and their accompanying references were selected, reviewed, and updated, again, by subject matter experts. While a few years have passed since first written, the content covered in these manuals, particularly the basic concepts, has changed very little, if at all. Importantly, references in each of the manuals have been reviewed and updated, where necessary, and websites have been added to allow the reader to locate additional and more recent support content.

The purpose of this manual is to provide staff, Volunteers, and counterparts with basic concepts regarding extension services. It frames a model of agricultural development based on farming, research, and extension services. Volunteers engaged in activities related to food security will find this manual especially useful. Entering a community of smallholder farmers, establishing critical relationships with farmers and their organizations, and providing direct and indirect extension services are all clarified in this text. The manual includes many job tools related to the extension service that will also be useful.

While the manual addresses the importance of researching agricultural practices of a Volunteer's site or assignment, readers will also want to review the Peace Corps' *Participatory Analysis for Community Action (PACA) Training Manual* (Publication No. M0053) and the companion publication *Using Participatory Analysis for Community Action Idea Book* (No. M0086). These resources expand on the participatory rural assessment approach based on Peace Corps Volunteers' experiences.

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The Peace Corps and Agricultural Development

For the Peace Corps, development focuses on building local capacity and self-reliance among those who need it most. Accordingly, the Peace Corps promotes dozens of agricultural extension programs that reach small-scale farming families worldwide.

Developing countries look to agriculture to stimulate long-term economic development. In addition, population growth has kept pace or even exceeded food production, leaving the world hunger problem unresolved. Inequitable food distribution systems and post-harvest losses magnify the current food deficit. These issues add up to a crisis and a mandate for agriculture in developing countries.

Small-farm families are deeply affected by such challenges. The situation is made more urgent by the inaccessibility of agricultural support services. This is due to the pervasive skewing of support services to larger and more productive producers.

Peace Corps Volunteers attempt to alleviate this crisis by reaching out specifically and personally to small-scale farming families in the manner described in this manual. This is consistent with Peace Corps' mandate to help those most in need. Extension workers foster effective two-way communication between farmers and support services in the role of facilitators. They help farmers develop a new sense of competent autonomy, as they confront together the world that is changing around them.

Background on Small-Scale Farmers

First and foremost, each farmer and family is individual, uniquely struggling to respond to the various factors that affect their success in the process of adaptation called farming. Despite rich personal, local, and regional diversity, however, these people share a number of important characteristics.

First, they are much more than just farmers. For example, they may be parents, religious or community leaders, masons, carpenters, healers, blacksmiths, truck drivers, etc. In these diverse roles, small-scale farmers adhere to complex local religious, social, and economic patterns and their accompanying demands. Due to influences from beyond the village, such farmers also have changing aspirations for material well-being, status, etc. Many have changing social identities as well, moving from family, village, and tribe or region membership toward national citizenship. They all are cultural beings and family members first.

Secondly, these are skilled and experienced farmers. They are experts in the local conditions affecting agriculture. They are practitioners of local agricultural and other technologies (e.g., hoeing, plowing with oxen, making tools, etc.). In the face of change, they are also farmers

in transition between traditional and newer agricultural practices. They are aware of outside inputs and new techniques. They seem to be open to producing a marketable or barterable surplus once family food needs are met.

Finally, small-scale farmers have economic concerns. They participate in local barter or subsistence economies, in which goods are either exchanged among neighbors or grown to be used at home. In these self-contained economies, farmers are not in the habit of investing in outside inputs or of using credit, except for meeting home needs. These farmers are usually limited to the family labor supply, or to a communal exchange of labor among neighbors. Most small-scale farmers operate as if they own or rent their land, as independent farmers, even though some are subject to tribal or community controls or to insecure tenancy.

Small-scale farmers share a village agricultural point of view. It is characterized by:

- A holistic outlook. Agriculture is a central activity, but it is only part of a whole, connected way of life. For example, those things that can be contributed to farm work, like money and labor, are constantly required to meet other family needs as well. The village family allocates these resources by looking at the whole.
- Environmental sensitivity. All farmers have to be extremely sensitive to their environments in order to survive. They sense from collective and individual observation what elements of the environment are critical to their success as farmers. They are particularly sensitive to cyclical things like rainfall and storm patterns. More than anyone else, they know the mini-environments of their individual farms intimately.
- Local focus. Small-scale farmers know a lot about local things and much less about regional, national, or global things. Most of these farmers' interests are local as well.
- Self interest. Each small-scale farmer has a list of priorities that helps him or her make decisions. This list defines a farmer's self-interest, which is a central part of his or her worldview.
- Farmer's bias. A farmer's view of things is colored by the physical and economic realities of farm work. These practical preoccupations are uppermost in a farmer's mind.
- Tradition, fatalism, and adaptability to change. Carrying out the tradition of farming is a normal and reliable habit of mind. This unchanging habit of mind is negatively reinforced by adverse outside opinions about village people, such as small-scale farmers. It has also been reinforced by the inability of tradition to contend with the new problems brought on by accelerated change. As a result, one of the extremes of a small-scale farmer's point of view is a kind of fatalism and feeling of impotence amid rapid change. The other end of the spectrum is a real, though often latent openness and adaptability to change since farming is a constant process of successful adaptation. Like other people, small-scale farmers are ambivalent toward change.

For small-scale farmers with all the above characteristics, change is not worthwhile unless it is:

- Culturally appropriate
- In agreement with self-interest
- Respectful of tradition
- Clearly beneficial
- Not economically risky

For example, Yigi Kamara grows rice in Sierra Leone. Every year, he grows his crop from May to September, the rainy season. In August and September, while waiting for the harvest, the stores from the previous year dwindle, and there is a "hungry season." Yigi plants millet and cassava on a hillside in March and April to deal with this. In order to grow rice year-round and perhaps even grow a surplus, Yigi is thinking of digging gravity-fed ditches and dikes in a swamp near his hill farm. The work will take four months, from January through April. Is it worth the effort? If he doesn't plant millet or cassava, will there be enough food this "hungry season"? Can he afford a shovel? Will his family be able to harvest, thresh, store, and grind all the expected new rice? Can he sell some to make it worthwhile? What will his neighbors say? What about the old stories about the dangers of working in the swamp?

Small-scale farmers like Yigi confront change as individual cultural beings, as practical farmers, and as economic producers. They have considerable resources which they bring to bear on the problems of agricultural production and livelihood in developing countries:

- Expertise in local technologies and a variety of practical skills (e.g., masonry, carpentry, etc.)
- Expertise regarding local conditions affecting farming
- Status as independent economic units
- Experience as farmers (tradition)
- A practical, critical viewpoint
- Adaptability
- Openness to producing a usable surplus

Their limitations include:

- Lack of capital beyond family supply
- Habit of not investing in or using credit or outside inputs
- Interests and roles which compete with agriculture
- Little access to outside agricultural support services
- Reluctance to take risks

- Lack of access to information, or lack of access to information in a form that is relevant to their needs

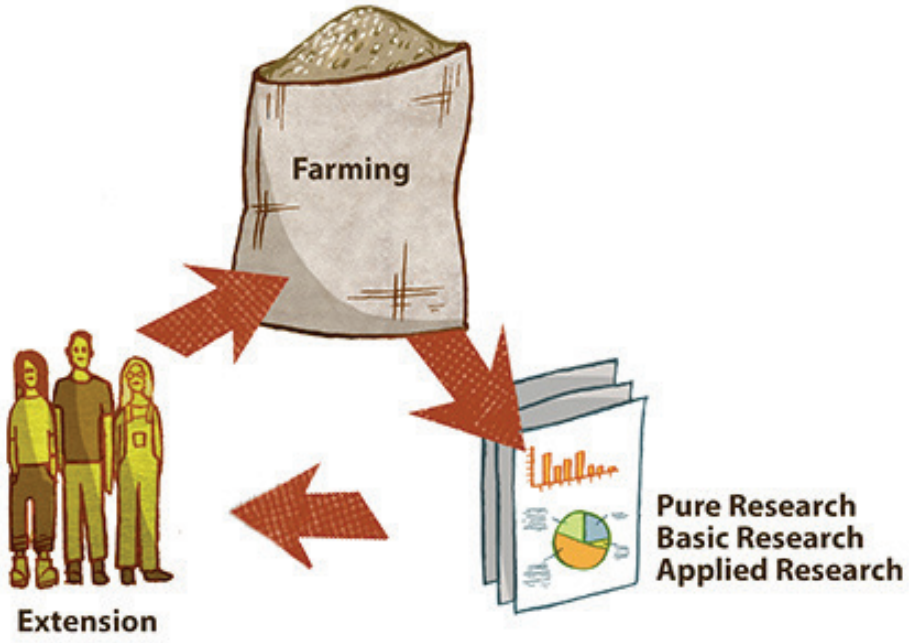
Along with these, however, there are factors from beyond the village which also limit the small- scale farmer's ability to deal with change. Most directed technological change, like the promotion of new practices, is based on the priorities and interests of development planners and leaders. This may exclude small-scale farmers or may be irrelevant to their needs. Governments, development agencies, and private businesses promote change this way. Examples may be mechanization or mono-cropping (cacao or sugar cane), which benefit large-scale farmers and foreign markets more than small-scale farmers.

Like Yigi, these small-scale farmers are the special clients of Peace Corps agricultural extension work. Given the unique nature of the problems small-scale farm families face, a specific kind of agricultural extension designed by the Peace Corps is intended to help them participate in the development process.

Two-way Communication

Agricultural extension is effective two-way communication. It is the best way to include small-scale farming families in the process of directed change that has evolved as a response to the crisis that agriculture faces in developing countries. The formal framework within which most agricultural extension takes place is called cyclical agricultural extension. This is an organized process that directs technological change.

Figure 1-1: Cyclical Agricultural Extension



Ch 1: What is Agricultural Extension?

The relationships between researchers, PCVs, and farmers should constantly evolve based on new information from researchers, farmer feedback, the economic context, and insights derived from on-farm experiments. In their training efforts, PCVs should always be listening closely to what farmers list as particular challenges, and should communicate those challenges to researchers. For research to work on behalf of the farmer, it must be relevant to farmers' needs and circumstances. This perspective represents a departure from the old way of doing things, when information needs were prescribed from the top-down and flowed in one direction, from researchers to farmers. This sort of top-down approach to agricultural development was often incompatible with farmers' realities.

Case Study 1-1: Two-way Communication and Participatory Plant Breeding

It is increasingly common to find crop improvement programs incorporating users' information from men and women farmers, consumers, processors, and traders. The users' information affects/influences decisions on the selection of finished products in what is termed participatory varietal selection. Involving farmers in the early stages of the plant breeding process has also started to pay dividends in what is referred to as participatory plant breeding (PPB). PPB is seen as a more efficient approach to finding adoptable varieties because selection is largely carried out in the farmer's environment and because farmers' preferences for traits figure prominently in the choice of parental material when "smart" choices are made.

Because the Peace Corps wishes to include small-scale farming families in the change process, it emphasizes two-way communication as its extension strategy. This manual outlines the skills and knowledge Volunteers need in order to practice this kind of extension work and is organized in the following chapters:

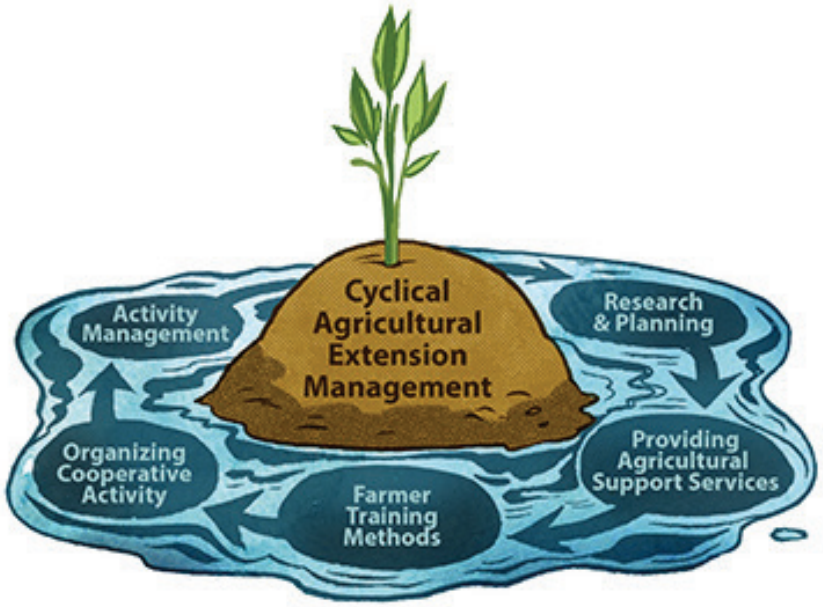
- Chapter 2. Research and Planning—Learning what farmers know, what they want, what the local situation is like, and planning with local input.
- Chapter 3. Providing Agricultural Support Services—Providing the services farmers need in order to develop and understanding the important difference between working for and working with farmers.
- Chapter 4. Farmer Training Methods—Understanding how farmers learn and how to carry out appropriate training methods.
- Chapter 5. Organizing cooperative activity—Understanding how people work in groups and how to build local institutions that capacitate and support farmers.
- Chapter 6. Activity Management—Integrating these steps into well planned, carried out, and evaluated village projects.

These extension tasks are at first carried out in rough chronological order. The entire process is cyclical, however, and each step is regularly repeated to ensure two-way communication.

This manual describes each extension task, illustrates it, and provides tools for carrying it out in the field.

Volunteers working on agricultural extension programs facilitate the two-way communication that invites small-scale farming families into the process of development. By doing so, Volunteers help develop the capacity and local self-reliance of those who need it most.

Figure 1-2: Tasks of Agricultural Extension



Case Study 1-2: Listening and Learning from Eligia

One of the best parts of being an agriculture volunteer with Peace Corps is the complete freedom to wander the village and meet everyone. Since I'm not attached to a school or hospital in Nanjota village, I can create my own schedule and design my own projects. All while wandering through some beautiful farm land. It means that one day I could be digging mud for bricks and the next in a meeting with district representatives and radio hosts.

And that was how I met Eligia Otomary. I was in a village meeting with about 100 people, but when it ended everyone was worried that I'd get lost walking back to my house so they enlisted a random woman to walk me back. We started chatting, and I asked her about her farm, which led to an invitation to visit. I accepted, of course, never expecting that I would ever see her again, but I was proven wrong when someone started knocking on my door at 6:00 am the next morning. I am one of those people who isn't really a person until two cups of coffee. In fact, most of my village has learned not to knock before eight. Pulled it together, though, and entered into one of the most rewarding relationships of my service.

Eligia is always happy to teach me about farming techniques and knows every plant in at least three languages. Most importantly, though, she is the agricultural extension officer for a farmers' group named Kilamo Hai, which was originally formed to sell their cashews outside of the government, which is the only market at the moment. Currently they work to better their farming techniques and support each other.

Ch 1: What is Agricultural Extension?

Eligia's job as their extension officer is to keep track of each farm through paperwork and by visitation and be an informational resource to the group. She ensures that every member of the group is using the land to the best of their abilities and knowledge. As we talked, a general problem presented itself. Most subsistence farmers have very little prior education. They are using techniques that their parents and grandparents used because there is so little access to new information, even from the district agriculture extension officers. Our goal became to educate farmers, starting with the basics and progressing into more complex topics, but still allowing the participants to specify their needs.

Our first Farmers' Field School was a two-day adventure that began with defining soil and progressed through organic composting, fertilizer, and pesticides. It gave everyone the same base of knowledge and opened a forum for future seminars. It also gave me the most amazing group I have had the privilege to work with. They supported me throughout the training with translation issues and asked questions when a concept was complicated. Most importantly, though, they actually used the techniques from the training, so when we had our second seminar on cashews, the farmers had testimonials about the organic pesticides and planting techniques. Nothing convinces people more than hearing from their peers that soup made from leaves and soap actually keeps the ants off the beans. Each seminar after that covered topics requested by Kilamo Hai. We expanded our knowledge together about cashew trees and started a tree farm that provides income-generation for the group.

Working with this group gave me the experience to qualify to represent Peace Corps Tanzania at the Feed the Future Forum and Chicago Council Symposium in Washington, D.C, where I gave a DEV talk on Women in Agriculture. I shared Eligia's story, who wakes up at 4:30 am every morning to go to her farm and doesn't return until 2 or 3 pm. Then because she is a mother of three and a woman, she cooks the afternoon and evening meals, does laundry, and washes all the dishes, finally going to bed at 10 pm. Everything is done by hand in Nanjota so this process is exhausting and long, but when asked what her job is, she says that she has no job; she's just a farmer. All of this work is addition to her involvement with Kilamo Hai.

The Peace Corps

Everyone in this group works hard to pull themselves out of subsistence farming. The night before I left for the Feed the Future Forum in Washington, D.C., the chairman of the group, Peter Njombi, came to my house to make sure I was coming back. He reminded me of all the work we had done together and all the work we still had planned. He was one of the first people to call me when I returned. Together with Eligia, we are working hard to better crop production and management one farm at a time. Kilimo Kwanza!

Introduction

Extension workers enter a community gradually. As outsiders, they must first meet personal needs to establish social contacts with their neighbors and orient themselves to their physical surroundings. Professional objectives are addressed later when the extension workers are more at ease in their interactions with those they work with, allowing them to more carefully focus on agricultural practices and community problems. Regardless of the type of information being sought, however, extension agents clearly establish themselves upon entering a community as being willing and able not to teach, but to learn.

Small-scale farmers in developing countries have not traditionally had full access to extension services. There exists, accordingly, an acute lack of information as to how to make those services conform to small-scale farmer needs. The extension worker, assuming a learner's posture, is one step toward bridging that gap. In order to complete the chain, villagers must step into the role of educators.

That villagers act as cross-cultural mentors of PCVs is assumed. What may be more significant is the vital function farmers can serve as historians and skilled practitioners of farming methods in a given area. When a small-scale farmer educates an extension agent about what has happened in the past on his or her farm, the agent can help the farmer begin choosing appropriate steps to make improvements.

The information an extension agent gathers at the outset of an extension effort is based on a "reality," a set of circumstances, or perhaps an event. It is important to note that different individuals may interpret the same "reality" in radically different ways. A jar is either half full or it is half empty; a harvest is either better than some years or worse than others.

Individual farmers' perspectives vary, and an outsider must be concerned with checking information gathered against independent sources. A similar check is warranted with regard to the extension worker. There is a strong tendency to selectively hear answers to questions that conform to notions that prompted the questions in the first place.

This mutual "filtering" of information occurs to a greater or lesser degree in all communication processes. Systematic checking of information will aid the extension worker in compiling a less-biased picture of the "reality" referred to above.

The information-gathering an extension worker attempts is done in a cross-cultural context. Thus, sensitivity and respect are crucial to success. One must be willing to share information about oneself and must have the patience necessary to persevere under the sometimes difficult conditions imposed by linguistic and cultural barriers.

Information filters and cultural barriers provide caution to a PCV to go slowly in the early stages of his or her work. One or more of the following suggestions could help an extension agent start on the right foot:

- Consciously employ observation skills to complement information gathered through the interview process.
- Engage a translator or assistant who can help ensure that research is done in a culturally appropriate manner. (Counterparts often play this role).
- Use some "random" process to select sources of information to prevent a skewing of results in one direction.
- Establish a routine of note-taking and record-keeping so that, later, information can be analyzed and plans can be made.

These and other choices pertaining to the methods used to gather information can be made more or less formal to suit the type of information being sought, the source, the interviewing "climate" or the extension agent. After a body of information has been gathered, recorded, "de-filtered," and analyzed, matches can be made between needs and resources, and the agent's role can be more clearly defined. Planning and problem-solving remain contingent, however, upon a continuing accurate flow of information between individual farmers and the extension agents who serve them.

Understanding People

Self-interest is the basis for all that a farmer does. The source of a farmer's motivation, whatever it may be in a given case, can be quite obscure to the extension worker. A farmer who seems to be strong, intelligent, financially secure, and aware enough to be successful may still cling to his or her timeworn practices rather than opt for something new that he or she perceives to be against his or her interests. Neither repeated contact with an extension agent nor weighty scientific evidence will change his or her mind. The farmer's personal concerns (e.g., religion or a desire for material possessions) are foremost in his or her mind. As such, they are of primary concern to extension workers.

An extension agent needs to learn what farmers value and consider important. This understanding is at the heart of the two-way communication process. Without it, the PCV can gain no perspective on the appropriateness of the changes being promoted. Nor can he or she determine what training methods are most suitable to local people's needs. Finally, and perhaps most importantly, the agent will be unable to empathize or even communicate effectively with his or her friends and neighbors.

To learn anything about a person's self-interest requires time and shared experience. It takes hours in hammocks and sweating over plow blades, eating from the same bowl, and walking together in sadness in a funeral procession. The methods used are informal, but the

information gleaned is of crucial importance. The farming aspect of a villager's life, as was mentioned in Chapter 1, is connected with all other aspects. Labor resources for farm work are also labor resources required by virtue of kinship and community ties to help maintain village roads and water supplies; money for improved livestock strains can just as easily become money for a niece's school fees. As an extension worker enters a community, then, and begins to make initial social contacts, he or she should take note of the various special interests people display to better understand how to go about his or her work.

This process is also known as participatory rural appraisal, which aims to incorporate the knowledge and opinions of rural people in the planning and management of development projects and programs.

Case Study 2-1: Felicia Learns About Self-Interest

Felicia had a special interest in serving the needs of the women farmers in her area. One of the agricultural tasks Felicia observed as primarily a woman's responsibility was grain drying. Hours each day were spent spreading grain on mats and concrete slabs where it was allowed to dry in the sun. Because chickens and free ranging goats often tried to eat the grain as it dried, someone had to constantly be on guard to shoo them away.

Felicia would often sit with her neighbors and talk as they watched their grain. She noticed that several of her neighbors occupied their grain drying hours by weaving mats. She asked the women if they were going to use the mats in their homes. Most replied that they intended to take their mats to a nearby market to sell. This, they explained, was the way they were able to pay their children's school fees.

On closer inspection, Felicia discovered that school fees were a major concern for most of the women in town. She talked with women who made clay pots, women who dyed cloth, and women who helped weed neighbors' fields for money and she found out that not only were school fees the sole financial responsibility of women family members, but that the fees at the local primary school had nearly doubled in the past two years. This information eventually led Felicia to concentrate her extension work on very small-scale, cash-generating projects to help meet local women's needs.

Following is a suggestive and partial list of a small farmer's self-interests and motivation:

- Pride in individual accomplishments
- Filling a particular role in a family or community
- Obtaining special material possessions
- The sense of fulfillment in being able to use one's existing skills
- Maintaining ties to tradition

- Avoiding risk
- Developing new skills
- Reducing workload of existing tasks
- Overcoming feelings of impotence

Community Survey and Mapping

Development must begin where village people are, not where the extension agent wants them to be. For that reason, extension workers study the local community and its connections to the outside world. Basic familiarity with a community helps the agent function more effectively in meeting personal and work needs. Beyond that, it is also a structured, practical task that a PCV can set to help build confidence in using a new language and practicing local customs.

A simple first step is drawing a map of the physical features of the community. Much of the map's contents (roads, houses, markets, etc.) can be gathered by observation. Details can be added by consulting neighbors. The point of the first rough sketch of one's site is to become oriented in a very general way to one's surroundings. The following tool is a checklist of points to include on the map.

Tool 2-1: Features to Note on Maps

Feature	Check
Location of topographical features	
Altitude	
Streams	
Principal features (landmarks) recognized locally as reference points	
Farm and non-farm lands	
Valleys	
Communications (roads and trails)	
Distance between points	
Travel times and modes of travel between points	
Seasonal access	
Demographic	
Location of communities	
Location of farmers	
Local names for communities	
Infrastructure	

Feature	Check
Irrigation systems, main and branch canals	
Drainage systems	
Stores where agricultural supplies are sold	
Schools	
Other	

Following are useful sources of maps:

- Google maps
- Geographic or geodetic service of the government. In most Latin American countries there is the military geographic service. This is normally the only source of relief maps.
- National resource inventory maps. These are useful for looking at the regional dispersal of resources, but are not much help in making a local inventory of resources.
- Road maps. Those secured from public works agencies will show greater detail than maps issued by other sources.
- Special sources. These include national or regional soil survey maps, regional development authorities, etc.
- Homemade maps. Most maps secured from official sources are not normally on a large enough scale to provide space for annotating such important local details as location of farms, secondary irrigation works, and unimproved roads and trails. Sections of official maps will have to be blown up by hand to secure the required scale.

The newly arrived field worker should take care in the selection of initial informants. The easiest contacts to make are likely to be a landlord, his or her husband/wife and relatives, local government officials, talkative neighbors, a counterpart, or "pet" farmers of the sponsoring agency. In any case, the PCV should be careful not to let the earliest contacts weight impressions disproportionately.

It is also important that one not be overly formal in approaching a community survey. At this early stage, it is not wise to take written notes in the presence of an informant, though some sort of record is essential for later analysis and planning. What is known naturally by a local resident must be systematically written down by an outsider. Therefore, at the earliest opportunity after an interview—midday break or in the evening—new information can be preserved in a field notebook or diary reserved for this purpose.

The first round of information gathering is to help an extension worker become oriented to his or her surroundings. It is general and broad, rather than specific and focused on a narrowly defined aspect of a community. Naturally, a community survey is not completed in the first few weeks of a Volunteer's service. It continues at various levels as an ongoing process in

extension work. A single informant might, during the course of a casual conversation, offer interesting insights into a community as a whole, as well as some of the more specific types of information referred to later in this chapter. At the same time, he or she may display a personal interest. The task of the PCV is to place each piece of information in its proper context. It is significant to note that regular repetition of research components serves as a means of monitoring change from the "beginnings," where people were when the extension agent began his or her work. The following tool is a guide to help you do this.

Tool 2-2: Community Survey

Facts about the Physical Community	Description
Climate	
Rainfall patterns	
Frequency of drought, flooding	
Seasonal temperature ranges	
Water Sources	
Rivers and streams	
Swamps	
Catchment areas	
Water table	
Bathing areas	
Sources of drinking water	
Sources of food	
Housing and Roads	
Number and type of houses	
Type and location of roads	
Number of bridges, etc.	
Vegetation	
Firewood	
Timber	
Plants	
Farm crops	
Facts about the people	**Description**
Population	
Number of people	
Age distribution	
Family size	
Number of families	

Density	
Settlement Pattern	
Density (spread out? concentrated?)	
Distance between farmers' farms	
Types of People, Ethnic Groups	
Groups in the community	
Activities of groups	
Group leaders	
Sanitation and Health Practices	
Behavior and Norms	
Awareness of problems and solutions	
Receptivity to change	
Interest in learning new ideas	
Customs and practices	
Sources of Income Outside of Agriculture	
Civil service	
Retail or small businesses	
Industry	
Crafts	
Local Leaders	
Local authorities (head people)	
Officials sent or appointed from the outside	
Religious leaders	
Traditional healers	
School teachers	
Extension workers	
Club, group, union, or cooperative leaders	
Committees	
Wealthy property owners	
Opinion leaders among various groups	
Education	
Number of schools or nonformal learning processes	
Types of schools	
Number of students	
Average level of education	

Agricultural Survey

Farmers are the experts in all aspects of the local agricultural environment. Extension agents are often trained in a limited set of agricultural practices. Therefore, it is necessary for the agent to turn to farmers and other local residents who have a vested interest in a community's involvement in agriculture to gain a broader perspective on the local environment and farming practices.

In particular, extension workers need to know which farmers practice the type of agriculture that they are most familiar with. Beyond that, they can contact other agricultural workers in the area, buyers of farm produce, suppliers of commercial inputs, and local truckers, all of whom possess intimate knowledge of certain agricultural practices. Their combined assistance should help develop a well-rounded view of local conditions.

Part of the information they supply will further orient a PCV geographically. A PCV needs to know where farms, farmers, suppliers, and marketers are located with reference to the road network and dominant topographical features. What he or she cannot find out from local sources or through observation may be available from various government map-making agencies. Relief maps, road maps, and soil survey maps can all prove helpful in supplementing hand-drawn charts. The latter are often more useful, however, because of the local detail they contain. Government sources can also be useful in orienting an agent to local climate and weather patterns. Weather stations offer specific data that may or may not be useful, depending on their proximity to an extension site. Relief maps also give some indication of relative temperature. (In the tropics, for instance, average temperature will drop by 3-4 degrees Fahrenheit for every 1,000-foot rise in altitude.)

The best source of local information is likely, once again, to be local farmers. In particular, discussions with local residents can give the extension agent some sense of the risks farmers face from storms and other weather hazards. The following are useful contacts for conducting an agricultural survey:

- Knowledgeable local farmers, specifically those farmers specializing in the same area as the extension agent
- Agricultural workers stationed in the area
- Buyers of farm produce
- Suppliers of commercial inputs
- Local truckers or boat operators

It is important that terms used to refer to weather conditions are relative and it may take some time before an outsider has a true feel for the conditions being described.

Climate and geography provide a backdrop for a consideration of more specific farming practices. A PCV needs to identify specific crops and livestock operations underway in an area and, more specifically, focus on the different means of production and processing. Note that the objective of this aspect of information gathering is to describe actual practices of most of the farmers in a given area, not the feasibility of improvements. Some attention should also be paid to general levels of production and access to inputs and services. The sum of these collective inquiries will be a picture of the overall agricultural development in the village or community where a PCV serves.

While drawing this picture, an extension agent (the PCV) needs to try to develop an understanding of how all of a farmer's various agricultural pursuits fit together in an annual cycle. It is necessary to try and piece together bits of information to form calendars for weather, crop growing seasons, cyclical animal husbandry practices, social activities, and other seasonal demands on a farmer's time and resources. The following is a useful climate and weather pattern tool to use.

Tool 2-3: Climate and Weather Patterns Survey

Factor	Description
Precipitation	
Annual rainfall	
Month-by-month rainfall (snow) totals	
Geographic distribution of rainfall	
Temperature	
Monthly averages	
Periods of extreme high or low temperatures	
Occurrence of first and last killing frost	
Frequency and magnitude of wind and storms	
Wind velocity and seasonal variations	
Types (e.g., hail) and frequency of storms	
Humidity	
Sun exposure hours	

The following are useful calendars to make:

1. A Generalized Climate and Weather Calendar

- Normal distribution of rainfall (monthly)
- As related by farmers (dry, wet, some rain, wettest time, rainfall drops off, etc.)

- Measured in millimeters, if you have access to meteorological data; your estimates if you do not have the exact data

2. Calendar of Agricultural Activity

For each of the major crop and livestock enterprises, display the following:

- Length and possible range of growing season in the case of crops, and reproductive cycle or feeding period of livestock
- Indicate times for performing critical operations and relative labor requirements of those operations

Given the total agricultural activity within the area, indicate the relative seasonal demand for the most critical inputs:

- Seasonal labor demand (Indicate periods, if any, of movement of labor into or out of the area)
- Seasonal demand for other critical inputs

3. Calendar of Key Religious Holidays and Social Events

Combine the above calendars to show the flow of a typical agricultural year as seen by a farmer.

The following tool is useful for gathering information on farming systems and practices.

Tool 2-4: Farming Systems and Practices Inventory

Identify the major crop operations within the area. For each:
Indicate the growing season
Normal growing season (dates)
Normal variations in growing season (early-late)
Make line bar graphs on a calendar to compare growing seasons for different crops
Describe the principal tillage practices and their earliest and latest dates of application. For every practice, indicate the following:
What the practice is called locally
The specific input or inputs associated with the practice, and the amounts applied per local unit of land measurement
The mode of application
The time of application
Estimate yields and returns

Reported yields per unit of land
Recent prices at normal time of sale
Multiply recent prices by approximate average yield; get approximate gross returns
Subtract approximate costs of production to get the estimated net returns
Identify major livestock operations within the area. For each:
Indicate the source of feed supply: native pasture, cultivated forages, crop residues, home-grown grains, purchased feed, etc.
Indicate when pasture is available seasonally and how forage quality varies throughout the pasture season
For other home-grown forages, indicate the source and form in which they are used (also for purchased forages): • Cultivated forages: irrigated alfalfa, chopped green, native forage as hay; grain sorghum as silage; etc. • Byproducts: rice stubble, corn; stalks stored in bundles for dry season feeding; etc.
Describe production practices
For feeding operations: the normal times of purchase and sale of animals
For reproductive functions: normal times of calving, farrowing, and weaning
Indicate when animals are on pasture and when they are confined
For every specific practice, indicate the following: • What the practice is called locally • The specific input or inputs associated with the practice and the amounts applied per unit of land measurement • The mode of application • The time of application (age or development stage of the animal)
Estimate yields and returns; record reported yields
Reproductive yields: number of calves weaned per cow, pigs per sow, etc.; pounds of calf per cow, pigs per sow, etc.
Milk production per cow: daily, monthly, per lactation period
Rate of gain, meat animals: pounds per day, per month, per pasture season, etc.
Feed conversion, meat animals: pounds of gain per pound of feed consumed, per pasture units occupied, etc.
Multiply current prices by the appropriate yield factor to get estimated gross return
Indicate general levels of production (crops and livestock)
Estimate the percentage of production marketed
Identify the principal local market outlets (buyers)
List seasonal movement of production off the farms: is it sold at harvest, some sold at harvest, some held for higher prices, etc.

List seasonal fluctuations of prices (average over several years, if possible)
List the outside production inputs available locally (Available means when needed)
Agricultural supplies: by brands, grades, and unit prices
Seed
Fertilizers
Insecticides
Fungicides
Nematocides
Herbicides
Rodenticides
Feeds
Feed supplements
Veterinary supplies
Hand tools
Hand-operated equipment
Other supplies
Agricultural machinery and equipment (if used)
Size and make of tractors
Plows
Planters
Cultivators
Sprayers
Spare parts
Other (e.g., irrigation systems)
Services
Custom machinery services and rates charged: per hectare plowed, dished, planted, etc.
Professional services (e.g., pest control): indicate whether public or private

After gathering some of the information above and becoming a bit more knowledgeable about farming in general, it will be useful to focus on the individual farm unit. It is at this point that the extension agent begins to become more actively involved in the analysis of the specific needs and resources farmers have. He or she can look at farm size and the farm family's labor resources, land tenure arrangements and land use management, the value of farm implements, and the general extent of a farmer's debts. The way all of these individual factors add up will help determine what services he or she might be able to provide to a particular family. In the case of the small-scale farmer that the Peace Corps Volunteer serves, this individual attention and the level of understanding it promotes are necessary requirements for genuine communication to take place.

The following tool is useful for surveying individual farms.

Tool 2-5: Surveying Individual Farms

Item	Description
Locate farms	
The name of the location as it is shown locally	
With reference to the transportation network and population and trading centers	
With reference to primary and secondary irrigation or drainage systems	
With reference to schools and any other local institutions	
With reference to other farmers	
Determine the nature of farm ownership	
If owned (or occupied), indicate whether the farm unit is occupied on the basis of: • Clear and registered title • By understanding (custom) • By force of occupancy • Other	
If rented, indicate rental cost, terms, and security of occupancy. • Cash-rent: how much per local unit of land; when payable (before planting, after the crop); what penalties for non-payment; chance of renewal • Payment in kind: how much product per land unit (hundred-weights/ hectare, etc.); payable in the field or delivered to the landlord; what penalties for non-payment; chances of renewal • Share-rent: percent of the produce; when delivered to landlord; costs of cash inputs shared between landlord and tenant; security of occupancy	
If lands are held in common, as often is the case with pastures, qualify the rights an individual farmer has (e.g., unrestricted rights, rights to pasture 10 cows, 20 ewes, etc.)	
Describe the land occupied by a farm	
Total farm size: measured in local land units (hectares, manzanas, cuadra, tareas, etc.)	

Item	Description
Location of landholdings: • If the farm is not composed of a single unit, indicate the number and size of its separate parts. • Indicate location of landholdings with reference to the farmer's house.	
Percentage of land in cultivated crops: • Irrigated • Non-irrigated • Intensive • Perennial	
Percentage of land in pasture	
Percentage of land in woods	
Percentage of fallow or marginal land	
Characteristics of the soil or soils that are found on the farm unit: • Local name of soil type • Color • Texture • Drainage • Slope • Depth • Tilth • Classification by local use (_____soil type is considered by local farmers to be ideal for growing _____, good for growing _____, and poor for growing_____).	
Location of water on or near the farm: • Surface water • Sub-surface water	
Ease of access to field	
Drainage patterns; for lands bordering streams, frequency, severity, and duration of flooding	
Description of farm improvements and conditions	
Living quarters: the farm family home, or in the case of absentee owner, the renter's or the workers' quarters	

Item	Description
Improvements to the land: • Irrigation systems: Indicate what kind of system (canal, well, spring, stream- pump, overhead sprinkler, etc.) and the source of water (stream, primary canal, spring, pond or lake, or subsurface) • Drainage systems • Terraces • Field access roads • Wells (for domestic or animal water supply)	
Buildings other than housing: • Livestock shelters • Livestock holding pens • Storage facilities • General purpose facilities • Others	
Fencing Is the entire farm unit fenced? Are some fields fenced and others not? What is the purpose of fencing (defensive, protection against other animals, management, and better distribution of animals on pastures)? What kind of fences (barbed wire, stone, brush, etc.)?	
Describe the farm enterprises on representative farms	
Indicate the relative importance of each enterprise to the farm business:	
• In terms of land use	
• In terms of subsistence	
• In terms of cash sales	
Indicate how enterprises complement and supplement each other, or are joint enterprises.	
• Complementary: Two or more enterprises occupy the same field and/ or the same labor force, and yield a greater combined return then they would solely	
• Joint enterprise: Normally feed production paired with livestock production	
Indicate what crop rotations are followed, if any	
Describe production practices	
Account for the farm labor supply	

Item	Description
Indicate the age and sex composition of the average farm family, and the extent to which family members contribute work to the farm enterprises	
Indicate their wages or other forms of compensation and whether or not they support a family	
Indicate work performed (weeding, harvest, etc.) and time and duration of their stay	
Labor is often exchanged among family, friends, and neighbors. Indicate how these exchanges are made and for what operations	
Describe the annual agricultural cycle as seen by the farmer	
Indicate the farm operations the farmer focuses on in a given month or season	
List specific decisions the farmer faces during each period	
Outline other specific seasonal concerns that capture the farmer's attention	
Note the farmer's long-term concerns	

Tool 2-6: Calculating Net Return on Agricultural Inputs

Corn		
1. Estimate gross return:		
Sale of 1,800 pounds of beans at 7¢ per pound		$126.00/Hectare (Ha)
2. Estimate costs of production		
Hired labor:		
Used of oxen		$12.00
Weeding		$10.00
Harvest		$8.00
Subtotal		$30.00/ha
Purchased inputs		
Seed		$6.00
Fertilizer		$35.00
Subtotal		$41.00/ha
Total production costs/Ha		$71.00/ha
3. Subtract total costs from estimated returns to get net returns	Estimated returns	$126.00/ha
Total costs		-71.00/Ha
Net returns		$ 55.00/Ha

Livestock	
Production: 10 liter of milk per day x 10¢/liter =	$1.00 per cow per day
Lactation period of 200 days x $1.00 =	$200 per year
900-pound steer sold for 16¢/pound =	$144.00
Market hog sold at 200 pounds at 21¢/pound =	$42.60
Estimated value of feed consumed =	$24.00
Gross feeding return =	$18.00

Figure 2-1: A Farmer's History of Long-term Weather Changes

Year	Observations of condition of crop	Explanation
Year 6	Corn was normal; beans were a disaster	Unusually heavy August rains made it impossible to harvest early season beans
Year 5	A good all-around crop year	"Dios lo quize" (Thank God)
Year 4	An excellent year except for the valley farmers	Unusually heavy precipitation over a one-week period in late June resulted in flash floods
Year 3	All yields reduced	An unusually dry year all the way through
Year 2	A good all-around crop year	A reasonably good year for all crops
Year 1	Early crops were excellent; later crops didn't pay their way	June and July rains were normal; drought conditions

Figure 2-2: Examples from Field Notebooks of Notations on Specific Farming Practices

Practice	Specific Inputs	Mode of Application	Time of Application
Bean production			
Plowing (tillage practices)	Oxen power	Use of Spanish plow, 2-3	Immediately after first rain passes
Seeding	Local seed, two boxes/manzana (approximately 50 units of manzana), three-man days of labor	Planted with alespeque (digging stick) in hills approximately 12 inches apart, 3–4 seeds/hill	Immediately after plowing, as weather permits
Beef production			
Vaccination for blackleg, pierna negra	Vaccine	Veterinarian provides service	Any time between 6–12 years of age

Supplemental feeding of cows in dry season	Molasses, 3–5 times/ day; cotton-seed meal, one time/ day	Molasses, feed free choice from pasture tanks; cottonseed meal rationed two times every two days	January through April, the dry season
Swine production			
Worming	Piperazine	In water	After weaning, repeat in three months
Supplemental feeding	Purchase supplement, 40 percent protein	Mix with grain at ratio of 1 to 4	From weaning to 100 pounds, change ratio to 1 to 5 at 100 pounds
Milk production			
Milking	Hand milking	Cow tied in corral with calf tied to hind leg; calf allowed to strip cow	Once a day
Mastitis control	Antibiotics (indiscriminate use)	Farmer applies empirically, according to directions on the vial	When symptoms are severe

Figure 2-3: Precipitation Graph, Using Frequency of Rainfall as the Measure of Seasonal Rainfall Distribution

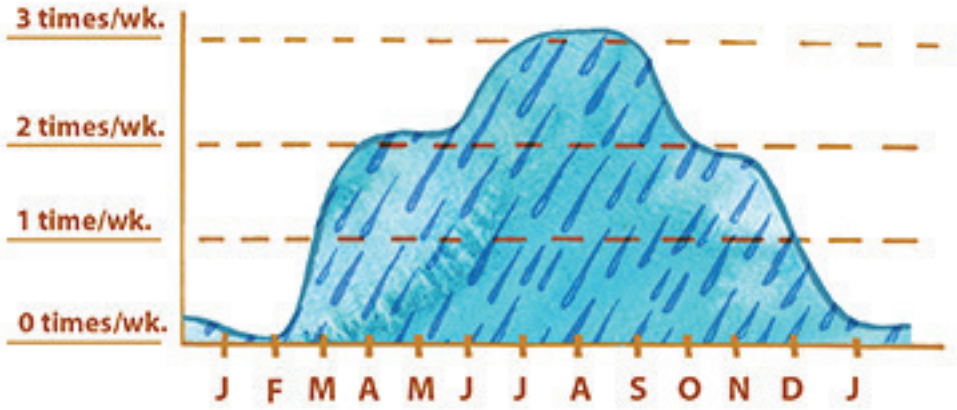


Figure 2-4: Rainfall Graph, Using a Dry to Wet Scale to Measure Seasonal Rainfall Distribution

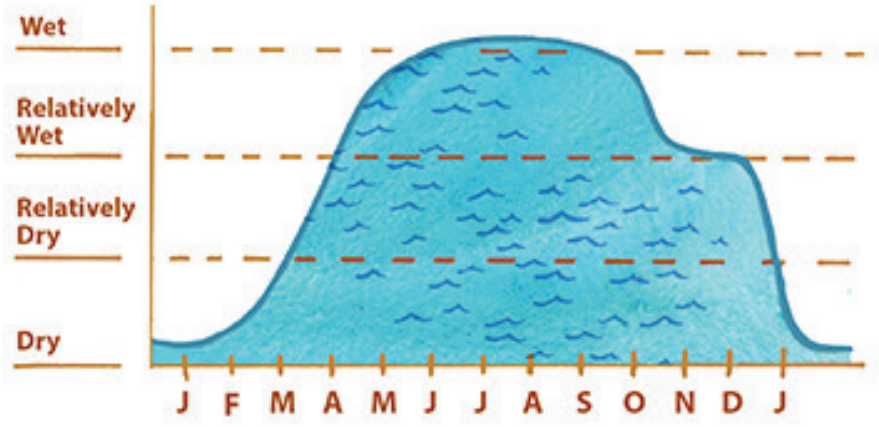


Figure 2-5: Crop Calendar

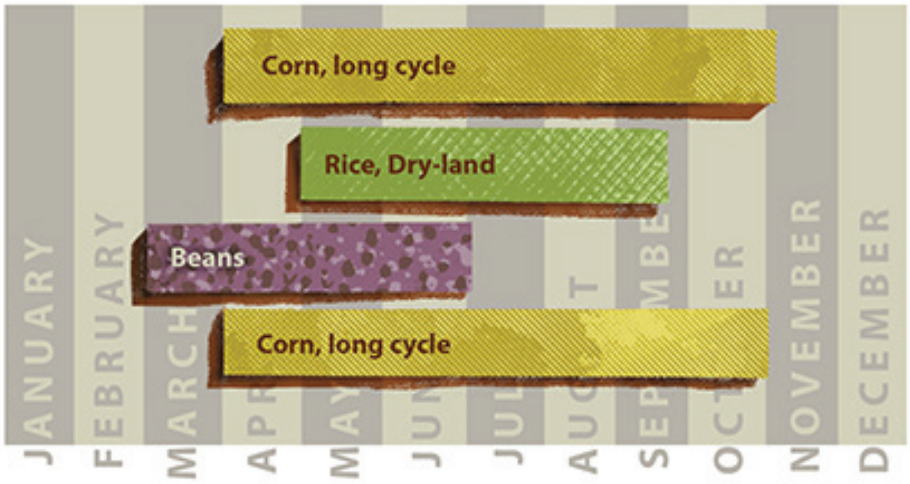


Figure 2-6: Peak Labor Demands

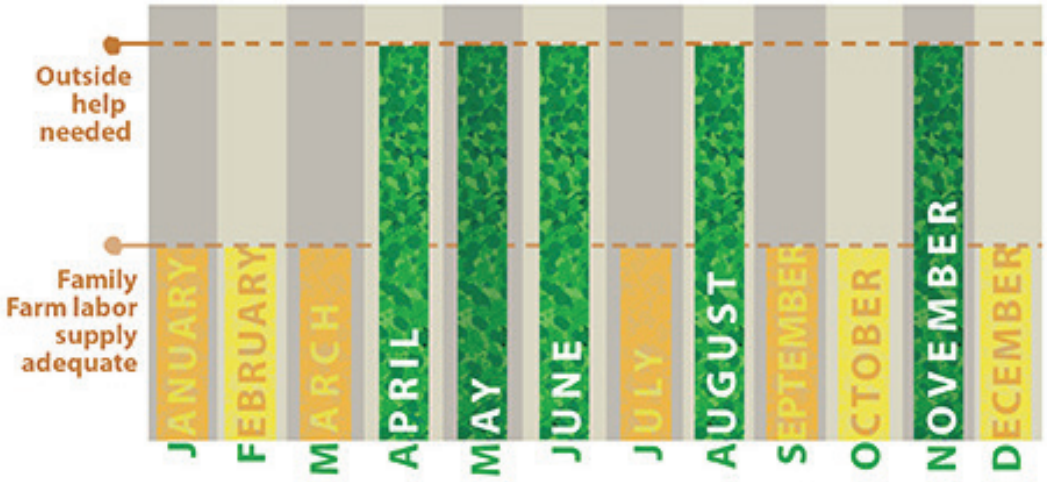


Figure 2-7: Annual Agricultural Cycle as Perceived by a small-scale cattle farmer in El Salvador

Time of Year & Normal Operations	Decisions	Preoccupations
December–January		
The pasture season ends. Herds are normally reduced through the sale of mature animals culled from the herd, and the sale of young stock not required as herd replacements.	How many animals can be carried through the dry season? Which animals should be sold? How many cows can be kept in milk production through the dry season? How far will dry pastures and sorghum forage stretch into the dry season? How much feed should be purchased, if any? Which heifers should be retained as herd replacements?	Keeping the herd in-tact: after culling. Will there be enough cows in production the following pasture season? Will there be a good sale on cull cows and feeder calves? (How to locate that buyer from Guatemala who offered such a good price last year?) Will sales cover debts that are due? Is it possible to get feed on credit?
January–May		
The dry season. Pastures dry up in January and do not revive until early June. (Rains normally start in late May.) During the dry season the higher producing cows are kept in milk production and fed the better quality dry roughage, and in many cases purchased feed supplements. Replacement cattle are fed the lower quality feed or left to survive on dry pastures.	Dividing the scarce feed supply between cows in production, dry cows, replacement stock, and calves. Purchasing molasses cottonseed meal, rice bran, and cottonseed hulls as supplementary feeds. Where and how to purchase supplemental feed?	Will the supply of farm-grown forages hold out? Will the farmer be forced to sell some animals (deplete the herd) before the pasture season arrives? Can feed be purchased on credit? How to reduce the cost of purchased feed? Will additional milk sales cover the costs of purchased feed?

Time of Year & Normal Operations	Decisions	Preoccupations
April–May		
The time to make decisions as to how the herd will be managed through the coming pasture season. The time to build or repair fences and corrals.	Equating herd size with potential feed supply. Deciding whether or not to purchase animals. Deciding which bull to run with the herd. Deciding which pastures to renovate and whether to do it with hired labor or with a corn-sorghum cropper.	Is there enough help for the pasture season? Will the old reliable milker stay on or will he move to another farm? Should he try one of the new grasses? Should he try some fertilizer on pastures? Where to borrow some money to sustain the family and the hired men though the months of April and May?
June–December		
The pasture season. All animals are on pasture. Most cows freshen (calve) in the months of June, July, and August. The maximum number of cows are in milk production and peak per cow production is reached August–October. Animals are vaccinated at this time (if at all). Pastures due to be renovated are plowed and put into a catch crop of corn and sorghum.	Division of the herd into grazing units. Once-a-day or twice a day milking. How much milk for the pail and how much for the calves? Whether or not to vaccinate and for what diseases? Breeding: turn bull or bulls loose or Breed selectively? Feed conservation for the coming dry season: set aside dry season pasture; make hay or silage; sorghum stover? Care of sick or injured animals.	Are price prospects good for cheese or fluid milk? Other animals breaking into the pastures. Potential theft of animals in isolated pastures. Freshening dates of cows (keeping them in cycle). Producing a surplus of feed to carry into the dry season. Getting good gains on the calves for later sale as feeders.
Year to Year		
Long-range considerations	Whether to emphasize beef or dairy production? Whether to sell milk whole or as cheese? How to increase feed supply, especially for the dry season? Whether or not to invest in more land, farm improvements, a new bull, etc.? What breed to use?	What is the future of the farm? Which of the children will stay on the farm? Should I try new practices? How to reduce debts? Is the investment in fertilizer use, an irrigation pump, new fencing, etc. worth the risks of incurring additional debts? How can I enjoy life (work less)? Should I join the cattleman's association?

Needs and Resources Survey

The needs a community (or individual farmer) identifies for itself are the needs it will work hardest to fill. Community and agricultural surveys help extension workers begin to understand what local needs exist. A needs and resources survey is the next stage of information gathering. It is directed toward helping a community isolate and articulate its problems and consider various solutions.

Gathering accurate information about needs requires skillful interviewing techniques. Questions about shortages of various commodities or the absence of particular services can easily become leading questions, especially when the information source has reason to believe that the extension worker has the capacity to solve the problem. For that reason, it is often more useful to conduct a needs survey through an indirect line of questioning. Focusing attention on the amount of time allotted to specific household and farm chores is likely to prove a more useful indicator of needs for labor-saving devices than a straight yes-or-no poll would be. Finding out what supplies people must travel to purchase or what services are sought outside the community will provide a better insight into local needs than simply asking people if they feel a health clinic, for example, should be built in town.

It is important that an extension agent be familiar with the resources that are available to a community. To acquaint onself with local solutions to problems, the agent needs to consult villagers themselves first. There are many resources and ways of doing things that an outsider will not know. In this respect, the PCV is still a learner. There may also be resources inside and outside the community that the agent can recommend in some situations. It is essential, though, that he or she understand first how the community views its own situation.

There may be good reasons why some of the solutions that might naturally be recommended would be inappropriate for a local situation. For example, an extension agent might suggest to a farmer who wants to expand his farming operation to take better advantage of the natural resource that exists in a particular tract of land by planting a citrus plantation there. The owner may, however, resist the advice because the land use arrangement on that piece of land does not allow for such long-range development. Thus, the land in question is not an available resource for the type of production the extension agent is advocating, even though at first glance it seems the best resource for meeting the farmer's needs.

Specific types of resources include human, informational, natural, material, technical, and financial resources. Human resources include, among others, the organizational skills of local leaders, the manual skills of craftspersons, the vast experience of the elderly, and the physical strength of youth. Informational resources are found in printed form in research and educational institutions, and oral form through well-traveled individuals, and in other visual and aural (e.g., radio) media as well. Natural resources include everything occurring in

the geographical environment, from mineral ores and trees to wildlife and sunlight. Material resources are manufactured items like tools, mats, rope, and nets. Technical resources are processes known and used locally to accomplish tasks (i.e., local technologies). And, financial resources include both local contributions and access to loans and grants, self-help funds and donations. All of these different resources and many others have a direct bearing on how a community meets its development needs. Accordingly, community resources require an extension worker's specific attention.

Questioning to gather information about a community's needs and resources

Whenever you hear from one of your neighbors that they are going to go or have just returned from out of town, ask where they went and what they did. Later, note the response in a work journal. Shortly, before the onset of the rains, you might notice that several of your acquaintances have either made personal trips or sent another person in their stead to neighboring villagers to buy seed for the upcoming planting season.

To follow up on his initial bit of information, begin to systematically ask every farmer you know how he or she gets seed. Ask those farmers who travel outside of town to procure seed where they get their seed, how long it takes to travel there, who they buy from, and how much the seed costs. Then travel with some neighbors to the villages where most people buy seed and talk with farmers who are doing the selling. Ask these farmers to show you how they store their grain from one planting season to the next. Also visit the storerooms of the farmers in the village. Ask these local farmers what varieties of seed they have on hand and how they avoid the extensive pest damages other farmers have complained about. Gradually, you will develop a more complete picture of the needs of local farmers for a less expensive and more accessible seed supply and the resources available where you live (e.g., storage technologies and seed varieties for filling these needs).

Tool 2-7: A Partial Resource Inventory Checklist

Resource	Yes/No?
Human resources	
Craftspersons	
Blacksmiths	
Carpenters	
Weavers	
Mechanics	
Masons	
Basket makers	
Rope makers	

Resource	Yes/No?
Potters	
Etc.	
Specialists	
Midwives	
Herbalists	
Fisherman	
Hunters	
Drivers	
Work companies	
Informational resources	
ICT	
Books	
Reports	
Films	
Records	
Smartphones, tablets, or other electronic devices	
Radio	
Sources	
Local governmental agencies	
Research stations	
Development organizations	
Natural Resources	
Sand	
Stone	
Native cement (mud and anthills)	
Cerass/palm thatch	
Lumber	
Bamboo	
Raffia	
Vines for rope	
Bush poles	
Banana trees, leaves	
Other	
Material resources (manufactured goods)	
Construction supplies (nails, etc.)	

Resource	Yes/No?
Tools	
Locally made tools	
Rope	
Mats	
Nets	
Tools	
Technical resources (local technologies)	
Financial resources	
Local fund-failing efforts (e.g., dances, fiestas, etc.)	
Money lenders	
Cooperatives	
Self-help funds	
Wealthy donors	
Outside development agencies	

Record Keeping and Planning

Extension agents do their farmer clients a great disservice when they fail to keep adequate records of their work. Development efforts overlap, mistakes are repeated, and useful insights and expertise are lost when the daily affairs of an extension station are not recorded.

Documenting extension work in an area serves several purposes simultaneously. These include:

- It helps the extension agent organize his or her own work.
- It allows the agent to more closely monitor the needs of individual farmers.
- It sets up an information bank for use by the community at large.
- It aids development agencies such as the Peace Corps and ministries of agriculture in evaluating and learning from past extension efforts.

Ongoing extension services can also be conducted with a greater degree of continuity.

The recording of information proceeds in stages. Initially, information is recorded in narrative form, and the purpose of writing things down is to simply help remember them at another time. After sufficient raw information has been gathered, a more systematic ordering of information can take place. Practical lists and information summaries emerge—farmers who have already purchased grade cattle, places where tools can be bought at the least

inexpensive price, tasks to be accomplished in the upcoming month—which help the extension agent use the research he or she has done in planning his/her work.

Planning takes place when the extension agent sits down with farmers, village leaders, counterparts, and ministry and project officials to try and determine ways in which the needs of a community can be linked with appropriate resources to solve problems. Problems are prioritized and various alternatives for solutions are considered. Decisions are made as to who will take responsibility for what tasks, and how and when the tasks will be completed. The point to be made here is that planning proceeds directly out of a lengthy information gathering and recording process designed to maximize the amount of local input into decisions affecting local people.

The format for recording information so it can be readily used in planning depends in part upon the work style of the extension worker, in part upon the type of information being recorded, and in part upon the need to keep information accessible to those who will eventually use it. A pocket-size field notebook can be used to jot down brief entries on farm visits. A work log or diary expands upon notes from the field to provide a history of work in a particular station. Charts, graphs, and timelines can be an efficient means of preserving large bodies of factual data. Inventory sheets and financial accounts are essential to the effective management of storage facilities. Periodic formal reports extend information from a local station to a more centralized location and constitute a key link in the two-way communication chain. Finally, maps and diagrams can be used to represent information in visual form. All of these formats can aid the planning process at different stages.

The following field notebook, work log, and annual report are included to show how information is first gathered and recorded in narrative form and later re-combined in a more useful format. The annual report serves simultaneously to help the extension agent organize his or her plans for the upcoming planting season and to inform the ministry's program officers of the progress made and problems faced at the agent's site.

Figure 2-8: Work log

1/30
Went to the town assembly leader early a.m. to ask about the farmer meeting in Yillah swamp. He said it would still take place. No one showed, but I did a rough sketch of the dam we want to repair.
Went to Sanga swamp with Samuel. Saw the area. Foday Sanusie wants to develop this dry season. About 2/3 of an acre. Requires a new biforcation of the irrigation ditch. Ditch needs to be cleared and widened before biforcation will be possible. Appears to be some problem with iron toxic soil. Advised farmers to burn rice straw rather than plow it under. Promised Foday I would come survey for him as soon as my equipment is available.
Visited Brimah Kaaha's section of the swamp. He is the first to plant his dry season crop; his plots are unlevel, iron toxic; no water on higher plots; bad weeds, and brown spots throughout. Samuel informed me that Brimah is spending a great deal of time working in his banana plantation these days.

Figure 2-9: Annual Report (year's end; excerpts from recommendations for upcoming planting season)

Sanga swamp
1. Widen and deepen drain all the way down.
2. Widen and deepen irrigation ditches all the way down.
3. Consider dividing larger plots into smaller, better-leveled sections to improve weed control.
4. Survey, peg, and construct new upland vegetable plots.
5. Repair leaks in main drain head gate.
6. Continue promoting vegetable, tree crops, and upland rice cultivation near the swamp.
Yillah swamp
1. Repair sluice gate and raise head of bank.
2. Investigate the possibility of working with head farmers on demonstration plots for nursing and transplanting techniques.
3. Repair bush path crossing the swamp on one of the interior bunds.

Case study 2-2: Maria Uses Records to Maintain Continuity from One Extension Worker to the Next

Maria arrived at her Peace Corps site after the Volunteer who preceded her had already left the country to return home. She found a stack of papers and notebooks waiting, with a hand-written note from her predecessor welcoming her and describing what types of information the various records contained.

Over the course of the next several weeks, Maria found many uses for these documents. First, there were maps of the community that helped her find her way around. One that was particularly useful marked the locations of the houses of the most significant community officials, farm cooperative leaders, and demonstration farmers. Second, there was a chart of the Ministry of Agriculture hierarchy, extending from field assistants to the district supervisor who helped remember people's names and responsibilities. Third, she found a record of the rental agreement established between the landlord who owned the town's agricultural storage facility and the ministry that paid the rent. Fourth, her predecessor had kept a daily work log, which gave Maria an idea of what farmers might expect of her based on their previous experience with Peace Corps extension agents. Fifth, there was a set of recommendations for ongoing work in the station that detailed some of the difficulties one group of farmers had experienced the previous year. Finally, there was a list of all the project farmers' names, including a full accounting of their loan obligations to the ministry store.

The chief value of the records from Maria's perspective was that they saved her from duplicating hours of time and energy in gathering information about her site. The value of the records to farmers was that they influenced Maria to go about her work with an eye toward maintaining some continuity with what had happened before.

Introduction

Once initial research tasks have been accomplished and research itself is well-established as an ongoing process, a PCV may turn his or her attention to matching the needs of farm families with available resources. This match begins to break the circle of exclusion that often leaves out small-scale farmers. Support measures will vary according to the farmer involved and will depend on a whole host of criteria, including societal roles, geographic location and accessibility of markets, access to water, land size, soil fertility, farmers' aspirations, and whether or not the support measure targets one farmer, or many. Furthermore, in many developing countries, agricultural products and services are not readily available. Since the gap between farmers in transition and sparse support services is great, matching needs to resources can be very difficult. Furthermore, in contrast to the old training and visit model of extension, in which farmers were regarded as "empty vessels" in need of "expert" advice, contemporary models of extension recognize that farmers are the best judges of their constraints and opportunities and have a great deal of knowledge about local farming conditions. Therefore, one should expect that services will need to be agile and flexible, and tailored to the needs and circumstances of farmers.

Farmers may need a combination of direct and indirect services. The capacity to deliver direct services is weak in many countries due to a lack of investment in government services, which, in turn, has led to departments of extension that are poorly resourced and equipped with outdated skill sets. In recent years, private companies may offer extension services, but those may be targeted for particular crops which are, very often, destined for export. A task for a PCV may be to assess and coordinate the various types of support based on the needs of farmers, as well as to help articulate the farmers' needs to those supplying extension services in both private and public sectors.

Societal Roles and Agricultural Extension

Though women constitute an estimated 43 percent of the global labor force in agriculture, it is estimated that women working in the agriculture, forestry, and fisheries sectors receive only 7-9 percent of agricultural development assistance. Partly as a result of this neglect, women farmers today tend to produce 20-30 percent less than their male counterparts.

It is widely recognized that, given the same access to agricultural resources, women farmers can be just as productive as men, which would translate into a 2.5-4 percent increase in agricultural output in the developing world.

As a PCV, it is your role to be mindful of this gap and address women's needs. You can:

- Provide labor-saving technologies and public goods and services.
- Train female extension workers to improve women farmers' access to extension.

- Engage women in planning processes and ensure women's voices are heard in decision-making at all levels.

Go to http://dl.dropboxusercontent.com/u/15810717/TM%20on%20Gender%20-%20Colverson%202012_06/index.html to learn about the gendered nature of farming systems and tools to address it.

Direct Agricultural Support Services

Common direct services include:

- Testing recommendations
- Administering credit
- Selecting and producing seed
- Providing inputs
- Surveying agricultural lands
- Providing storage facilities
- Marketing products

For the PCV, the direct provision of support services produces three benefits. First, providing a specific and practical service (e.g., surveying a swamp, distributing seed, building and using a farrowing crate) is an excellent credibility technique. It enables the extension worker to demonstrate his or her skill and competence and cultivate trust and rapport with farmers. Secondly, direct services bring research, technology, and outside resources directly to the aid of small-scale farmers. The circle of exclusion is broken and farmers can choose among these new resources. Finally, the services themselves are subject to farmer feedback and informal local testing as farmers use them. This, in turn, affects research and the development of agricultural practices or products, completing the process of two-way communication.

In developing countries, agricultural support can be very difficult to provide. Products such as seed, manure, feed, fertilizers, tools, or equipment are often in very short supply and are not locally produced. The infrastructure that produces, distributes, and maintains these inputs is also limited in developing countries. The newness of communication and transportation systems upon which extension workers and information-sharing depend imposes severe limits as well. Therefore, the ability to effectively identify, procure, and deliver support resources to village farmers is a considerable skill.

Indirect Agricultural Support Services

The following are considered indirect agricultural support services:

- Working with individual farmers
- Working with counterparts
- Working with groups
- Working with cooperatives
- Working with local authorities, government, or development agencies

Indirect service is often called facilitating, or helping someone do something for himself or herself. The emphasis in direct services is working FOR farmers. The emphasis in indirect services is working WITH them.

The difference between direct and indirect service may be illustrated by the following examples:

Figure 3-1: Difference Between Direct and Indirect Services

Direct (FOR)	Indirect (WITH)
Surveying accurate contours to lay out rice paddy plots on a hillside for a participating farmer, using a transit level and stakes	Showing a participating farmer how to measure contours roughly by using water-leveling, a process of flooding a rice plot until the water level indicates the contour of an equal elevation on a hillside
Demonstrating to farmers how to conduct and properly use a farrowing crate to ensure safety of new piglets	Training a master farmer and a host country agricultural technician (a) to build and use a farrowing crate and, (b) to set up and deliver a method demonstration which shows other farmers what a crate is, how it is built and used, and how it can help small-scale pig farmers
Writing a proposal, procuring vegetable seed and shovels, and transporting them to a village agricultural project site	Going through a long-term process of helping a group of farmers (a) raise, harvest, dry, and store their own vegetable seed, (b) invest a portion of their vegetable crop profit in seed, (c) invest a portion of their profit in shovels, and (d) convince a farmer who runs a local truck service to deliver the shovels to the village

By comparing direct and indirect service in each example, four general tendencies emerge:

- Helper's role. The active role changes hands from the PCV performing a service to the PCV helping local people provide a service.
- Dependence. Provision of the service depends first on the PCV, but then the dependence shifts to local people.
- Resources. There is a change from an outside resource to local resources for meeting the need.
- Time. There is a change from an immediate, technically precise and straightforward solution to a longer-term, step-by-step, more complex solution involving more people.

Direct service is entirely appropriate when arousing interest, gaining credibility, solving an immediate pressing problem, or especially when avoiding a disaster or catastrophe. Indirect service takes much longer, involves training others, employs local resources more, provides for wider community involvement, and shifts dependence from the PCV to local community people.

The PCV is a catalyst of change who enhances rather than diminishes the competent autonomy of farmers. Dependence on uncontrollable outside resources can be as limiting a situation as a subsistence system that does not respond to change. PCVs help farmers meet their most immediate needs. Then they help them address a deeper need—the need to participate in and control change. By facilitating support among farmers and available resources, the PCV begins to capacitate farmers, making them interdependent with a widening circle of these resources.

Direct Services

Testing Recommendations

It is the extension agent's responsibility to make sure recommendations to farmers are relevant, beneficial, and appropriate. Given the gap between researchers and small-scale farmers in most developing countries, recommendations often must be tested in the field by PCVs.

Why is it necessary to test at all? First of all, agriculture is a location and time-specific endeavor. There are too many major variables in agricultural situations to consider specific practices to be universally applicable. For example, a certain type of maize may be well suited to early rainy season cultivation in one area of Honduras while 100 miles away the local climate, soil characteristics, and pest problems may make it a poor choice. Therefore, even practices developed by researchers for one region cannot be described as clearly suited to other local settings until they are tested thoroughly.

There are other reasons why recommendations must be tested: The PCV must have confidence in a practice that he or she is to recommend, so he or she must see the results of its use. This is also true for farmers. Unless a farmer sees a practice work well in his own locale, or hears from a reliable source that it works well, caution holds him or her back from employing the practice. Lastly, local testing of recommendations helps arouse farmer interest in new practices and enables farmers themselves to take part in the process of testing and formulating new practices.

As noted in Chapter One, the research and extension cycle includes:

- Pure research
- Basic research
- Applied research
- Adaptive research
- Extension work
- Farmer use and feedback

Testing recommendations in the field involves a combination of adaptive research and extension work. In developing countries especially, these steps overlap and most often are handled by the PCV. The PCV plays a dual role (field research/PCV). Because they rarely have the scientific training to do research without assistance, PCVs, however, are urged to conduct tests in collaboration with local or regional research stations and staff. It is absolutely essential that all testing be done within the context of the knowledge, experience, and interests of local farmers, who are the most important experts in local situations.

A Closer Look at Adaptive Research

Small-plot experiments. These should be conducted at both the national station and regional substations and are designed to test promising leads gained from applied research. In the case of most developing countries, this applied research may well have taken place in another country. The small-plot experiments point out the more promising of these leads, which may again be subjected to further small-plot tests. An example would be the testing of a number of promising crop varieties. The very best of the promising leads become tentatively recommended practices.

Farm field experiments. Those practices showing the best results at national stations and/or regional substations are now tested at scattered locations within the region to measure their performance under more varied soil and climatic conditions. They are tested at various levels of application and in varying combinations. Those practices with the best results become general recommended practices for the area involved. In short, these field experiments are the means for localizing general recommendations.

An experiment is a test that compares two or more treatments (e.g., two or more practices or varying rates of an input like fertilizer). Its design and management are based on rigidly standardized scientific procedures for assuring accurate unbiased results that are not influenced by extraneous factors. The results are subjected to a rigorous statistical analysis to determine if there is really any significant difference between treatments.

Because of the highly technical nature of such experiments, PCVs are not encouraged to carry out either small-plot experiments or field experiments themselves, unless absolutely necessary. Even then, such experiences should be conducted with tremendous technical support and one should apply conservatism with regard to results. Adaptive research steps like these are the final research efforts that adapt a practice to local conditions. As such, the PCV role is to make sure they occur, to scrutinize their appropriateness, and to assist where necessary in their completion.

Field test or result trial. A field test or trial is usually conducted by extension workers in cooperation with participating farmers. Here the practice or "package" of practices is tested under realistic local farm conditions to determine its true range of profitability for the farmer. A new practice cannot claim to be proven until it passes the result test, which provides the ultimate basis for making a specific recommendation.

The field test is neither an experiment nor a demonstration. Only one variable selected for testing (e.g., a new practice or a specific "package" of practices) is compared with the present or "traditional" practice. For example, a result trial would be used to determine the profitability of a given rate of fertilizer like pounds of manure and compost per square meter. On the other hand, a field experiment would be used to determine the response to several or more different fertilizer rates. The result tests are designed to obtain information about a practice, not to promote it. They are conducted on farms, but the purpose is to prove the worth of the practice to the extension worker and the extension agency, not to the cooperating farmers. The two treatments (e.g., the "old" and the "new") are not randomized and replicated as with an experiment; rather, the result test is repeated simultaneously on a number of local farms, since the goal is to get an overall idea of the new practice's performance in the area. PCVs with good training in the reference crop or animal and the relevant practices can competently supervise result tests, and this can be one of their most valuable activities.

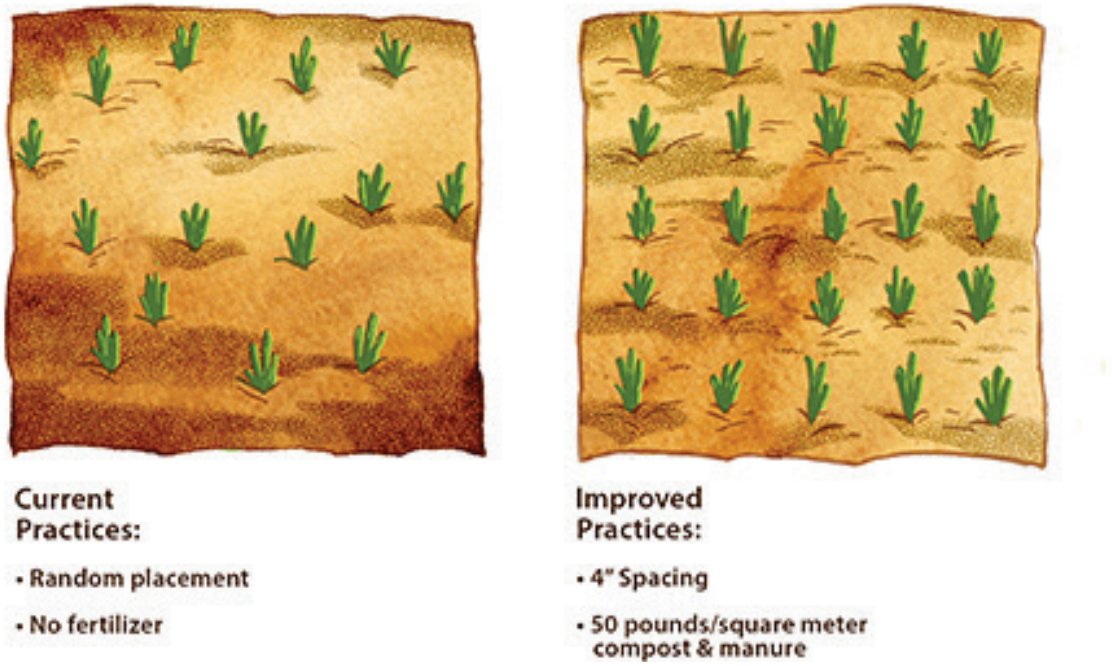
Extension begins when the emphasis shifts from testing to promotion, although there are areas of overlap between adaptive research and extension, especially in situations where resources are limited. PCVs often visit national experiment stations in search of worthwhile practices to promote, which have undergone adaptive research. It is then up to the PCV to promote these practices through result tests and demonstrations. The result test can be viewed as either the last step of adaptive research or the first step of the extension process.

Result demonstration. This is not a testing procedure like the result test. Its objective is to demonstrate the profitability of a proven (locally tested) practice under actual farm conditions. If the new practice requires a change in traditional procedures, a good amount of in-the-field instruction may be needed, along with the demonstration. When groups of visiting farmers receive such instruction and view the plot, the demonstration becomes a method-result demonstration. The extension worker should approach farmers from this standpoint: "We have good reasons to believe this practice is profitable and would like to help you prove it to yourself." A demonstration plot like this can be set up by a PCV soon after arrival in a new locality. It should be laid out in a prominent place in order to arouse interest.

Method-result demonstration workshops, during which farmers actually practice specific techniques or innovations, are the major extension tool for promotional purposes. Chapter 4 has a detailed description of method-result demonstrations.

In all of these techniques for testing the suitability of recommendations to farmers, the PCV is asked to consider the limits of his or her technical skill and the limitation of his or her point of view. Conservative, adequately-tested recommendations serve farmers best.

Figure 3-2: Layout of a Field Test



The following are factors that decrease the need for extensive local testing of a general recommendation before promoting it:

- Local growing conditions are uniform over the work area (soils, climate, management level, etc.).

- The adaptive research on which the general recommendation is based was technically adequate and was subjected to a rigorous analysis (including statistical analysis).
- The adaptive research took place under growing conditions similar to those of the work area.
- The new practice represents a single factor change (only one new input or change).
- Capital requirements are low.
- The potential benefits are high and not subject to great variation.
- No changes in growing practices are needed.
- The extension agent has had prior experience with the new practice.
- The new practice reduces costs or shortages by replacing a higher priced or less available input with a lower-priced or more available one. Examples: substituting an animal-drawn cultivator for laborious hand weeding.

The following details practices and their relative need for local testing prior to promotion.

Figure 3-3: Agricultural Practices and Their Need for Local Testing Prior to Promotion

Practice	Level of Testing
A new (improved) crop variety	Very extensive local testing needed, along with detailed analysis of the results.
Fertilizer use	Low to moderate rates can be recommended on the basis of limited local testing, lab soil tests, and diagnosis of obvious visual hunger signs. Higher rates should be based on local farm experiments, result trials, and individual farm soil testing. Considering the many local variations in soil fertility, general recommendations often result in the application of too much or too little fertilizer or the wrong nutrient combination. For example, applying only N + O soil also deficient in P (phosphorus) may give the farmer only 25 percent of the yield response obtained when both are applied.
Mechanization	Depends on the model and type of equipment. Appropriate small-scale equipment usually has a wider adaptation than most new practices, although soil and weather can affect performance.
Change in crop rotation or a new cropping system	Very extensive testing is needed (at least several years).

Practice	Level of Testing
Disease and insect control	Chemical and cultural methods have much wider adaptation than biological ones. At least some limited testing should be done with specific chemical and cultural controls before promoting them to farmers.
Chemical weed control	Effectiveness varies greatly with different soils and weather conditions; local testing should always precede promotion.
Irrigation practices	Feasibility studies conducted by experienced technicians should always precede the installation of a new irrigation system; possible negative environmental effects must also be examined (i.e., salinization, groundwater depletion, malaria, bilharzia, etc.)
Introduction of a new crop	Very extensive testing is required.

How to Demonstrate a New Practice

Select the practice. When selecting an appropriate practice or "package" to demonstrate, rely on the local extension service to provide appropriate choices; always check to see if adequate local testing has been done; the amount needed will vary with the practice—that is, selecting an adapted improved crop variety requires much more local testing than the use of mulch or insecticides. The practice(s) chosen should be affordable, adapted, and profitable for the majority of farmers. Some extension services may divide the region's target farmers into several recommendation domains (see Figure 3-4), each with an adjusted package to reflect variations in soils, topography, economic circumstances, etc. At least in areas where extension efforts are relatively new, practices that produce results in weeks or months are more likely to be readily accepted than those requiring longer periods.

Figure 3-4: Recommendations Domains[1]

Recommendation Domains

Tips & Facts Sheet

"Recommendation domains" are areas where a single recommendation has broad application due to similarities in both socio-economic and environmental conditions. Different terminology is used (e.g., mega environments, etc.), but the goal is to identify uniform areas and thus improve the probability of success (reduce the risk) associated with recommendations.

Recommendation domains can help ensure technologies fit (Photo A. Bohn)

Domains – How developed?

Use maps and local input to define uniform areas based on major bio-physical and socio-economic characteristics that will affect a recommendation (see table).

Characteristic	Example and why important
Soils	Are there soil characteristics that will affect crop potential and response (e.g., heavy versus light soils; fertile areas vs. problem soil areas (low pH, salinity, etc.))
Water	What is the access to reliable good quality water as this greatly influences yield potential and associated farming risk. Map rainfall patterns (levels, distribution) and irrigated vs. rainfed areas.
Topography	Slope and altitude affect erosion risk, water retention, and temperature. Differences in temperature affect evapotranspiration and growth rates.
Wealth and credit	Access to finances affects the ability to test and adopt practices.
Labor availability	Labor shortages at critical times (e.g., weeding or harvest) can limit options
Farm size	Farm size can influence practice suitability. Are farms Small < 0.25 ha vs. large > 10 ha
Cropping system	Crop rotation and cropping patterns can influence the subsequent crop (e.g., planting date, harvest date, soil planting conditions).
Other problems	Disease or other problems (e.g., weeds, Striga) may affect some areas and change the suitability of a practice.
Input and market access	Are inputs available? Will produce have a profitable easily available outlet or will it saturate markets?

- Choose the farmers to attend the demonstration. Choose key farmers who are influential but not necessarily the best or most progressive, since they may be regarded as eccentric or as being favored by the extension service. Group demos on rented land are OK, but the group should be a pre-existing one (like a co-op) rather than one specially organized for the demo. Since the farmer or farmer's group should do most of the actual work (this makes the demo credible), be sure that this is understood. This brings up the question of whether the inputs should be donated or if they have a cost.
- Choose a suitable location and layout. A conspicuous location with good exposure near a road or trail is best. The land and soil shouldn't be atypically favorable or unfavorable but representative of the target farmers' situations. The size should be large enough to be realistic but not so big that it's difficult to visually compare the traditional and improved practices plot side by side. Two hundred square meters per plot would

1 Source: Modified and used with permission of the USAID/MEAS Project. http://dl.dropboxusercontent.com/u/15810717/Methods%20and%20Tools/Tips%20and%20Facts%20-%20Recommendation%20Domains.pdf

be adequate for a maize demo, with less area sufficing for more intensive crops like vegetables. It's also easier to find cooperative farmers if they know that the plots will be small, thus minimizing any perceived risk.

- Decide demonstration arrangement. A side-by-side layout is better than a front-and-back layout. It's usually best if the rows run front to back rather than parallel to the viewing area. This makes it easier for farmers to enter the plots. Fields should be visible from the road and have a sign indicating what is being done and who can be contacted for further information.
- Discuss with and collect input from farmers, farm extensions, and researchers about what should be demonstrated and how.
- Provide adequate supervision of the demo. Both the extension worker and the farmer need to be thoroughly familiarized with the what, why, when, and how of the various operations involved. Make sure the needed inputs are on hand. Make sure the inputs and other practices are correctly applied on schedule. Avoid the tendency to favor the improved practice plot by giving it an unrealistic amount of care. Keep accurate records, including rainfall, which will help analyze the success (or failure) of the demo.
- Promote and follow up after the demo. Supervised, scheduled visits conducted periodically at key stages are best. Since new practices usually require a combination of explanation and instruction, a combined result-method demo may be appropriate. However, do not count on farmers being convinced enough to try the new practices even by the time a successful demo reaches the harvest stage. Also, farmers may not be able to apply the practices until the next cropping season. Any demonstration should provide farmers with realistic cost-return data for the practices. Researchers and extension workers tend to exaggerate the claims and benefits of a new practice. Be conservative, yet realistic. A typical result demo is done on a small-scale when farmers implement the methods on larger fields.

How to Make Realistic Claims

Researchers and extension workers tend to exaggerate the benefits of a new practice, while farmers usually have a more objective attitude. Here are some rule-of-thumb adjustments for arriving at realistic claims.

- Discount the amount of yield increase claimed for the new practice. Discount expectations of increased yield by an amount equal to the standard deviation.[2] If the recommendation is based on outside data, discount the yield increase by at least 25 percent. If test results occurred under a better than average crop year, discount increased yield claims by a least twice the standard deviation or by 35 percent.

2 See the Peace Corps' manual Traditional Field Crops (M0013) manual to calculate statistical variance at http://collection.peacecorps.gov/cdm/singleitem/collection/p15105coll3/id/11/rec/1.

- Make an additional discount for less than optimum employment of the new practice by farmers. For example, the effectiveness of recommended fertilizer rates depends greatly on proper timing and placement. There are no standard rules here. Usually, the more complex the practice and the more new skills involved, the greater the discount should be.
- Make conservative economic estimates on returns. Base all estimated costs and returns on "farm gate" costs and prices so that items like transport and commission are included.
- Use harvest time prices when estimating returns. After calculating the additional costs for the new practice(s), add an extra 10 percent as a safety factor.

Obviously a PCV might end up discounting claims to a ridiculous extreme if he or she applied all the above guidelines. Remember that the purpose is to make claims realistically conservative, so it is wise to use good judgment.

Ways of Reducing Risks Associated with New Practices

Aside from assuring that new practices are adequately tested locally before promoting them, there are several other ways of reducing farmer risk:

- It is usually better to encourage farmers to try a new practice on only a part of their land. This reduces both risk and hesitation and also enables the farmer to make comparisons.
- In the case of purchased inputs, recommendations should be geared to providing the low budget small farmer with the maximum return per dollar spent rather than maximum profit per hectare. This is especially true for a high cost item like fertilizer. Since yield responses begin to drop off as rates increase, low to moderate dosages will give the best return per dollar. (Bigger farmers can work on the principle of high volume, low return per dollar, which gives maximum profit per hectare).
- Make sure that farmers thoroughly understand the how, what, when, and why of the new inputs or practice(s).
- Small farmers in any area will vary in skills, capital, and management ability. The extension service should make sure that its recommendations are tailored to the needs of the majority but should also make provisions for the special needs of more advanced farmers.
- A "package" of practices that addresses the major yield-limiting factors simultaneously may also reduce risk under certain conditions.

Ideal conditions for promoting improved crop production practices to small farmers:

- The new practice does not increase farmer risks and, most importantly, does not require farmers to "bet their base." That is, farmers won't risk losing any of the production they require to feed their families.
- It does not depart radically from current practices or require considerable re-training.
- The potential gains of the practice exceed the added costs by at least two to one. (This is the benefit/cost ratio.)
- The needed commercial inputs and associated services involved with the practice are readily obtainable at reasonable terms. For example, the spread of improved maize varieties in Kenya was greatly aided by the establishment of a network of 1,000 small-seed suppliers.
- The practice has been thoroughly tested in the area where it is to be introduced.
- The payoff from the new practice occurs in the same crop cycle in which it is applied.
- The costs of the new practice are within the farmer's means. This usually implies access to reasonable credit.

Cost/Benefit and Net Return Analysis

Cost/benefit analysis is a tool for measuring the economic benefit or loss attributable to a specific practice. It can be used to measure existing practices or new ones. The process for conducting cost-benefit is as follows:

- List all inputs used in a practice
- List cost of each input, in money terms (Make an effort to gather them a money value for locally-available inputs)
- Record and summarize costs of inputs
- Determine and record yield attributable to a practice
- Calculate the money value of that yield
- Set up a cost/benefit ratio
- Determine the economic benefit of a practice

Inputs and cost		
Labor	Available	-
Seeds	5 pounds at 15¢/pound	.75
Hoe	Available	-
Manure	100 pounds at 10¢/pound	10.00
Mulch	Available	-

Total cost	$10.75
Estimated yield	
10 pounds onions/square meter	30 pounds onions
3 square meters	
Yield Value	
Market price $2.00/pound	$60.00 value
30 pounds	
Total cost	$10.75
Value and yield	$60.00
Economic benefit	$49.75 total

Administering Credit

Farmers can exercise certain options only when they have the financial resources or capital to do so. Accumulating these resources is a necessary first step toward innovation and change. Farmers can accumulate resources by saving surplus income or borrowing resources from other sources. To the small-scale farmer, saving presents a major problem because even the diligent application of customary farm practices does not often yield much surplus beyond home needs. One of the major catalysts of potential farmer innovation in developing countries is, therefore, the provision of credit.

There are many kinds of credit: informal sharing of a shovel and family communal labor, village-level borrowing, bank loans, or inputs-credit schemes. Beyond the village level, credit is both a powerful tool and a potential cause of dependence. While credit is a way of life for American farmers, it is only as a last resort or an initial catalyst event that it is considered in this manual. Cooperative ventures and capital-sharing are better ways to help small-scale farmers gain access to resources for change.

Farmers themselves may have any of the following motives for using credit:

Consumer Credit

- Survival. When a crop failure or family illness causes the normal balance of home needs and harvest to go out of balance.
- Family and social obligations. When a wedding, funeral, or other family obligation requires money or resources not at hand.
- Consumption. When something the farm family wants is beyond normal means.
- Investment in the home or cottage industry. When the farm family wants to buy a labor-saving device (corn grinder), set up a cottage industry (sewing machine and cloth), or repair/expand a house.

Agricultural Credit

- Survival of farm enterprise. Securing resources necessary to keep the farm going.
- Paying for seasonal labor. Extra labor beyond the family may be needed to plant, weed, or harvest when there is no surplus to provide wages.
- Acquiring inputs. Purchasing new tools, fertilizer, or equipment to carry out a new package of practices.
- Increasing efficiency. Sometimes farmers wish to substitute animal or machine power for human power for land preparation, for example, but need to borrow to employ it before realizing profits.
- Marketing. While waiting for a good price for their produce, farmers may need to borrow to survive.
- Expanding the scale of farm business. To acquire additional land, to finance farm improvements (clearing land, building storage facilities, constructing irrigation works, etc.), or to increase herd size.

It is important for the extension worker and small-scale farmers to understand why and how credit is extended to farmers. Credit being a form a dependence on resources beyond farmers' control, it should be carefully and cautiously used. When the motivation of the lender is different than the farmer's motivation, there is much less opportunity for informality, for leeway with regard to the repayment of a loan, and generally for sympathy for the farmer's precarious position. It is of prime importance that the extension worker and farmer seeking credit be aware of the motives of lenders.

Locally, credit can be extended as a social obligation or an aspect of friendship or family responsibility. However, credit is most often preferred to earn interest on the loan. This is the basis of commercial lending in and out of a village. Beyond earning interest, credit is loaned to facilitate sales, to assure the delivery of farm products, or as a public service through development projects. These motives are important to consider in seeking credit with farmers.

To determine whether it is worthwhile to incur the risks of using credit, it is useful to calculate the costs and terms versus the profitability (the cost/benefit) of credit. The cost of credit is not fixed and has to be determined by the lender and borrower in informal cases like communal labor. There may also be customary or unwritten rules as to what such credit costs/terms will be. The cost of commercial credit, on the other hand, is always the amount of the loan, plus agreed-upon interest, plus any expenses incurred by the borrower in securing the credit.

Most of the cost of a commercial loan is interest. Interest is calculated a variety of ways, each resulting in a different amount of credit and a different cost. A common form of interest for small -scale farmers is the advance sale of crops, in which the lender is promised crops at

current prices even though the price will be higher at harvest time. The difference in price constitutes a loss to the farmer, which is a form of interest, or credit cost.

Credit "terms" are all the conditions, including credit costs, that are part of an agreement between the lender and borrower. The usefulness of credit is a measure of the costs and terms versus the returns or results of credit use. Cost/benefit is calculated in monetary terms for most commercial credit, although timeliness, social appropriateness, and other considerations also must be weighed. Most especially, the Peace Corps extension worker must help a farmer weigh the value of credit against the danger of dependency on factors beyond the farmers' control. This must always be part of the calculation of credit cost/benefit.

Because most commercial credit is extended for profit, it is rarely extended to the small-scale farmer. Due to the uncertainties of weather, pests, and diseases, the limited money-making ability of the small-scale farm, and the inconvenience of administering credit to a far-flung clientele in rural areas, the small-scale farmer is often not considered a good "risk."

Other forms of institutional credit (through development projects or agricultural product distributors), where these exist, are more readily available to small-scale farmers, but do not allow freedom to use the loan for any purpose. The loan must go to producing a certain crop or buying certain inputs. Thus, it is not easy to help small-scale farmers gain access to credit.

The process of acquiring credit involves, first, surveying a farmers' needs and clarifying with him or her the specific need to borrow capital. Secondly, the farmer and PCV must inventory local credit sources. Next, the PCV and farmer must calculate the costs of credit and estimate the returns to the credit to determine the cost/benefit of employing the credit opportunities identified. This would include clarifying the terms of credit. Then the farmer and PCV must apply for the credit. Finally, the PCV must help the farmer honor the terms of the loan and re-pay it when due. Chapter 5 has more on how to bring farmers together to solicit credit, and Chapter 6 has pointers on helping to organize and carry out this process of acquiring credit.

Figure 3-5: Example of the Results of a Credit Inventory

Source	Agricultural supply store	
Type	Credit on fertilizer and hybrid seed, at planting time, to be repaid at harvest	
Location	Capital city, 400 km away	
Terms	Only for farmers or organizations who buy 2 tons of fertilizer and $100 worth of seed	
Simple credit cost	Total loan	$100
	Credit costs (fixed fee)	$10
	Farmer expenses (travel)	$ 5
	Total credit cost	$15

Source	Agricultural supply store	
Annual interest credit cost	Total loan	$300
	Months	8
	Annual interest	8%
	Fixed service charge	2%

Interest annual rate	x	Total Loan	x	% Year Use	=	Interest Charge
.08	x	$300	x	8 (.75) 12 (months)	=	$16

Local Credit Sources:

- Borrowing tools, seed, or other inputs from a neighbor, friend, or cousin
- Work companies (groups of laborers work on each other's fields or work in a field for reciprocal work later)
- Communal labor (village farmers provide labor to local leaders out or respect and in the knowledge that leaders are benefactors in times of hardship)
- Informal sharing of equipment labor or other inputs in the village
- Borrowing from local money-lenders, merchants, or leaders to pay back in kind at harvest

Institutional Credit Sources:

- Borrowing from local lenders commercially to be paid back in cash plus interest
- Cooperative lending institutions credit co-ops, farmers associations or co-ops, consumer co-ops, etc.
- Agricultural product processors, e.g., canneries that extend credit as advance payment to get agricultural products
- Agricultural equipment suppliers, e.g., fertilizer suppliers or feed dealers, that extend credit to stimulate sales
- Commercial banks
- Government or development agency-sponsored credit programs

Once sources are identified, terms become the major consideration in matching credit alternatives with alternative opportunities to employ additional capital in the farm enterprise. The following checklist can be used to determine the terms under which credit is being offered through the credit sources available to the subject group of farmers.

Figure 3-6: Credit Terms Checklist

Item	Description
Credit costs	
Credit charges	
Credit expenses	
Security	
Land	
Capital assets	
Savings account	
Conditional sale deed	
Sponsors	
Integrity of the borrower	
Duration of the loan	
Less than six months	
Until harvest	
Six to 12 months	
One to five years	
Until repayment	
Over five years	
Timeliness of loan	
Is the loan available at the time needed?	
How flexible to change is the date of repayment?	
In kind or cash?	
Is the loan disbursed in kind (fertilizers, seed, etc.)	
Is repayment required in kind?	
How are values (prices) set on these goods?	
Constraints on credit use: Is it stipulated that the funds be used only in a specified fashion?	
Application procedures	
Application form	
Financial statement	
Personal interview	
Farm visit by field supervisor	
Disbursement procedure	
Processing time required	
Form of disbursement	

Item	Description
Repayment procedure	
Lump sum payment	
Partial payment or partial amortization	
Periodic repayment of principal and interest	
Interest paid in advance	
Penalty for default	
Discount for loan paid on time	
Penalty charge for default	
Other terms	

Selecting and Producing Seed

The quantity and quality of seed is one of the most limiting factors in crop production. It is essential that small-scale farmers gain access to necessary amounts of high quality seed if they are to realize profitable yields. Yields are a function of many factors, two of which are variety (the type of seed) and seed quality. Because adequate quality seed is not often available to farmers in developing settings, PCVs may have to multiply or at least help farmers grow their own seed.

Importance of the Informal Seed Sector

It is very important to promote access to seeds that are saved and exchanged among smallholder farmers. Such a practice is important because it makes diverse seeds available, the characteristics of which are conditioned by local environmental and social criteria. Societal roles, for example, will play a part in seed choice, as will preferences for certain traits that may be conditioned by culture. In light of environmental trends, it is also important to maintain diverse sources of seed stock that will enable production even in light of uncertain weather conditions. High-yielding imported varieties may not work well in local conditions, and often farmers may prefer varieties that are more likely to consistently perform, even if they aren't as productive as the high-yielding varieties.

There are generally three ways to produce seeds: open-pollination, hybridization, and genetically engineered. There is an argument to be made for maintaining health, vigor, and diversity of all three sectors because this helps to ensure that seeds are available from multiple sources and can satisfy diverse objectives of farmers at all scales. The advantages and disadvantages of each kind of seed are shown below.

Figure 3-7: Ways to Produce Seeds

Seed type	Description	Advantages	Disadvantages
Open-pollinated	• Seeds that have developed through natural pollination, i.e., wind, birds, insects.	• Seeds can be saved from year-to-year, and exhibit stable traits from year-to-year. • Seeds adapted to local, site-specific conditions. • Farmer familiarity with their characteristics and needs. • Fair to good resistance to local insects/ diseases. • Local availability. • Proven ability to produce acceptable yields under local physical and management conditions (local adaptation). • Low cost. • Ability to be multiplied successfully on the farm. • Provide a large gene pool for future breeding efforts.	• Possibly low responsiveness to increased soil fertility, use of fertilizer, or other improved practices. • Genetic traits of seeds vary widely, which is good in terms of adaptive capacity, but can be disadvantageous for farmers who want specific traits.

Seed type	Description	Advantages	Disadvantages
Hybrids	• Hybrid seeds are produced by cross-pollinating two dissimilar (but related) plant varieties.	• Bred for selected traits and therefore will exhibit more uniform characteristics. The farmer knows what he or she is going to get. • Under the right conditions, they can generally be more productive. Other benefits may include earlier flowering, drought tolerance, and disease resistance.	• Do not breed true. That is, seeds from plants grown from hybrid seeds will not exhibit the same characteristics. This means that farmers will generally have to buy their seeds from year to year. • Often require specific management practices and may not perform well if not used in conjunction with other inputs at the prescribed application rate, such as purchased fertilizer.
Genetically-modified seeds (this is a controversial subject, which, for lack of space, will not be discussed thoroughly). Good resources for learning more can be found on the Internet.	• Seed which contains traits from non-related species, and which has been produced through highly specialized and technological processes.	• Can be produced to address very specific problems. • "Biofortification," for example, is the production of varieties that contain nutrients, or levels of nutrients, that would not normally be found in "natural" plants. Other seeds are engineered to produce their own pesticides. Others, to be tolerant of pesticides and herbicides.	• Requires very expensive technology to produce. These technologies are controlled by a very small number of companies, which introduces significant questions of ownership and control into the food-production system. • There is concern that because many are developed to withstand applications of pesticides and herbicides, farmers will over-use dangerous chemicals. It is argued that this, in turn, will lead to weeds and insects developing resistance, thus making them harder to deal with, which, in turn, will lead to the application of more dangerous chemicals.

Once the type and specific varieties of seed are chosen, it is important to make sure enough quality seed is available; this can be easy in some cases, difficult in others. Finding out what the problems are with particular seeds and particular seed sources is an important task for the Volunteer, and is best understood through discussions with counterparts and knowledgeable nongovernmental organization (NGO) staff and scientists. It is worth noting here that there has been success with local community-based production of seed. These approaches depend on consultation and close collaboration with smallholder farmers. The result, if successful, produces multiple benefits, including more reliable access to quality seed and the establishment of small enterprises in the community. Resources to learn more about community-based seed production include:

- Promoting a Strong Seed Sector in Sub-Saharan Africa, IFPRI Policy Brief: http://www.ifpri.org/sites/default/files/publications/bp006.pdf
- Integrated Seed Sector Development in Africa, an initiative of Wageningen University: https://www.wageningenur.nl/en/show/Integrated-seed-sector-development-in-Africa.htm

Case Study 3-1: Ralph Experiments with Rice Varieties

Ralph has been working with local rice farmers for six months. They have been experimenting since last year with new varieties a previous Volunteer had introduced. Some of the new varieties had yielded much more than the local varieties. Three in particular are of note. One variety yielded twice the previous yields. Two others exceeded local variety yield by significant amounts. The farmer (Jo) who used the highest yielding variety also used a recommended application of nitrogen fertilizer. Of the farmers who used the other new varieties, only one (Abdul) used fertilizer at all, below the recommended rate.

This year, Ralph does not provide fertilizer to farmers himself and the farmers do not buy any on their own. The farmers insist on using the same new varieties, however. Jo is astonished to find that the highest-yielding variety of last year yields less than most local varieties. Abdul, who used a different new variety with some fertilizer, found his yield to be almost as good as last year. Ralph concludes that Jo's variety is probably a hybrid geared to special fertilizer and management practices, and that Abdul's is a synthetic or mass-selected variety. Ralph verifies his conclusions with regional agricultural researchers. He then explains to the farmers the difference in variety types and characteristics and recommends Abdul's variety fertilizer and a locally adapted package of growing practices. The farmers agree to use Abdul's variety, to purchase seed from him, and to forego the purchase of other outside inputs. Ralph plans to help each farmer multiply his or her own seed during the year. He also plans to test all the varieties present in the area with the help of the local agricultural research station.

Case Study 3-2: Chris and Jina Learn the Importance of Local Testing of Seed

Chris and his counterpart, Jina, have been working on kitchen gardens with a group of women. The women are particularly interested in reducing the amount of inputs they must purchase with hard-won cash. The two extension workers are therefore trying to determine several things: Which local vegetable varieties can be easily grown for seed? What germination rates can they expect from these varieties? What varieties will maintain their viability in successive propogations?

With time, Chris learns from his investigation that there are no lists of "recommended varieties" for the area in which he works. He realizes he must learn about the seed from local farmers/gardeners and by personal experience or local testing. He comes to understand that this will be a long process, which must precede any gardening project.

Providing Farm Inputs

Beyond credit, locally adapted practices, and adequate seed, there are other outside inputs to which small-scale farmers do not have ready access. The PCV may help farmers directly by providing such inputs when needed. These inputs may include:

- Labor, equipment, or machinery
- Tools
- Manures, lime, and other organic soil treatments
- Manufactured or inorganic fertilizers
- Pesticides, herbicides, and other agricultural chemicals
- Storage containers
- Other items necessary for production, harvest, and processing of agricultural products

Useful inputs improve sustainability of agriculture by being:

- Culturally appropriate
- In agreement with farmer interests
- Familiar to or easily learned by farmers
- Technically beneficial
- Not economically risky (cost/beneficial)
- Locally available or within easy access

Through thorough research and planning (see Chapter 2), the PCV and farmers determine which crops or livestock should be raised and generally which practices to employ. The PCV

makes sure any recommended crops or livestock practices are thoroughly tested under local conditions. Then, based on farmer interests and recommendations, farmers choose the practices and crops/livestock that seem best for them. At this point, the farmers and PCV assess the need for various specific inputs to their farm enterprises.

Determining what inputs are needed involves, first, an assessment of the specific problems each crop or animal enterprise entails. Then the PCV and farmer can list various inputs to solve each specific problem. Finally, the farmer can choose the most appropriate input for the job.

For example, in order to raise okra, a farmer must weed his or her plot on several well-timed occasions. He or she will probably choose the most convenient, familiar, and cost/beneficial weeding inputs, in this case mulch and one locally made hoe.

It is extremely important that the PCV and farmer weigh the appropriateness of any input employed in the farm enterprise. Appropriate in this case means useful to the small-scale farmer. The choice of an appropriate input involves much more than the technical solution to a problem. The independent choice of several inputs for a production project on purely technical grounds can add up to a gross disservice to other farmer interests and needs.

For example, using pesticides in an irrigated rice field upstream from a drinking or washing hole is not appropriate, even though it may solve the immediate insect problem successfully. Friday afternoon work to prepare land for planting is not appropriate in a Muslim village where worship is held on Friday afternoon, even if it constitutes the best local form of communal labor. Choosing inputs involves the spectrum of farm and village interests.

Procurement involves these steps: identifying the sources of inputs, ordering the materials or making sure the materials are available, arranging for payment and transportation, purchasing and transporting the inputs, and storing and distributing the inputs. Logistics are often difficult where roads, communications, networks, and transportation systems are new and incomplete. It is, therefore, necessary to plan and carry out procurement steps in a rigorous way.

Distribution of inputs should be orderly, efficient, culturally appropriate, and well-documented. The more inputs to be distributed, the more formality is necessary.

"Fairness" is often an issue that arises when inputs like tools or fertilizer are being distributed. "Fairness" is culturally-defined, however, and is rarely the same for an American and a Costa Rican or Kenyan person. For example, an American PCV may receive a partial shipment of vegetable seed in response to an order through the agriculture ministry. Since there is not enough to fill every farmer's specific order, the PCV may decide to equally divide the seed among all farmers to be "fair." The local chief may be very upset to know he is to receive as much as his neighbor, an ordinary village person. To the chief, "fair" means according to

local custom, by which the chief is accorded more out of respect. The orderly and efficient distribution of inputs must be culturally attuned or it will cause misunderstandings and create serious mistrust.

Some inputs may be borrowed instead of purchased. These may be treated like credit in terms of assessing cost, terms, and cost/benefit. Keeping careful records of equipment, machinery, or input loans is imperative. Signed or witnessed agreements, according to local custom, help sort out terms when return or payment is due. Borrowed inputs must be monitored carefully and cared for according to agree-upon terms.

In situations where agricultural support has not reached small-scale farmers, the power to help this way is often a challenge worth the risk of dependence. It is important for the PCV to understand that he or she can only accept this responsibility provisionally, however, even though at first it may be vital to bring resources to the aid of small-scale farmers in this way. Accepting the responsibility to be a source of inputs to village farmers, the PCV must always keep in mind the needs, interests, and goals of farmers, and help to meet them. In the case of farmers who wish to use harmful and dangerous pesticides on their crops, for example, the PCV must weigh carefully his personal conviction to say no against his respect for the opinions of his farmer friends. There is no formula for this sort of decision-making, but it is of paramount importance that the PCV use his "power to provide" with great care and consideration.

Fertilizer and Pesticide Use

It is imperative that PCVs promoting the use of any manufactured fertilizer or pesticide consider the issues involved in their use. Much has been written about "organic" versus "inorganic" agricultural practices. Extension workers are asked to clarify their own opinions and values with regard to these issues and to work with farmers, focusing as far as possible on the wishes of farmer/clients. Where a PCV disagrees with a farmer over "chemical" use, the PCV should provide information (technical knowledge) to help the farmer make his or her own choice. Right and wrong are personal viewpoints in this matter. Farmers have a right to their choice. Extension workers also must exercise thoughtful personal choice.[3]

3 For using fertilizer and other soil additives like organic manure or compost, see the 1980 Peace Corps manual Soil, Crops and Fertilizer Use (R008) at http://collection.peacecorps.gov/cdm/singleitem/collection/p15105coll3/id/71/rec/8

Case Study 3-3: Frank Helps a Farmer Choose Inputs

A farmer is going to grow okra using a new variety and locally adapted practices suggested by Frank, the Volunteer. A "specific problem" the farmer must cope with is well-time weeding. The farmer and Frank devise a list of possible inputs to help solve the weeding problem:

- Family members and friends, by hand
- Family members and hoes
- Family members by hand (longer hours)
- Mulching and some weeding by family
- Herbicide by local agent and farmer (backpack sprayer)

They discuss the choices. The herbicide is too dangerous and too expensive to use in this situation. Weeding by hand will take too long, especially since family and friends cannot meet at the same time. Hoes sound good, but they will cost a small amount, care of the local blacksmith. Mulch is readily available, but is not the best sole solution.

The farmer and Frank agree that the best solution is to mulch the okra garden and purchase one hoe to weed when needed.

Figure 3-8: Distribution Record Chart for Inputs

Date	Tools	Farmer	Date of Return
5/10/84	Hoe	Miki sold	$1.00 paid
5/11/84	Hoe	Ishmael	due 5/18
	Rake	Ishmael	,,
	Shovel	Ishmael	,,
5/12/84	Wheelbarrow	Mary	due 5/19
	Hoe	Mary	,,
	Shovel	Mary	,,
5/13/84	10 hoes	Jo and work	due 5/20
	10 shovels	Company	,,
		etc.	

Surveying Agricultural Land

Surveying as it is meant here is the branch of applied mathematics used to determine the area of any portion of land, the lengths and directions of boundary lines, the elevation and contour of the surface, and the art of accurately delineating these measurements on paper. Surveying of this kind is a service provided rarely to small-scale farmers. It is important to them for several reasons:

- As land tenure and farm practices allow for more individual ownership or tenancy of land, it is important to know the exact location, boundaries, and area of a parcel of land.
- This is doubly true where there is a shortage of land.
- In order to calculate optimum seed, lime, manure, fertilizer, irrigation or other applications on a given extent of land, precise area measurements are necessary.
- In order to properly level or contour a field to use irrigation or rainfall water most efficiently, the elevation and contours must be measured exactly and mapped out.
- In order to locate irrigation channels, dikes, or drains, contours and elevation must be accurately gauged.

Surveying is done on two planes: boundaries and area measurement are located on a two-dimensional plane—length and width; elevation and contours are located on a three-dimensional plane—length, width, and height. Boundaries and area measurements are depicted on a map as lines. Elevations and contours are indicated by points or lines marked with a certain height value.

This kind of multi-dimensional "literacy" is not often easy to share with village farmers, who have learned a different type of spatial orientation.

Providing Storage

Approximately 30 percent of grain in storage all over the world is lost because of insects, rodents, and molds. For the small-scale farmers with whom Peace Corps PCVs work, this is a major problem daily. In villages, protection from such pests and molds is lacking.

Extension workers must focus some of their attention on issues beyond the production of agricultural products. By helping a farmer double his or her grain or vegetable yield, a PCV may cause a major storage problem. Where does the new grain go? How does the farmer protect it from pests, moisture, or thieves?

A PCV can help by encouraging farmers to plan their storage strategies. Also, farmers can determine the most appropriate storage facilities and strategies with the extension worker's help. Finally, adequate storage is the most practical marketing tool a farmer has. He or she

can hold onto a crop until prices become favorable if storage is adequate. The importance of storage facilities cannot be overemphasized.

Case Study 3-4: Joel and Maria Address Storage Issues

Maria felt very proud. Due in part to the encouragement and assistance of Joel, the area PCV, she had worked hard on an intensive onion garden. The yields were great! Joel was also very pleased. Basket after basket was carried to Maria's little adobe hut. It soon became apparent, however, that there was not enough room. Joel offered to store the rest himself.

The price at this time of year was not the best, but it was still good. Because of the space problem, Maria elected to sell her entire crop except five full baskets, right away. She realized a modest profit. Two months later, the leftover onions that had not rotted from moisture commanded double the previous price at the local market. Joel and Maria both learned the importance of learning marketing, drying, and storage techniques as part of the gardening process.

Marketing Agricultural Products

The PCV is often in a good position to help farmers understand and participate more successfully in the marketing system. One of the largest and most uninviting arenas the small-scale farmer enters by virtue of change is the marketplace. In it, he or she is subject to the forces of supply, demand, big business and government policies, and regulations. Here, if anywhere, the farmer needs the direct assistance a PCV can provide.

There are two main ways in which PCVs can help small-scale farmers successfully approach the market system: by organizing large-scale cooperative groups aimed at gaining local or regional price advantages, or by securing favorable prices through timely marketing.

The process of helping farmers secure price advantages through timely marketing involves four steps:

1. Establish who controls the crop/animals at harvest and under what conditions.
    - Advance sales. Farmers may receive payment in advance for a crop, thereby obligating it to a buyer.
    - Contracted sales. Farmers may contract to sell a crop to a buyer at a certain price for a certain quality and quantity.
    - Loan or credit restrictions on sale. Farmers may have to sell a harvest when a loan payment is due.

- Tenancy or rent restrictions on sale. Farmers may have to sell or give part of a harvest to a landowner or local leader due to tenancy terms, rent due, or local custom.

2. Establish an estimate of price fluctuations during various seasons of the year.
   - Find out the average low price during the month when 75 percent of all producers sell.
   - Find the average high price over a time when the price is highest.
   - Make sure the high and low prices are equivalent-same grade product in the same condition at the same point in the marketing process.
   - Subtract the low price from high price to get an approximate seasonal price difference.

3. Estimate the costs of holding products off the market.
   - Estimate the average length of the "holding period" between the middle of the period of average high price and average low prices.
   - Estimate roughly the cost of holding each product (bushel of rice, pound of beef) off the market (e.g., storage facility cost or depreciation, storage losses, handling costs, etc.)
   - Estimate the profit or loss to the farmer by holding a crop out of the market. (This depends on the difference between the cost of holding out and the anticipated seasonal price rise.)
   - Net benefit = Estimated price rise – Estimated holding cost = Net benefit (per unit of crop)

4. Decide to hold crop or sell.

Before a farmer can contemplate marketing strategies, his or her crop must, at harvest, be free of any restricting arrangements. If the crop is free at harvest, and if the net benefit of holding the crop out of the marketplace is significant (more than 25 percent), then the PCV can advise the farmer to hold his or her crop out until the price rises to the seasonal average high price.

Figure 3 -9: A Farmer's View of the Marketing System

A farmer's interest in:	Determines	Farmer knows it relates to:	But probably does not know it relates to:
Market access	• Which commodities to produce	• Transport facilities • Quotas • "Monopoly" control	• Effects of government policies
Marketing standards (weights, grades); availability and quality of direct marketing services (weighing, timeliness of payment, credit, other)	• How to prepare crop for market and choice of buyers for the crop	• Local customs • Buyers' preferences • Personal relationship with the buyer • Buyers' honesty • Buyers' resources	• Legislation • Processors' preferences • Buyers' management ability • How much it costs buyers to perform marketing functions
Overall marketing efficiency	• Marketing margins and the price received	• How efficiently the transport and assembly functions are performed	• Management and technical skills • Productivity of labor • Many and varied costs • The less visible market functions
Competitiveness of the system	• Marketing margins and the price received • Choice of buyers	• Number of potential buyers and alternative markets • Buyers' financial and political power	• Control of financing • National policies • The subtler forms of influence
Market, equating supply and demand (price determination)	• More than any other factor, determines the prices received for products, planting and harvesting schedules, and price mix	• Orderly marketing • Seasonal factors • Size of the total crop • Distant demand factors beyond control	• National policies • How much of the consumers' price is absorbed by the marketing process • Internal supply and demand • Costs of holding the crop

The following are sources for collecting price data and ways to analyze it.

Sources of data (current):

- Actual sales
- Reported by farmers
- Reported by local people
- Reported by handlers of products
- Reports by ministries, market publications, etc. (historical)
- Recent memory
- Official reports and studies as above

Analyzing data:

- Collect data from sources
- Convert all data to common units of value
- Check prices to eliminate abnormally high or low prices
- Make sure information on prices is relevant to the community in which farmer/clients live
- Establish average prices by observing them over a regular period of time (two or three weeks)

Farmers can influence four factors that affect the prices of their products over a short period of time:

- Time of sale
- Choice of buyer
- Collective or individual marketing
- Condition of the product

Farmers can learn, with Volunteers, about their options concerning these four factors. Often the price of a product is lower near normal harvest time, so holding the product in storage is often a way to gain a higher price. Storage depends on perishability, facilities, farmer's ability to wait for income, etc. The choice of buyers is often limited for small-scale farmers, due to transportation costs. Collective marketing is advantageous when costly transportation is a means to a higher price. Collective marketing involves thorough planning of harvest, handling, and storage, as well as price and profit-sharing agreements. The PCV can help point out the need for these considerations and can facilitate the process of dealing with them.

Indirect Services

Indirect service refers to those services in which a PCV helps people do things for themselves. Direct service sets up two relationships: between the PCV and the farmer, and between the PCV and sources of support. In indirect service, the PCV removes himself or herself and allows farmers to gain direct access to sources of support.

This shift often involves a change in both the nature of the service and the source of a service. Generally, indirect service finds sources closer to the village while direct services can range far afield. PCVs are urged to choose sensitively between direct and indirect services to provide farmers with access to resources that allow them more permanent choice and creative power, as opposed to new forms of limitation.

Working with Individual Farmers

In order to help a farmer act more independently to solve farm problems or secure needed services, the PCV first must strive to understand the farmer's motives and interests. Unless the PCV knows how to secure a service or solve a problem, he or she is not in a position to help a farmer do it. Farmers, as practitioners of local technical skills, often have their own valid and workable understanding of problems and solutions that should be carefully checked before the PCV acts to solve a problem. There is a subtle shift of attention, in providing services indirectly, from the problem itself to the person whose problem it is.

The PCV's interaction is with the farmer directly. The activity for the PCV stops being a purely technical task and becomes an interpersonal and technical task. Extension tasks take on this interpersonal dimension dramatically, consciously, and centrally.

Practically speaking, "two-dimensional" extension tasks are accomplished by doing each step, every detail, in the farmer's presence and with his or her help. The farm visit, for example, must be done with the farmer each time. The particular problem viewed (insect damage to a crop, for example), is looked at with two sets of eyes. The PCV feels a responsibility to show the farmer the problem, to listen to and understand the farmer's view of the problem, and to devise a response to the problem in conjunction with the farmer in a way that includes the farmer in the process. This is the habit of "counterparting," of seeking a specific farmer co-worker for each extension task and activity.

Having confronted a problem jointly and discussed it equally with a farmer, the PCV and farmer now must consider the options open to them to solve the problem. This discussion is often not easy, due to language and cultural barriers. But it is essential that it proceed in a way which includes rather than alienates the farmer. Admittedly, this pace of problem-solving is

slow compared to direct action. However, something else is accelerated. That is the farmer's rate of learning and growth as a problem-solver with widening scope.

The next step in working with farmers is passing on specific technical skills and knowledge. Because this is a specialized and extensive topic, Chapter 4 of this manual is devoted to it entirely. Here it should be emphasized that helping a farmer learn technical skills is a long and focused process. When the shift from direct action to the development of farmer skills is complete, the PCV plays the special role of the trainer.

Another shift occurs when the PCV endeavors to serve farmers indirectly. This is a shift of responsibility. Whose responsibility is it to provide supportive services to farmers? This is a complex question, but generally speaking in developing countries, farmers assume that PCVs provide this support, especially material inputs. Having been enticed to move out of the self-sustaining security of subsistence farming by cash-crop PCVs in the past, this is a logical assumption for farmers to have. However, dependence on PCVs for necessary support, as another form of limitation substituted for the subsistence system, is not desirable. Moreover, PCVs, by their very existence as outsiders in the village community, are agents of change. Their benevolence and sensitivity notwithstanding, PCVs must accept the fact that, initially, they own the responsibility for change in the village context. In order to practically allow farmers to shoulder this responsibility themselves, the PCV works to transfer it back to the farmer.

Once a farmer has decided that a recommended new practice matches his or her interests and will meet his or her needs, then it is time to choose inputs and procedures, develop skills and knowledge, and transfer the responsibility for carrying out this project to the farmer. A PCV does this by helping the farmer clarify what needs to be done and who is responsible. Transferring responsibility in this way involves a series of simple steps.

How can a PCV be sure a farmer will accept responsibility for solving problems and accomplishing tasks? It is often believed that the "colonial peasant mentality" is too entrenched, and rural farmers are too unmotivated to take charge of and change their lives. This is the most dangerous fallacy under which PCVs can labor. No one can presume to motivate another person. Everyone in the world is motivated in one way or another, for motivation is the degree to which interests and desires are acted upon. Extension involves a process of discerning the unique interests and goals of a farmer. If these coincide with the objectives of a PCV's work, the farmer will appear to be "motivated" to participate in such work. PCVs must strive diligently to fashion their own objectives in the image and likeness of the interests of the farmers they serve. By clarifying tasks and following the steps in transferring responsibility for tasks over to the farmer, the PCV is engaged in the process of defining a clear and limited role as helper. Limiting and defining the helping relationship is an essential skill in weaning farmer-clients from dependence on the PCV.

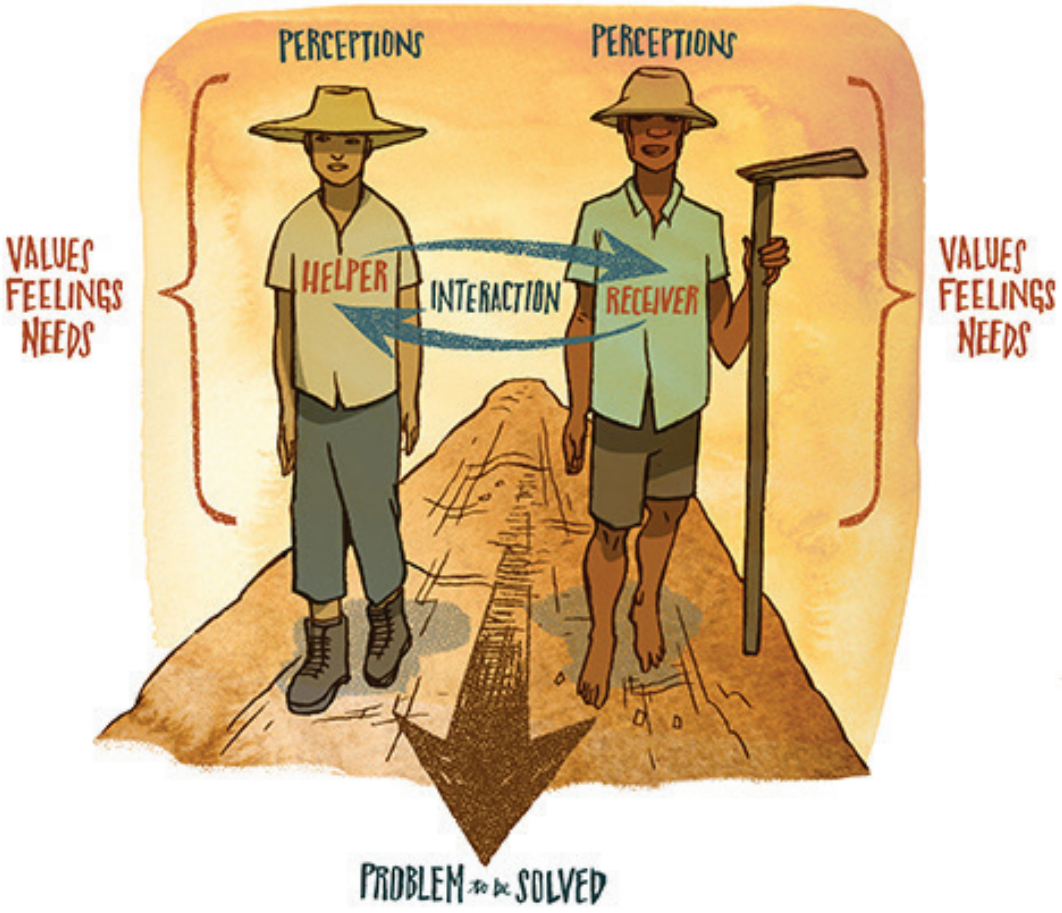
From the very first day of work in any community, the PCV must make clear the limits of his or her role and the goal of his/her work to help farmers participate in change successfully. The extension worker's role ideally should run a standard course:

It should expand as a farmer's interest in specific agricultural resources grows initially. Then the role should slowly contract as the new ideas and skills are more clearly linked to the interests of the farmer, and the farmer begins solving problems with the extension worker more and more. Finally, the PCV's role is given its clearly limited form in equilibrium with the skills and resources of the farmer.

Being a PCV involves attaining empathy with farmer-clients, but it does not mean being a farmer or doing a farmer's work. It is the responsibility of the PCV to initiate and promote the process by which farmers reclaim responsibility, develop skills and confidence, and participate actively in the process of change.

One way to look at the helping situation is to sketch it in the following manner.

Figure 3-10: Perceptions



- The helping situation is dynamic, i.e., characterized by interaction that is both verbal and nonverbal.
- The helping person has needs (biological and psychological), feelings, and a set of values.
- The receiver of help has needs (biological and psychological), feelings, and a set of values.
- Both the helper and the receiver of help are trying to satisfy certain needs.
- The helper has perceptions of himself/herself, of the receiver of help, of the problem, and of the entire situation (expectancies, roles, standards, etc.).
- The receiver of help has perceptions of himself/herself, of the helper, of the problem, and of the entire situation (expectancies, roles, standards, etc.).
- The interaction takes place in relation to some need or problem that may be external to the two individuals, interwoven with the relationship of the two individuals, or rooted in the relationship between the two individuals. Wherever the beginning point and the focus of emphasis are, the relationship between the two individuals becomes an important element in the helping situation as soon as interaction begins.
- The needs, values, feelings, and perceptions of the situation cause the receiver of help to have certain objectives.
- The needs, values, feelings, and perceptions of the situation cause the helper to have certain objectives.
- Both helper and receiver of help have power (influence) in the helping situation. However, it is the receiver who controls whether or not change actually takes place.

Working with Counterparts

Often PCVs from outside the local community are asked to work with formally designated counterparts, usually from the agriculture ministry. This is not always the case, and in many instances the relationship between the PCV and his or her co-workers is not clear. Working with counterparts in this context means defining a co-worker relationship with whomever the PCV is working with, regardless of what is being done, as well as figuring out how to work with formal counterparts.

When attempting to provide a service to farmers indirectly, the PCV is engaged in a process by which he or she removes himself/herself from the scene as an intermediary. One strategy for replacing oneself to an extent is defining a way of working that allows a farmer to learn how to do things himself/herself. In this instance, the farmers are the PCVs' counterparts.

Another strategy is to focus the motivation and develop the skills of the ministry or other counterparts surrounding the PCV. In essence, the process is the same as when working

with the farmer. However, those designated or most likely to act as counterparts to PCVs are ministry agricultural technicians. These technicians have far different interests, backgrounds, aspirations, and motivations than those of small-scale farmers.

The first step in defining a healthy working relationship with a counterpart is to research the counterpart's interests, background, etc. Even before this, the impetus of indirect service demands that in every extension activity performed, the PCV actively seek out and identify the appropriate counterpart, and work toward the establishment of a long-term co-working relationship.

Who, then, is the PCV's counterpart? Very often, the person is an agriculture ministry or development agency technician. It is extremely important for the PCV to remember that no two counterparts are alike, and the PCV's expectations of a counterpart should be based on an understanding of the particular person, not a set of preconceptions.

What can be expected of counterparts? Perhaps they can be counted upon to be cultural informants (experts in local cultural affairs and language). Counterparts are usually skilled in local or traditional technologies as well (use of the machete, plowing with a bullock, etc.). Often, they have special training in some specific technical aspect of agriculture, as well as a certain amount of formal education. Thus, the typical counterpart is bicultural, bilingual, and familiar with both traditional farming and modern agriculture. The insights derived from such attributes are rich and useful.

Where possible, every extension task should be accomplished with a local co-worker of some kind. A PCV's habit of counterparting serves to reinforce an expectation of active participation on the part of farmers and ministry co-workers, just as habitual planning with local people conjures up the expectation that they will be consulted in planning changes. Counterparting is a discipline to cultivate.

Planning requires some formal effort when working with others. In working with counterparts, PCVs should engage in some form of "contracting" process. The contract is an agreement as to what needs to be done and who should do what by when. The method and results can be agreed upon as well. Obviously, as a relationship develops, these agreements may become assumptions, but they must be defined clearly at the outset. The contracting process helps make cooperation practical, minimizes misunderstandings, and helps keep work with others orderly and efficient. The contracting process can take five minutes when a task is familiar to those involved. However, it must be tailored to local cultural patterns. The contracting process generally follows these steps:

- Getting acquainted
- Sharing expectations of each other and the task at hand
- Discussion of expectations to verify or adjust them

- Negotiation of plans, work style and method, and results expected
- Agreement on plans and details of work
- Agreement on roles, responsibilities, and when to meet to check results

Neither counterparts nor U.S. paraprofessional PCVs are always equipped to do complex technical tasks. There are several ways to help counterparts learn new skills and knowledge. Theoretical sessions can be set up in which the PCV plays the role of the teacher and the counterpart hears a lecture or reads a technical reference in preparation for discussion with the PCV. These can even be regularly scheduled and reciprocal, where the roles are reversed.

Practical learning situations can be designed, too. Setting up a demonstration can be the occasion to teach a counterpart how to practice a technical task. Performing gardening or farm tasks with counterparts transforms them simultaneously into "indirect services" in the form of counterpart training. A PCV gradually develops this other habit of structuring the accomplishment of direct services as learning situations for counterparts by contracting beforehand and transferring responsibility step by step.

The best way to promote and reinforce learning is to ask counterparts to teach others. PCVs facilitate this by learning from counterparts, in addition to setting up situations where counterparts train farmers in new skills.

Just as with farmers, transferring responsibilities to counterparts and defining the limits of the PCV's role contribute greatly to the process of working together. The sense of accomplishment a counterpart can feel as a result of doing something oneself serves to motivate him or her greatly. The organizational benefit of transferring the responsibility for doing a task from a planner (PCV) to a competent co-worker (counterpart) is that more work can be accomplished. The delegation of specific jobs as ongoing responsibilities is a more structured way to capacitate counterparts.

According to experience, increased competency, and interest, a counterpart can be assigned as a specialist within the scope of work at an extension station. For example, a counterpart who likes to travel and organize things may be a good procurements officer. Perhaps a PCV notices that his or her counterpart is quick with numbers, respected by the local community, and less inclined to travel or endure physical labor. This person could be designated as storekeeper. Another technician who is a skilled expert at certain technical tasks or an exceptional teacher may be best suited to train farmers by conducting method/result demonstrations.

The natural consequence of the increased motivation and competence of the PCV's counterparts is a re-definition of the PCV's role. Freed from the execution of various tasks, the PCV can more effectively plan, carry out, and evaluate work or branch out into new

endeavors. The complementary roles of PCV and counterpart evolve throughout a working relationship toward the goal of skilled co-workers ready to replace the PCV as thoroughly as possible. In this way, support for small-scale farmers is institutionalized on a local level.

Take time to find out about your counterpart's background in detail. Often, Volunteers have learned too late that their counterparts have skills which could have been useful to local farmers had they been aware of them. In deference to your position as his or her supervisor, your counterpart may not let you know what he/she can do unless you ask.

The following is a partial list of special tasks/roles counterparts can play at extension stations:

- Storekeeper
- Procurements officer
- Method/result demonstrator (farmer trainer)
- Mechanic
- Surveyor
- Work company overseer
- Result demonstration supervisor

This process is conceptual. That is, these steps are ideas about reaching understandings and agreeing on roles. In each cultural setting, these steps must be done the way custom suggests. The idea of working consciously to clarify assumptions must take a local and acceptable form.

Working with Groups

The topic of working with groups is mentioned here because it is the manner in which the PCV can really help small-scale farmers marshal the resources to solve many of their own problems directly. Given its importance, the whole of Chapter 5 in this manual focuses on working with groups.

Working with Cooperatives

When there is an existing cooperative association in the community in which a PCV works, he or she is confronted with the problem of providing services to the co-op as opposed to any individual farmer. This is the situation where defining a clear and consistent role is most necessary. A cooperative must stand on its own and maintain a clear sense of its own responsibility and ability if it is to succeed. If, in his or her zeal to help, the PCV reclaims some of that responsibility or inadvertently causes the co-op to depend on him or her for some service, he or she can easily endanger the self-motivation upon which the cooperative enterprise rests.

There are, of course, circumstances in which the PCV can and will provide services directly to a co-op. Giving a cooperative new skills is a tremendous investment in its longevity and effectiveness. However, being ever mindful of both the ease with which dependence relapses and the effort involved in developing competent self-reliance, the PCV must be extremely cautious. Caution takes the form of a careful delineation of a role that is helpful without being indispensable.

In the case of working with cooperatives, PCVs are urged to work always with a cooperative-member counterpart. Most particularly, the PCV should seek out the nominal and informal leaders of a cooperative to work with them as counterparts.

Chapter 5 details specific ways in which PCVs can facilitate the work of groups. The earlier subchapters in this chapter, "Indirect Services," offer guidelines to use for defining a clear and helpful role with cooperatives.

Working with Local Authorities, Government, or Development Agencies

Being the intermediary to some extent between farmers and institutions of various kinds, the PCV must answer to various people at any given time. He or she must work effectively within an institutional framework and to orchestrate these different interests successfully. There are several types of institutions that he or she may be involved with:

- Local authorities (community leadership groups, village hierarchy, etc.)
- Government ministry or department
- Development agency project

Each of these institutions has both a formal and an informal structure. It is often said, for example, that the influential advisor of a government minister, while not an official member of a ministry, is part of a "shadow ministry" behind the scenes. The informal structure of an institution is not easily apparent to the outsider, but it may have tremendous impact on institutional decisions or events. In dealing with any institution effectively, a fundamental lesson is the fact that real power and influence may not lie with those who have a titular position. This is not a license to avoid institutional structure, but it is important to know.

PCVs sometimes do not fit into institutional structures very well. They are the outermost grass-roots level of most government or development agencies, and they tend to be outsiders in the village community. As such, they have both considerable license and a large responsibility to become a part of these institutions. There is an emphasis in this manual on research at the level of people's interests. This extends to institutions as well.

The PCV's first responsibility to an institution is to clearly define its expectations of him or her. But how can one deal with the often competing or un-complementary interests and goals of

these organizations? Clarifying their interests is a start. Clarifying one's own interests is the next useful step as a PCV. Then, usually by a process of trial and error, the extension worker implements an acceptable accommodation of these interests. It is up to the PCV to work out compromises among unreconciled interests.

When pursuing the goal of capacitating local institutions, PCVs find it necessary to work within institutional frameworks. The most thorough way of helping people grow is to start where they are, not where they "should" be. This in no way diminishes the aspiration for better things. It is rather, the institutional form of indirect service. Rather than performing a service or solving a problem apart from or for a local institution, the PCV can focus on the institution itself and the resources the institution has to allocate to the problem. He or she will concentrate on how to help those resources work better.

On the other hand, the informal structure of a government ministry or village hierarchy may be more effective than its formal one. It is up to the PCV to balance use of both. In a government or development agency, it is essential to pay due respect to those in power, but secretaries, truck drivers, carpenters, storekeepers, etc. may be those who really get things moving.

At the village level, there are often informal "craftmanship structures," as well as religious, cultural, and social hierarchies that are not readily apparent. As pertains to agriculture work, "craftmanship structures" are systems of "master" or "head" farmers and opinion-leaders in farming work. These are the people through whom significant change can be effected. On the village level and often in other institutional settings, PCVs come to discover that friendship is a powerful thing, and that investments of "village time" spent with people in culturally-defined settings and activities have profound implications for work. Following is a partial list of important people in local institutions.

Village:

- The most respected farmers
- Gifted orators
- Religious or cultural leaders
- Respected craftspeople or technicians
- Persons who advise or affect more visible leaders
- Persons who have vested interests in agricultural work
- Persons who have been affected by extension work in the past

Government ministry:

- Secretaries, receptionists, appointments people

- Bookkeepers, accountants, storekeepers, finance people
- Drivers, mechanics, helpers
- Carpenters, technicians, artisans
- Family and friends of officials
- Suppliers of agricultural products and other vested interests

Development agency:

- Foreign government representatives
- Family and friends
- Gatekeepers like secretaries, etc.

Working within institutions while trying to facilitate growth and change for village farmers is a difficult task. It requires sensitivity, clear values, ability to work out conflicts and give useful feedback, patience, and an ability to discern the real catalysts of work while respectfully working along established lines. The rewards of this tight-rope act are many, for institutional changes and successes have extensive effects on the local scene. Respectful efforts from within by the PCV can help the institutions that affect small-scale farmers become better resources.

Case Study 3-5: Difference Between Lydia and Rory in Working with Counterparts

Lydia is a very precise person. She is thorough, prompt, and reliable. This is what she expects of others. She has been working in the district for eight months. Her supervisor met her at a reception for his district headquarters. She has visited him precisely seven times since then, at the end of each month. Each time she comes she asks the receptionist to see him, submits two copies of her typed report, politely asks questions or makes her requests, leaving copies of each for her supervisor, and leaves to return to work. She is very upset today because for the fourth month in a row she has not received what she requested—not even an explanation as to why. In fact, her supervisor is not finding it convenient to even see her anymore for her monthly visits, and the receptionist refuses to tell her where he is or when he will be back. Lydia is incensed!

Rory, on the other hand, is a relaxed sort of fellow, though he is reliable and conscientious in his own way. He has learned by trial and error to dress neatly when visiting the ministry office. He knows the store clerk at the office, who is always there, very well. He sets two days aside for the visit each time he comes (which is when he needs to) and brings money to entertain himself. He invariably is able to get together with his supervisor, Mrs. Garcia, and her husband. They usually begin at their house and go out to eat and enjoy an evening together. In the course of these affairs, Rory is able to talk business with Mrs. Garcia fairly well. Usually his objectives are met—not always—but usually. And he has been told by Mrs. Garcia herself that he can count on her in an emergency.

Ch 4: Farmer Training Methods

Introduction

Farmer training is education that most often takes place outside formal learning institutions. It differs from education in schools because it is geared toward adult learning.

Adult learners are distinct from child learners in four important respects. The self-concept of a child is characterized by dependency, whereas mature adults are self-directed and sufficient in most aspects of their lives. Adults tend to resent educators who fail to take this fact into account and do not appreciate being talked down to or having their autonomy restricted in ways that show a lack of respect. Since most learning situations are pedagogical, or directed at children, adults often enter training with expectations that they will be treated like children, with explicit guidance at each step. When they eventually discover that they are capable of directing their own learning, adults are often spurred on by a strong, emerging motivation to pursue their own educational goals.

A second aspect of adult education that also pertains to agricultural training deals with the motivation to learn. In pedagogical learning, teachers decide the content to be delivered to students, as well as how and when the teaching is to take place. Adults, on the other hand, begin new learning ventures with some ideas of what they will gain from doing so. It is necessary, then, that extension agents discover what it is a farmer wants to learn.

This may seem like a natural step and perhaps not worth much emphasis. Nonetheless, failure to accommodate a farmer's interests is a common pitfall. Extension agents often assume the teacher's role and decide for the farmer what he or she needs to know. The drawback to this approach is that the farmer is likely to resist. Decisions on the content and method of training must be the shared responsibility of farmers and PCVs. The common purpose that emerges from such choices leads to a sense of cooperation necessary for learning to take place. A cooperative spirit in adult learning is important because it allows for the sharing of useful knowledge and skills adults bring to a new learning situation. Children have less experience to offer. Their classroom activities are characterized by modes of one-way communication, lectures, assigned readings, and audio-visual presentations. By contrast, the past experience of adult learners is central to adult learning, so activities such as discussion, role-playing, and skills-practice are designed, using that experience as a foundation for further learning. Grain farmers are asked to use their intimate knowledge of seasonal variations of climate to help plan a crop rotation pattern suitable for local conditions. Livestock owners rely on their experience of the difficulties of procuring local feedstuffs as they make selections to design a nutritional feed ration for a flock of laying hens.

The final characteristic of adult learners that sets them apart from children has to do with their time perspective and how it affects their orientation to training overall. Children (and many educators) view pedagogy as preparation for the future. Its focus is the child himself or

herself. Graduation is the point at which learning begins to be applied. Adult learning, on the other hand, is based on the principle that all experience contributes to a learning process that does not end with the closure of a training event, but continues throughout one's adult life. Whereas pedagogy involves grouping and classifying information into subjects to be studied now for use "someday," adult education promotes learning by working on today's problems today. For example, farmer training sessions are likely to focus on composting rather than chemistry, or immunization rather than microbiology. Though elements of the broader subjects come into play in each case, the immediacy of application is the determining factor in choosing the actual content of the training.

Adult learning is not widely practiced in the extension services that are predominant in the developing world. Small farmers in developing countries are often told what is right ("modern techniques") and what is wrong ("traditional practices"), what to grow (often, cash crops), and where and when to market their produce. This approach to extension promotes dependency on outside inputs and expert advice (self-concept). It denies farmers the choice of what they want to learn (motivation). It does not focus on the developing farmer's most immediate need to grow more food for his or her family (time perspective). Nor does it take into account a farmer's accumulated experience of the environment where his or her crops are grown.

The environment in which a small-scale developing country farmer lives is often dominated by uncertain weather, pests, diseases, and price fluctuations. Farming in this environment is fraught with risks. Given the choice afforded in a farmer training system built on adult learning principles, a farmer will avoid as much risk as possible. The extension worker's task, then, is to help the farmer reduce risks whenever possible through a sensitive choice of training methods and presentation of innovations that are appropriate to the scale and type of farming being practiced.

There are several ways to help accomplish this goal. Perhaps the most important is to try to ensure success by promoting only those innovations whose results have been thoroughly tested under local conditions. PCVs often succumb to the temptation to promote before testing. This may well result in failure of the practice and a disastrous loss of credibility among farmers. The importance of assessing the success rate of specific proposed changes cannot be overemphasized.

A second way to reduce farming risks is to time the sequencing of innovations. Certain changes lend themselves to earlier promotion than others. Those who are easily assimilated into current practices involve less risk than those who are more disruptive of the norm. Examples would be innovations that do not require a radical change in diet or a detrimental shift in the tasks assigned to men and women in the work force; that would avoid considerable retraining; or that would not entail a realignment of a periodic farming cycle. Less costly innovations (e.g., timeliness, seed selection, or better spacing techniques) are preferred and in cases where cash inputs are required, risk is reduced if they are readily

available to all classes of farmers. Finally, extension agents can build credibility by first introducing innovations that have an immediate payoff as opposed to those that have longer term results (e.g., variation of a feed ration as opposed to cross-breeding).

Sometimes it is easier to promote a "package" of innovations than a single innovation, because the results of a well-tested package are often much more dramatic. The package approach is also sometimes favored by national planners of extension services because it is seen as a more efficient use of limited extension manpower. One major drawback of this technique is that if the package fails, farmers may conclude that all of the individual practices are unproductive. Also, more research and testing are required to adapt a package to local conditions as opposed to a single innovation. A package may be more costly because several changes are introduced at once and may therefore be inaccessible to small farmers with limited cash resources. (Note that a package can also be designed that does not include cash inputs.) Finally, the elements of a package may be so closely related that if a single input is unavailable or one component is inadvertently neglected, the entire package may be susceptible to failure.

A recent package of innovations are related to developing five skill sets with farmers. Research conducted by Modernizing Extension and Advisory Services (MEAS), Catholic Relief Services, and others indicates that addressing the top five skill sets of smallholder farmers simultaneously reaps the best rewards. These skills include group organization and management, savings and financial management, basic business and marketing skills, technology and innovation, and natural resource management. Based on this research, they have developed training materials that you may want to access on the Internet.

It is not uncommon for extension agents, whether they are working with a package or with individual innovations, to exaggerate the benefits of a new practice. Efforts must be taken to make conservative recommendations. Suggestions include: lower yield estimates to account for incidental factors and less than optimum employment of new practices by farmers; recommend purchased inputs on the basis of maximum return per dollar rather than maximum return per land unit or head of livestock (this favors small farmers who do not profit by volume); and encourage farmers to do a limited trial of a new practice prior to wholesale adoption (for example, on a small portion of land rather than over a whole landholding). The idea behind making conservative recommendations is that they allow a farmer to improve at his or her own rate until reaching a position of sufficient financial security to assume greater risks.

At times, the difficulties farmers have in taking their chances with a particular practice have less to do with the practice itself than with the method of its presentation. Appropriate training methods help ensure that the benefits of change and the specific steps required to make that change are effectively communicated to a farmer in a way he or she can readily understand.

Examples of different learning styles include farmers who need to see and test results for themselves; farmers who are unsure how to do something; farmers who need to get their information from people they know rather than strangers, and farmers who need ideas expressed in a logical framework that is consistent with their own world view. Corresponding training methods are result demonstrations on farm-trials; method demonstrations; training of master farmers to train their peers; and analogy and storytelling. When an effective match is made between the training method and learner, the quality of communication between the extension agent and the farmer increases, trust is established, and risk in the eyes of the farmer is reduced.

In summary, farmers seek to avoid risk whenever possible in an occupation characterized by uncertainty. To help farmers change and adapt new conditions, extension agents need to make concentrated efforts to reduce risk by rigorously testing results before promotion, introducing easily adaptable improvements before those requiring a more substantial departure from accepted practices, packaging innovations to enhance results, erring on the conservative side in making recommendations, and choosing training methods appropriate to farmers' learning needs. The advantages of combining these risk-avoiding steps include a greater measure of credibility for the extension agent and a more significant degree of control of, and participation by, farmers in the development process that affects their lives.

Cross-Cultural Communication

Extension work is carried out through two-way communication. This communication takes place in a cross-cultural environment that is not familiar to a new agent. Sensitivity to that environment is important in everything the agent does.

Evidence of cultural differences is readily found in a people's customs and beliefs. Extension agents need to look beyond these more obvious manifestations of culture to subtle distinctions in language and other means of communication if the desired two-way flow of information is to take place.

Language

Learning to speak the farmer's own language is a goal most PCVs work toward. Learning to use a language in a culturally appropriate way may in many respects be a more useful objective. For example, there are expressions in most languages that have special (colloquial) meanings in local circumstances. "An empty sack will not stand up" does not refer to grain bags in a storeroom; it is an expression that says, in effect, "A man who has not been fed will not work." Proverbs or parables such as this one are very direct forms of communication that can enhance an extension worker's ability to talk effectively with people. Generally, they refer in some way to the most vital aspects of life in a given culture. Systematic questioning about

key elements of life, such as food or family, may generate a list of expressions that would prove useful in a PCV's work with farmers.

An equally important consideration is the way people of a given culture communicate nonverbally. There are often very strict, unwritten rules regarding gestures, eye contact, and other means of physical communication. An outsider may unwittingly break these rules and cause offense.

A useful way to avoid cultural miscommunication when using a language is to choose a language instructor or interpreter who also serves as a cultural informant. Focusing on parables and nonverbal means of communication, in addition to learning grammar and vocabulary, will help ensure that culture enhances communication rather than impede it.

Cultural Bias

The participants in any communication exchange bring with them a particular viewpoint or bias that reflects their culture. Volunteers doing extension work in technical fields such as agriculture often betray a special bias toward abstract scientific concepts that is not always shared by the people with whom PCVs work.

Experiments have been conducted which show that people in non-literate societies do not share "Western" concepts of measurement or geometry. Examples of scientific bias include:

- Measurements
- Notions of time
- Geometry
- Ability to read maps and photographs
- Ability to interpret scale

For example, equal quantities of water were poured into a long, thin glass and a short, stout glass. When asked which glass contained more water, 60 percent of a non-literate group chose one glass or the other because of its shape. Similarly, two points were marked on a circular table and test participants were asked to connect the points with a straight line ("as if you were carrying a heavy load of wood or water"). Again, roughly 60 percent of the participants failed to draw the straight line. The implications of a Volunteer's scientific bias may not be apparent until farmers confront a task such as measuring fertilizer or digging an irrigation ditch and encountering difficulty. The need for extension agents to consider this type of cultural difference is nonetheless apparent.

Illiteracy has other implications. People who are constantly exposed to the printed page are also frequently inundated with photographic images, not only in magazines and books, but

also on television and movie screens, signs, and advertisements. The skill of interpreting these images is referred to as visual literacy. Those who are visually illiterate have difficulty with depth perception in pictures, and they have a hard time discovering motion or identity. Other two- dimensional visual effects, such as maps or drawings, present similar difficulties to those who are not "conversant" in visual language. Thus, an extension worker should use care in choosing visual aids for a training presentation.

Appropriate Cross-Cultural Training Methods

The following are culturally appropriate training methods:

- Storytelling
- Analogy
- Proverbs, parables (colloquialisms)
- Skits
- Role-plays
- Song and dance
- Visual aids such as:
  - Models
  - Photos
  - Puppets
  - Drawings
  - Posters
  - Flannel boards
  - Flash cards
  - Flip charts
  - Games
  - Puzzles

Several of these are discussed further below.[4]

Storytelling

Just as ignorance of cultural norms can work to block effective communication, understanding the communication patterns in a local culture can open up new, exciting avenues for information flow. Storytelling is a means of communication that has been practiced in many cultures for generations. When used in extension work, stories can serve several different purposes. They can demonstrate drawbacks of specific agricultural practices without singling out any one farmer in front of his or her peers. This is accomplished by narrating in the third person a story about a fictional character and allowing the audience to draw its own conclusions.

4 This short technical note from Modernizing Extension and Advisory Services (MEAS) can be used by trainers and PCVs to help structure learning sessions: http://www.afaas-africa.org/media/uploads/publications/meas_tn_principles_of_teaching_and_learning_-_barrick_-_uf_-_aug_2011.pdf

When learning a new language and gathering useful colloquial phrases for use in cross-cultural communication, start with vital topics such as those in the following list:

- Harvest
- Children
- Land
- Money
- Food
- Weather
- Work
- School
- Family politics

The way a story is actually told can vary with the story's purpose. An extension agent can incorporate peer teaching into storytelling by asking several farmers to tell different parts of a story. This allows for wider participation and generally creates a higher interest level on the part of the audience. An extension agent can also tell half of a story and leave omissions for farmers to complete. This can be used to test and see how much farmers actually retain during training sessions, for example:

> *"Jose has been working all day under the hot sun. He is tired and is looking forward to the meal and bathwater that will be waiting for him when he returns home. Still, he wants to finish planting his maize field before evening, so he continues, methodically dropping handfuls of seed into holes* **(how far?)** *apart ..."*

In some cultures, stories can even be dramatized with farmers playing different roles. In general, creative use of this medium can bridge communication barriers that would otherwise pose serious problems to outsiders acting as extension workers.

Analogies

Another particularly effective technique is to use analogies for situations within the collective experience of one's audience.

This allows farmers to build upon what they already know as they learn. A rice plant goes through a growth stage during which the stem grows fat just prior to vigorous vertical growth. This is an opportune time to apply nitrogen fertilizer so it is important that the stage be precisely identified. By analogy, extension agents and farmers in West Africa refer to the stage by saying that the plant "gets belly," or becomes pregnant. This type of analogy can be used in the context of a story to help farmers come to a fuller understanding of a new practice or method by incorporating concepts with which farmers are already familiar.

Figure 4-1: Sample Analogy

Revised from: Werner and Bower. 2012. Helping Health Workers Learn. Hesperian Foundation.

Songs and Dances

Songs and dances are communication media that are easily overlooked, but nonetheless serve as extremely effective mass promotional devices. Most villages have someone who can sing and put words to music. The agent need only ask this person to prepare a song on a special topic, such as:

- The man who harvested his grain too late

- The woman who built a strong fence around his or her garden to keep out pests
- The village that had no grazing restrictions

When set to a popular tune with a pronounced dance rhythm, the elements of these stories can rapidly become ingrained in the daily routine of a whole village.

Role-Playing

Role-plays or spontaneous dramatizations provide an opportunity for farmers to practice skills in problem-solving, community organizing, and teaching methods. They require few props and minimal preparation, can be very lively, and can come very close to approximating real-life situations. It is important not to ask farmers to role-play situations that are extremely controversial. To prevent bad feelings from developing, each player should be allowed to de- role by saying how it felt to play his or her character, and discussion among players and observers should be encouraged.

When preparing a joint demonstration on fertilizer application, a Peace Corps extension worker and his or her counterpart take turns playing the role of a non-literate woman vegetable farmer. They pose questions to each other and follow advice exactly as it is given to see if they can uncover any areas of cultural bias in their presentation.

Visual Aid

Finally, a wide variety of visual aids can be employed to improve cross-cultural communication. Several cautions have already been mentioned about the limits to the use of graphics models and photographs. Even so, excellent training materials are available to help PCVs prepare and use visual aids in their work.

Scale Models

Sometimes maps can be constructed as three-dimensional scale models for:

- Mapping (three-dimensional relief features)
- Demonstrating the relationship between a system's parts
- Reproducing to scale a mechanical part that can be used to practice manual skills
- Planning
- Promotion of innovations
- Problem-solving
- Comparative analysis

For example, to demonstrate the interrelationship of a system's parts and to solve a problem, a set of irrigated rice paddies are modeled out of clay. Farmers owning connecting paddies are assembled and each is asked to demonstrate with the model how he or she irrigates plots and where he or she lets water into the plots, where he or she lets it out, how long and often he or she lets water flow through the plots, etc. A discussion then ensues about how water not used by farmers upstream must be allowed to pass unimpeded to farmers downstream.

Planning considerations:

- Choice of scale
- Choice of materials (cost, availability)
- Permanent or temporary construction
- Rain protection
- Shade
- Accessibility (suitable for audience size)
- Portability
- Capable of being manipulated (encourages participation)
- Culturally acceptable

Caution is warranted, in that interpreting scales may not be a common practice in a given culture. The example is often cited of the extension worker who, in a presentation on cattle diseases, employed a 1 meter-long scale model of a tsetse fly. At the end of the short talk, one farmer raised his hand and thanked the agent for alerting him to the dangers of the tsetse fly. He added that he was, himself, not too worried because he had yet to see a fly anywhere near as big as the one in the agent's hand on his own farm.

Another problem with scale models in particular and visual aids in general, is the unconscious use of negative symbolism. Colors, certain animals, or replicas of human beings can all, in certain cultures, have connotations of danger or represent unfavorable omens. The key to avoiding offense in cross-cultural communication is to pre-test presentations with part of the intended audience to determine their suitability in advance. Observers can help a PCV with suggestions that will make his or her communication more direct and bias-free.

Audience

Choice of audience may have clear implications within a particular culture. In some cases, it is a sign of respect to pay separate visits to individual households. Practically speaking, training sessions with individuals may be more effective because they can be paced to meet specific needs. They also make use of a farmer's own fields as a training setting, a more comfortable and relevant arrangement for most farmers.

The advantages of working with groups include opportunities for farmers to step into active training roles with their peers. This helps de-emphasize a PCV's role as "expert" and helps ensure that information will pass through culturally appropriate channels.

Nonverbal Communication

Observe or ask cultural informants about rules concerning the following types of nonverbal communication:

- Body language, gestures
- Interpersonal space (how close to stand next to someone)
- Timing of verbal exchange (is it rude to interrupt someone before he or she has finished speaking?)
- Eye contact
- Touching (body contact, holding hands, etc.)

General Considerations in Effective Communication

- People learn by hearing, seeing, tasting, smelling, discussing, doing
- The more farmers actively participate in training, the more two-way communication will take place
- Does the training method relate to a farmer's own experience?
- Is the information timely?
- Is the skill needed?
- Is the innovation affordable?
- Is the language used free of unnecessary technical terms and abstractions?
- Is the tone of the presentation respectful and pleasant?
- Is the audience comfortable (temperature, seating, visibility, hearing range, etc.)?
- Is the presentation well-rehearsed and organized?
- Are materials locally available and conveniently placed?
- Is a mechanism in place to make sure the desired message was conveyed in the presentation?

Farm Visits and Troubleshooting

Making individual visits to farmers' fields and livestock holding areas is the farmer training method most widely practiced by extension workers. As such, it requires special attention.

During farm visits, extension field workers are often directly confronted with very pressing problems. On the spot, the extension agent is asked to make an expert judgment about (troubleshoot) something plaguing a farmer's plants or animals. The way the PCV handles this situation can profoundly affect levels of dependency in the farmer-agent relationship. The trick in successful troubleshooting is to avoid taking on "expert" status.

The situation an extension worker faces is somewhat like the interaction between a doctor and his or her patients. Given someone who needs medical attention, the doctor has several choices as to how he or she responds. The doctor may simply cure patients with a packet of pills or an injection and send them on their way. Or the doctor may explain to his or her patients the causes of their afflictions and the way the cure works, cure them, and send them on their way, hoping to have educated them enough to prevent future illness. Finally, the doctor may refuse the responsibility for a patient's cure, discuss the possible causes of the disease, and explain to the patient ways that he or she might be able to cure himself/herself. With this, the doctor sends a patient on his or her way, hopefully more capable of both preventing disease and curing it without any further assistance from the doctor.

The three options for the doctor's response are listed in order of decreasing dependency in the patient-doctor relationship. The same options may be available to the extension agent. One difference in the case of the agent is that he or she is likely not to have the same degree of expert training as most doctors. The consequence, then, is that the PCV is in many instances not qualified to make the type of expert judgments represented in the first option above. On the other hand, like the doctor, the extension agent may face situations that he or she is competent enough to handle and that are serious enough in nature as to require direct action—a disease outbreak among a herd of cattle, for instance. In these cases, it is useful for the extension agent to have practical troubleshooting skills.

The first skills to consider are those of observation and examination. It is essential at the outset that the agent possess enough technical expertise to be able to distinguish normal from abnormal conditions. There are lists of signs of plant and animal diseases, for instance, that an extension agent needs to have either memorized or readily available for use. In the field, then, the agent watches for abnormal plant color, lack of uniformity, stunting, wilting, and leaf spots. And he or she physically examines plants for signs of insect feeding. The steps necessary for a thorough examination need to be second nature. The way to make them systematic is to practice them daily and actually record them in field notebooks and work logs.

The second set of skills involves utilization of resources beyond those of the agent. Included among these skills are information gathering, description, and networking. When confronted with a problem in the field, the extension agent needs to know what practices the farmer has used that might have contributed to the problem, what solutions the farmer may have already attempted in order to get rid of the problem, and, in more general terms, how much

the farmer actually knows about possible causes and solutions for a given condition. In order to gather this information, the PCV needs to utilize the interviewing skills discussed in Chapter 2. In some cases, information gathered from the farmer and the extension worker's own skills at diagnosis may still fail to turn up any clearer understanding of a situation. Being able to accurately describe what conditions exist becomes a crucial skill. The agent can carry a description of a problem to a network of technical support persons, including other farmers, other extension agents, and technical research stations, to solicit their opinions as to what steps should be taken.

A third set of skills is important when the extension agent does have a clear idea of what is wrong with a farmer's crops or livestock. It is in this instance that one is most likely to set oneself up as an "expert." Therefore, caution is warranted. The skills involved include dialogue and use of cross-cultural communication techniques. Dialoguing entails the artful posing of a series of questions logically sequenced so as to lead a farmer through the thought process of diagnosing a problem. The key is to keep asking open-ended questions. In cases where dialogue fails to work, the PCV can give a careful, straightforward explanation of a problem, using analogies to describe other parts of a farmer's experience. Relating a problem to something a farmer already knows will help him or her grasp the solution as something that is not wholly unfamiliar to him or her, rather than as something that is entirely within the foreign, even magical realm of scientific expertise.

Increasingly, PCVs are depending on technologies in a variety of ways to support the smallholder farmer. Global Positioning Systems (GPS) are being used to help map farms while cellphones are being used to access market prices for food products. The Internet provides current research on a broad range of farming practices and allows PCVs, counterparts, and staff members the opportunity to collaborate through communities of practice. A Volunteer working with farmers to improve cashew nut production in Malawi can easily share newly identified practices that can help in other countries. Electronic tablets can store a great deal of information, including "how to" videos that can be very useful.

Case study 4-1: Troubleshooting in a Poultry Extension Program

Field workers in a livestock extension program directed at poultry farming come together in a district capital for a meeting where they discuss how they deal with the widespread problem of overcrowding in chicken pens.

Volunteer A simply tells farmers to build new pens for some of the chickens.

Volunteer B observes the chickens' aggressive behavior and examines several of them that are afflicted with fungus diseases related to the sanitary conditions in their pens. He asks the farmer how long the behavior patterns and diseases have been present. He explains to

the farmer how the behavior and disease are related to the size of the pen and recommends moving some of the chickens to a new location.

Volunteer C observes the overcrowded pens and tells the farmer that she will return the next day with a suggestion to improve the health of the flock. She goes home and prepares a detailed analogy to help explain why it is important to reduce the number of chickens in the pen. She returns the next day and draws a parallel between the chickens and a large number of people confined in a closed room. She asks the farmer to recall the bad air and the heat he has experienced in closed rooms full of people and says that chickens experience something similar when too many of them are crowded together in one pen. She then recommends that the farmer build a new pen for the overflow.

Volunteer D is unsure whether overcrowding is the problem or not. He counts the number of chickens in the pen and paces off its size. He asks the farmer to describe the chickens' behavior and makes some brief notes in his field notebook. He visits other farmers whose flocks are healthy and compares the density of the chicken population in their pens. He asks the other farmers if they have observed any of the same sort of aggressive behavior as the first farmer he visited. The other farmers, it turns out, have larger pens for a comparable number of birds and have not witnessed aggressive behavior in their flocks. On his next visit to the District Office of the Ministry of Agriculture, he has his suspicions confirmed by a senior extension officer who tells him that the disease and behavior of the problem flock are probably related to the overcrowded conditions in the pens. He returns to the farmer who owns the chickens and explains what the other farmers and the ministry official told him. The farmer decides to build a second pen for some of his hens.

Volunteer E observes the crowded conditions and guesses right away that they are the source of the farmer's problems. Rather than directly tell the farmer her opinion, she asks several questions that gets the farmer thinking about different possible causes of the problem. Some of the ideas the farmer has are shown to be wrong when the extension agent points out exceptions. Others she accepts as possibilities. Finally, the farmer and the agent have narrowed their list down to two or three potential causes. They discuss ways the farmer can test them and arrange for follow-up visits by the agent to see if any of the options have worked. After testing one of the possibilities and finding that it does not change the condition of his birds, the farmer finally determines that overcrowded pens are the chief cause of his flock's illnesses.

Sample Dialogue with a Farmer About Crop Management Techniques	
Questions to the farmer	Answers
Q: What is the problem with these plants?	A: They are yellow and their leaves are withered.
Q: Are all of your plants in the same condition?	A: No, some are much healthier.
Q: What can make plants get sick like this?	A: Sometimes the ground is not good; sometimes there are insects.
Q: Why do you wait until this time of year to plant your garden?	A: Because the crops will not grow well without the rains.
Q: Where do the heavy rains go when they hit the ground here? Do they stay in one place?	A: No, some goes into the ground, but most of the water goes down the hill to the low part of the plot.
Q: How do the plants in the low part of the plot compare to the sick ones you brought me here to see?	A: They are much greener and larger than these.
Q: Why do you think that is the case?	A: It could be because there is more water in that part of the plot when it rains.
Q: How can you help these plants on the upper half of the plot grow better?	A: Give them more water by hand.
Q: How often will you water them?	A: Once every day.
Q: If that is not enough, what will you do?	A: I will water morning and evening, twice a day.

NOTE: The ultimate cause of the problem here is that the garden plot is unlevel. The more immediate problem of making his or her plants healthy is more important to the farmer. The extension agent in the dialogue is wise to wait until a more appropriate time—just prior to the next planting season, for example—to talk to the farmer about leveling off the plot itself.

Guard against asking patronizing questions by being thoroughly familiar with a farmer's knowledge.

The following are troubleshooting tools for crop extension agents:

- A pocketknife for digging up seeds or slicing plant stems to check for root and stem rot or insects borers
- A shovel or trowel for examining plant roots or checking for soil insects or adequate moisture
- A pocket magnifying glass to facilitate identification of insects and diseases

- A reliable soil pH test kit for checking both topsoil and subsoil pH; especially useful in areas of high soil acidity. Kits using litmus paper are generally unreliable
- Disease, insect, and hunger sign guides that can be handwritten if conveniently sized booklets are not available

The following are troubleshooting steps for crop extension agents:

- Know about signs of abnormal conditions; supplement knowledge with additional training, if necessary
- Assemble useful tools
- Observe and examine and consult with farmer
- Consult with other farmers and local agriculturalists
- Consult outside experts and resources

Appropriate problem-solving options to consider (in order), include:

- Non-action (Can the farmer handle the problem on his or her own? Is he or she turning to an extension agent out of force of habit?)
- Dialogue leading to farmer-controlled experimentation
- Preceding a response with time to prepare an appropriate training method
- Making recommendations after patiently explaining their rationale
- Intervening directly in cases of extreme need and attempting a follow up at a later date

On-Farm Demonstrations

On-farm demonstrations are effective means of reducing the risks farmers perceive. They are designed to take new innovations out of the "unreal," scientific realm of the research station and place them firmly within the bounds of a farmer's everyday experience. They are used first to display the results of adopting a new practice and then to give the farmer an opportunity to practice new methods. Both types of demonstrations serve to make clear to a farmer exactly what is entailed in opting for a new farming innovation.

Chapter 1 describes the cyclical agricultural extension. Result demonstrations are the link in that chain at which the active promotion of innovations in farming practices begins. Practically speaking, result demonstrations are side-by-side comparisons of new and traditional techniques. They are conducted in a farmer's own fields or barns to show that experimental results can be reproduced locally. Even though crop farming examples will be used throughout this section, result demonstrations can be very creatively employed by livestock extension agents as well. (See Chapter 3 under "Testing Recommendations.")

On the surface, a result demo might seem fairly straightforward, but there are actually a number of factors that can serve to reduce their effectiveness. First, the demonstration must produce results that are visible and significant enough to convince farmers to try the new practice themselves. If the practice is, for instance, not fully tested beforehand under local conditions, the demonstration runs a high risk of failure.

Second, the innovation has to satisfy the farmer's own criteria in terms of the other risks associated with it. That is, it must promise an immediate return, fall within the farmer's financial means, and suit prevailing cultural patterns, to name just three.

Third, the demonstration should not be run by an extension agent. Farmers will be more impressed by results obtained by their peers than by supposed agricultural experts. Fourth, the farmer on whose land a result demonstration is conducted cannot be extremely wealthy or progressive; nor should the plots receive an undue amount of attention and care. The idea of the demonstration is to show a group of farmers what results can be obtained by a normal farmer under normal conditions. Hence, the choice of demonstration farmer needs to be made with care, the site should be typical of surrounding lands, and the crop itself must be managed at a realistic level. Any other arrangement will undermine the demonstration's effectiveness.

In setting up a result demo with a cooperating farmer, it is important to establish who is responsible for the labor involved in maintaining plots and who will provide necessary inputs. In order to make the demo credible, the farmer must do most of the actual work. Inputs are a stickier problem. Ideally, the demonstration farmer will provide his or her own inputs. Realistically, there may be some instances where the extension service might need to donate inputs as a courtesy for a farmer's cooperation. Two questions need to be considered: Will a gift of inputs have a negative effect on the agent-farmer relationship? How will other farmers perceive such a gift? Whatever the choice, arrangements must be made explicit at the outset.

The next set of practical considerations in setting up a demonstration focus on the plot: its location, its layout, and its size. A conspicuous or readily noticeable site is crucial in attracting maximum attention. Locations near roads, or footpaths, or on the immediate outskirts of a village are ideal. Visibility is the key factor in plot layout. When viewing from the most prominent vantage point, from a road, for example, the traditional and improved plots should be side by side rather than front and back. Signs can be erected to attract further attention and provide explanations of the demonstration. (Note that signs need to meet the visual literacy levels of a majority of the farmers observing the demonstration).

The size of the plot may be influenced by several factors: the labor constraints of the demo farmer and the amount of land he or she has available; the size of the group who will eventually observe the formal presentation of results; the type of crop; and the overall impression the demonstration is intended to create. In general, the plot should be large

enough to be impressive without being too large to take in both parts of the demonstration with a single glance. Rough estimates suggest that 100–200 square meters would be enough for an effective demo of field crops, with less area required for demonstrations with vegetables.

Throughout the planting and maintenance operations connected with the demo, the farmer needs to be thoroughly familiarized with the what, why, when, and how of what is going on. In particular, the extension agent should check that needed inputs are prepared and applied on time. The entire process needs to be documented accurately so that results can be adequately explained when the demonstration is completed. Rainfall figures for the duration of the demonstration crop's growing cycle, for example, are of crucial significance.

If the demonstration farmer has been adequately trained during the course of the growing season, he or she can play a central role in the use of the demo as a promotional tool by providing testimony to a particular method's effectiveness. There may be opportunities early in the demonstration garden's growth cycle to show preliminary results to neighbors. Pointing out differences in plant size and color at various stages serve to heighten interest in a demo as it progresses toward completion.

The main presentation of results should, however, be conducted at harvest time. The farmer should be prepared to help the extension agent through four steps: an explanation of the new practice focusing on amount of labor required, materials needed, and changes from traditional methods; a conservative estimate of costs and returns; a question and answer period; and an offer of follow-up visits to other farmers interested in adopting the new practice themselves.

This follow up often takes the form of a second type of demonstration, the method demonstration, which allows farmers to learn by doing. The extension agent physically demonstrates a practice—how to determine a goat's age, for instance, by checking its teeth—and asks the farmer to try the same practice. The agent watches and corrects the farmer until he or she can do the practice properly, and then moves on to the next step of the demonstration.

Only one topic is covered at a time in a method demo. Checking a goat's teeth is one aspect of the topic: "Determining what livestock to buy at an auction." Goat buying and goat breeding are different topics. Each method demo is timed to coincide with the operations that farmers are involved with in their individual farming cycles. Planting demonstrations are conducted a week or two before most farmers begin planting; and weeding demonstrations are conducted just before the optimum time in a plant's growth cycle to do a complete weeding operation. In this way, a series of method demonstrations serve to span an entire growing season and keep the extension agent in close contact with his or her clients.

Being successful in conducting a method demo requires close attention to detail. The site and time of demonstration should be selected on the basis of audience comfort. Shade, heat, and sight lines are three important considerations. Materials for the demonstration should be locally available and arranged conveniently for use in the demonstration. The best way to make sure that nothing will be forgotten is to prepare a written plan. This may include the step by step sequence of the demo itself, as well as lists of materials needed and major points to be covered. Once the plan is written, the extension agent needs to rehearse the presentation in its entirety. Only by actually walking through a demonstration can the agent be sure that nothing has been left out.

When actually conducting the presentation, it is important to encourage as much farmer participation as possible. Points at which farmers can be directly involved should be indicated in the written plan (see Box 4-1). Other means of accommodating farmer learning styles are to continue to relate new material being presented to a farmer's previous experience and to carefully choose vocabulary with which the farmer is already familiar. Some technical terms may prove very difficult to translate without considerable thought beforehand. A good way to check to make sure that the audience is following a presentation is to pose questions to farmers at regular intervals. The demonstrator can also repeat steps where necessary. Finally, it is important for either the extension agent or one of the farmers to summarize the main points of a presentation at its conclusion.

Box 4-1: Written Plan for a Method Demonstration

Section of Plan	Content
Demonstration title	Garlic Onions are Easy to Grow for Food and Profit
Why is this demonstration important to your audience?	• Garlic onions grow easily. • Garlic onions provide a good food addition for the home. • There is an available market for a good crop of garlic onions.
Materials needed for this demonstration	• Planting plot • Hoe • Hand rake • Stick (1 foot long) • Stick (4 inches long) • String • Pegs • One oil tin of well-rotted farmyard manure • Garlic onion bulbs

Section of Plan	Content
Visual aids and handouts	• Pamphlet on "Planting Garlic Onions" • Sample onion bulbs
Step by step activities	1. Mark out the first row. 2. Measure second row 1 foot from the first row. 3. Additional rows are laid out at the same spacing. 4. Make the planting furrows 1 inch deep. 5. Place farmyard manure in furrows to the level of the ground. 6. Mix the manure into the furrow soil. 7. Mark the planting spaces along the furrow. 8. Plant the bulbs at 4-inch spaces apart in the furrows with the bulb pointing upward.
Summary of points made during the demonstrations	• Garlic onions can be planted during long and short rain periods. • The planting space is 4 inches between plants in the row, and the rows are 1 foot apart. • Furrows are dug and filled with well-rotted manure to the level of the ground. • The manure is mixed in the furrows with the soil. • A single bulb is placed at each 4-inch space in the furrow. • The point of the bulb is pointed upward. • The soil is firmed around the bulb for fast germination.
Plans for follow up	• Visit the farmers who have indicated an interest in planting onions and assist them as necessary. • Visit again before harvest time and assist with marketing the crop.

Following are useful guidelines for planning and conducting an effective result demonstration:

- Choose an appropriate (minimal risk) innovation.
- Choose a cooperative farmer whose management techniques will be imitated by his or her peers.

- Agree with the farmer on who is responsible for labor and inputs.
- Choose a conspicuous location.
- Lay out the demo plots for maximum visibility. (Use signs to attract attention.)
- Choose a suitable size for the demonstration plots.
- Work closely with the cooperating farmer on managing the demonstration.
- Keep accurate records (including rainfall) of factors that might influence the outcome of a demonstration to accurately interpret results.
- Show preliminary results of the demonstration to other farmers periodically to help build interest in the demonstration's outcome.
- Time the final presentation of results to coincide with the harvest.

Include in the final presentation the following steps:

- An explanation of the new practice(s)
- A conservative estimate of costs and returns
- An opportunity for the audience to raise questions about the demo
- An offer of follow-up visits to farmers interested in adopting the new practice themselves

The following are useful guidelines for planning and conducting an effective method demonstration:

- Plan to demonstrate only one topic at a time.
- Time demonstrations to correspond with farming operations being carried out in the field.
- Sequence method demos to span the entire farming cycle.
- Consider ways to make audience members comfortable as they view the demonstration.
- Prepare a written plan for the demonstration, including:
  - A step-by-step sequence of what will happen in the demonstration
  - A list of materials needed
  - A summary of major points covered in the demo
- Incorporate participation of farmers into the demonstration whenever possible.
- Choose analogies and vocabulary that will help the farmer tie the new information to things he or she has already experienced.
- Check periodically throughout a demonstration to make sure audience members are following the presentation by posing questions to them.

- Repeat steps where necessary.
- Make sure major points of the demonstration are summarized.
- Arrange for follow-up visits to farmers interested in trying the new method.

Use the following checklist to evaluate your own demonstration.

Tool 4-1: A Checklist for All Types of Demonstrations

Question	Yes/No
The subject:	
1. Is the farmer ready to use the improved practice to be demonstrated?	
2. Does he/she need the skill or practice?	
3. Can he/she afford it?	
4. Have you selected a title that appeals to him or her?	
5. Have you planned to teach only one thing at a time?	
6. Have you collected all available information on the subject?	
7. Have you decided which language or vernacular you will use?	
8. Are you certain the practice or skill to be taught is not too difficult for him or her to learn?	
Plans made for the period before the meeting:	
1. Have you arranged the time and date for your meeting?	
2. Have you arranged for the demonstration site?	
3. Will each farmer who attends your demonstration be able to see your actions?	
4. Have you assembled all of the materials you will need?	
5. Are you planning your demonstrations to relate to the farmers' experiences?	
6. Have you practiced your demonstration until you can do it to perfection?	
7. Have you developed your demonstration using a standard plan?	
8. Did you write down each step?	
9. Have you listed all of the key points?	
10. Are your instructions written in a simple, understandable manner?	
11. Were signs and/or posters used to direct the farmers to your demonstration?	
Plans made for the period during the meeting. (Plan before the meeting, check results after the meeting):	
1. Did you present your demonstration with enthusiasm?	
2. Did you act yourself?	
3. Did you talk to your audience?	
4. Was your demonstration explained to the farmers, step by step?	

Question	Yes/No
5. Are you certain you were understood?	
6. Did you allow time for questions from the audience?	
7. Did you repeat steps when necessary?	
8. Did you assist slower participants when they fell behind?	
9. Were faster participants used to assist you?	
10. Were the important steps summarized at the conclusion of your demonstrations?	
11. Were final questions encouraged?	
12. Was reference material handed out at the conclusion of your demonstration?	
13. Were the farmers told where to get additional advice?	
14. Was there a list made of attending farmers?	
15. Was your meeting held without conflicts with other meetings?	
16. Were photographs taken of activities at the meeting?	
17. Were records kept of the meeting for future use?	
18. Were credit and recognition given to local farmers who contributed to your demonstration?	
Plans made for the period following the meeting:	
1. When the farmers left the meeting, did they know what to do on their own farm?	
2. Were plans made for the next meeting?	
3. Were they told what material, if any, would be needed for the next meeting?	
4. Were they told to be thinking of the problems involved for the subject of the next meeting?	
5. Was any publicity given to your meeting by the press or through the use of a news release or radio message?	
• Press	
• News release	
• Radio	
Plans made for follow up:	
1. Have the farmers changed over to use of the new practice that you demonstrated?	
2. Will you provide additional assistance if requested?	
3. Have the farmers called on you for further assistance in using your new practice?	

Field Days

Field days are special events. A series of demonstration skits, speeches, and other activities focused on a central theme are strung out over the course of a day to promote new practices and bring recognition to successful farmers and agricultural workers in a particular area. The prevailing mood is festive and the atmosphere is not unlike that of a country fair. The point of such a day is to call attention to new and exciting developments in agriculture.

This is done by inviting special guests, cooking a big meal, preparing a day's worth of interesting presentations to watch and take part in, and bringing in perhaps some musicians for everyone's enjoyment. It is not expected that farmers leave a field day having learned a great deal of specific information. The meal and the other special features tend to work against that possibility. It is hoped instead that farmers leave with new interests and new concepts of what is possible after seeing what their neighbors have been able to accomplish in their work.

Field days can be used in several different contexts. On a purely local level, a field day can be staged through the collective efforts of a group of agricultural workers and a handful of farmers for other people in town. In this case, it serves as a glorified result demonstration. Its chief function is to generate interest within the community, but it can also work to raise the status of agricultural workers and innovative farmers in the area.

A second use of a field day moves beyond a single village to neighboring villages. Invitations are sent to a group of farmers in an area that the extension agent feels would be well-suited for an expansion of his or her extension efforts. In this case, the secondary benefit goes to the entire host community, which is viewed by its neighbors as being industrious and in possession of special levels of agricultural expertise.

The third situation appropriate for a field day involves the Ministry of Agriculture and other government officials and celebrities from out of town. The intent in staging a field day for these people can be twofold. First, it is a chance for the agricultural workers in town to gain much needed recognition from their superiors. Second, it may be an opportunity for a town to lobby officials for additional services. In the latter case, a serious commitment to agriculture is demonstrated during the course of the day, and a well-articulated request for special attention brings the day to a close.

In all three of these cases, it is in the best interests of field day planners to create favorable impressions for their guests. Audience comfort and enjoyment and effective presentations are of utmost importance. The initial consideration is the selection of an appropriate and timely theme to suit the target audience, e.g., improvements in management practices for traditional (locally-and perennially-grown) crops. The next concern is to come up with a list and sequence of demonstrations, booths, activities, and other events and features devoted to

the theme. This is followed by logistics, e.g., routing of guests through the course of the day, meals and refreshments, entertainment, and cleanup. A decision has to be made, for instance, to route guests through demonstrations in a single large group, in several smaller groups, or individually. This will depend on the expected turnout and how many people are involved in organizing the day. For all of the different tasks, responsibilities need to be clearly designated.

Highly orchestrated events such as these are especially prone to unforeseen problems. Contingency plans should be made for late arrivals, rain, or slow moving groups. In general, field days tend to move more slowly than they are meant to. That being the case, it is often useful to choose someone to monitor the overall progress of the day. This person can then be responsible for setting any contingency plans in motion, when necessary.

The work involved in hosting a field day can be divided into stages. There are initial meetings when decisions are made concerning field day topics, guests, and the division of responsibilities among planners. These are followed by a period of early preparation during which presentations are rehearsed, invitations are sent out, and meetings are held about routing of guests. Last-minute preparations will include coking, assembling materials for demonstrations, and clearing brush from paths where guests will walk. Finally, when the field day itself is held: someone greets the guests, demonstrations are given, a big meal is eaten, and someone thanks the guests for coming and sends them home while a clean-up crew goes to work. Follow-up contacts are then initiated and continued over the course of the next few weeks or months.

In everything that happens, the thrust of the day is enjoyment and excitement. To keep the appropriate tempo, then, individual presentations should not exceed 30 minutes and the entire sequence of activities before the day-ending feast should be completed in less than three hours. Note that sufficient time is necessary at both the beginning and end of the day for guests to travel to and from their homes. This often means that special accommodations—water, shade, chairs—will be necessary to deal with extremes in weather patterns.

Figure 4-2: Sample Field Day Schedule

Time	Event
9:00-10:00a.m.	Guests arrive from nearby villages
10:00	Welcome by master of ceremonies
10:30	Guided tours of demonstrations: Guests escorted in three groups around the village to observe the first of three sets of demonstrations: 1. Threshing and milling of grains 2. Drying of grains, vegetables, and fruits 3. Storage of grains, vegetables, and fruits

Time	Event
11:15	All three groups meet for refreshments under the large cotton tree
11:45	Groups observe their second set of demonstrations
12:30	Groups observe their third set of demonstrations
1:30	A meal served under the large cotton tree
2:30	Closing remarks by the master of ceremonies

Following is a sample list of responsibilities to be covered by field day planners:

- Mail invitations
- Clear paths and standing/sitting area around demonstration sites
- Set up and move benches and chairs
- Act as master or mistress of ceremonies
- Act as guides
- Act as demonstrators
- Serve refreshments and water
- Troubleshoot
- Provide entertainment
- Prepare meals
- Clean
- Follow up with participants

Following are considerations in preparing a route for guests:

- Clear obstacles such as roots, stumps, and rocks and cut back over-hanging branches
- Cut the trail wide enough for two people to walk side by side
- Clear an area around each demonstration larger than that which would fit the expected tour groups comfortably
- Avoid trails that double back on each other in an "5" pattern to ensure that demonstrations do not compete with each other for farmers' attention
- Avoid steep and tiring trails
- Build sturdy bridges over streams or marshy areas
- Avoid areas that do not drain well

Mass Media

The following vehicles of information, normally included under the heading of "mass media," can be used by extension agents:

- Role-plays and skits for large audiences
- Posters for widespread distribution
- Culturally appropriate signs in a few strategic locations
- Use of periodicals in discussion groups
- Agricultural fairs
- Radio serials
- Newsletters

Usually, PCVs involved in mass communication efforts adapt other training methods to use with a larger audience. Role-plays and dramas are shifted from verandas and village clearings to stages where 100 or more people can view them simultaneously. Poster designs originally intended only for local use can prove successful enough at calling attention to some new aspect of agriculture to warrant mass production and distribution through ministry channels over a much wider area.

Media for extension work can include periodicals, agricultural fairs, and radio. Periodicals can be used as discussion starters in farmer meetings where at least a portion of those present are literate. Agricultural fairs are conducted in many developing countries to encourage agricultural development. Volunteers can make use of these fairs by encouraging some of the farmers in certain areas to compete for prizes in farm produce competitions. Such prizes can be a valuable form of reward and recognition for a farmer's achievements. Radio provides the most exciting opportunity of any of the standard mass communication devices. This medium can be put to use as a simple information vehicle—to relay announcements of upcoming farmer meetings in an area, for example. It can also be employed in more creative ways. PCVs with experience in radio broadcasting and production may be able to work within ministry channels to produce simple yet highly effective advertisements for new techniques. Serialized skits, songs, and humorous stories are very popular in countries where national radio stations receive widespread attention.

Figure 4-3: A Serialized Radio Dialogue Promoting New Agricultural Practices[5]

Tape 1 (January 15 - February 15). *Popular song is heard, 10 seconds. Music fades.*

- "Juan, aren't you going to the fields today to clear a new patch of ground for planting this year?"
- "No, Felipe. I won't need to clear away brush this year. Since I started applying cow dung and grain husks to my garden, I haven't had to move to a new location every time the rains come."
- "You mean cow dung and grain husks can help your garden?"
- "Yes, you mix it in the soil as you plant and the ground yields better harvests."
- "Dios mio, Juan! I don't know where you get these ideas!"
- Music comes up as radio announcer intones: "Contact your Ministry of Agriculture extension agent today."

Music up full. (60 sec.)

Tape 2 (February 15 - March 15). *Popular song is heard, 10 seconds. Music fades.*

- "Juan, aren't you going to the fields today to set traps for the rodents eating our garden?"
- "No, Felipe. Last year I built a fence around my garden and it is keeping the animals away very effectively."
- "You mean the fence you built is strong enough to keep all the rodents away?"
- "Yes, I used wire to build the fence and rodents cannot get through it"
- "Dios mio, Juan! I don't know where you get these ideas!"
- Music comes up as radio announcer intones: "Contact your Ministry of Agriculture extension agent today."

Music up full. (60 sec.)

Tape 5 (May 1 - May 30)

- "Juan, aren't you going to the market today to sell your vegetables?"
- "No, Felipe. I dried many of my vegetables this year in the sun and am keeping them for my own use rather than selling them."
- "You mean drying vegetables in the sun can keep them from spoiling quickly?"
- "Yes, by cutting them thin and drying them on racks I can keep them for up to three months."
- "Dios mio, Juan! I don't know where you get these ideas!"
- Music comes up as radio announcer intones: "Contact your Ministry of Agriculture extension agent today."

Music up full. (60 sec.)

5 Suggestions: Keep the dialogue format simple; do not alter it until the advertisement has caught on. Use the same actors' voices throughout the serial. Use the same piece of music throughout as a theme song.

Ch 5: Organizing Cooperative Activity

Extension work can help farmers participate more competently in the process of change in various ways. By providing indirect service, PCVs help farmers link directly to supportive resources. Through farmer training, farmers learn new skills, knowledge, and practices in order to increase their agricultural options.

Organizing cooperative activity, on the other hand, can help farmers on a different level:

- Cooperation is a form of capital that farmers do not normally have alone, with which they can address bigger or more complex problems and gain access to a wider range of supportive services.
- Cooperative activity (especially formalized cooperation) institutionalizes changes (new skills and access to new resources) in the form of work companies, pre-cooperatives, cooperatives, etc.
- Cooperative activity concentrates and focuses the most readily available and useful resource each small farmer has—personal skills. Cooperation transforms the personal resources of each person into powerful tools for change and growth. The process of cooperating can also transform the people themselves. Because extension workers wish to help small-scale farmers solve practical problems and grow as people, organizing cooperative activity is a most important skill and must be done with great respect for local institutions, customs, and cultural norms.
- Cooperative activities can affect the local balance of influence and authority. The decision to organize should be made by local people themselves for their own purposes. Small-scale farmers can find themselves exerting newfound influence on local events when engaged in organized cooperation. As the most numerous producers in the agrarian economics of developing countries, small-scale farmers need to participate actively in local agricultural development and change. It must be done sensitively, however.

Institutionalizing change is a very slow process. Appropriate levels of cooperation are planned for various stages of development. At all times, PCVs strive to organize farmers in order to develop collective problem-solving ability, a long-term goal.

There is a wide range of cooperative activity which farmers share. They vary from informal endeavors between family members or friends to formal institutions involving many farmers. A list of the common kinds of informal and formal cooperation among small-scale farmers includes:

Informal

- Sharing a shovel
- Working together on each other's farms
- Sharing water rights

- Joining a seasonal work company
- Renting a truck together to market a crop
- Renting and stocking a storage building

Formal

- Joining a dues-collecting farmers' cooperative

When PCVs organize cooperative activities, they must understand and guide this process. PCVs can tell the difference between a collection of individuals, a group, and an organization. Each has a specific purpose, requires a unique level of cooperation among farmers, and calls upon a special skill on the part of the organizer. Managing group dynamics is an important part of organizing cooperative activities.

Organizing must be distinguished from both "facilitating" (providing indirect service) and management (planning, carrying out, and evaluating work). Facilitating is linking farmers and resources directly to solve problems. Organizing, on the other hand, has two purposes, creating capital and institutionalizing change. The avowed goal is to create something which lasts. What farmers do with it is up to them.

Bringing farmers together, a PCV must employ several of the skills underlined below: In order to understand the collection of individuals who seek to cooperate, the PCV must assess "self-interests" and local problems. When these interests and problems are analyzed, leaders and the PCV can define unifying or common issues, to act upon cooperatively. The issues must then be transformed into cooperative tasks, which farmers agree to do together. Once it becomes clear what needs to be done, the PCV helps farmers define roles and agree on responsibilities so each task will be done.

In order to discuss these issues and decide how to act, the PCV develops skill in planning and carrying out meetings and managing group dynamics. So that local people learn organizing skills, an effort is made to train leaders throughout. If the opportunity presents itself, a PCV may help farmers form associations or co-operatives, the ultimate goal of organizing.

In order to initiate cooperative activity that is not dependent on the organizers, the PCV's role must be clearly defined and strictly limited. Organizing is a very strict and disciplined form of helping. The PCV must never make a decision for participating farmers and insistently return the responsibility for each task to the farmers themselves. As an organizer, the PCV can only consult or assist farmers.

Limiting and defining the helping role like this is never easy, especially because this stance contradicts the persistent expectation that PCVs perform direct services. Organizing is said to follow after direct and indirect service and farmer training for this very reason. The time must

be right. Farmers must have the skills and interest to be self-reliant. The PCV and his or her farmer friends must work long and hard to change the expectations which colonial extension activity has created. Organizing for the future can then begin.

Volunteers who have laid this groundwork for successful organizing can seriously address the issue of working themselves out of a job during the second year of their tour of service. Upon arriving in a village, a PCV represents a new village resource or capital, which can be institutionalized by focusing existing farmer resources through organizing. The beneficial innovations accepted by farmers in a village can also be institutionalized by organizing cooperative activity.

Organizing cooperative activity can lead to greater farmer access to support services. Beneficial change can be institutionalized and two-way communication between researchers and farmers can be greatly improved. Organizing is, therefore, an extremely valuable extension skill.

Assessing Self-Interest and Problems

Whether an extension agent is working with a particular existing group or has been asked to help a group organize itself, or has identified the need for a group in a community in order to accomplish a certain goal, the first step in each case must be an assessment of people's interests and problems. This assessment identifies the motivations for cooperative activity. In the case of a simple form of cooperation like sharing a tool, the assessment effort is limited to a quick check to make certain the tool is available, the people involved are agreeable, and a way of sharing can be agreed upon readily.

However, as the type of cooperative activity becomes more ambitious, there is an increased need to study the unique interests of potential participants. Each farmer has a particular set of interests which motivates him or her to act. People cooperate for a variety of reasons but, generally speaking, everyone participates in those activities from which they derive some benefit. This is a definition of self-interest. Therefore, cooperative activity must meet the needs of those who participate in order to succeed.

Just as important, however, is an assessment of the problems facing the community. Problems often lend themselves more easily to one type of solution than another. For example, when heavy rains threaten the tiny rice seed beds that 30 farmers individually have made on their own farms, the best solution to the problem is to ask each farmer to open the dikes of his or her rice field that lead to the drainage canal, or, if it is a real emergency, to rush around and do it oneself.

On the other hand, if a small common milking parlor is to be built for a village goat project, it makes sense to organize the livestock farmers to mix and pour the cement floor, build the

walls, and raise the tin roof together. In the second instance, the scope of the problem is greater than any one farmer's resources, and the benefit of the effort is to be shared among the farmers involved. Studying the nature of community problems, the PCV can determine whether the effort involved in organizing cooperative activity is worthwhile, and whether cooperative effort is the best means of achieving a solution to the problem.

In order for cooperative activity to work at all, it must be both concretely linked to participants' interests and clearly the most practical way to solve a pressing problem. Otherwise, the barriers to cooperation—mistrust, rivalry, and competing interests—overwhelm the best of efforts. Cooperation, as inspiring and powerful as it is, relies entirely on the motivation of each individual participant. Without focused, committed personal motivation, cooperative efforts fail.

As part of this initial assessment, it is important to pay particular attention to hierarchical structures and interest groups already functioning within a community, for several reasons. There may already be a group addressing the problem the PCV and people have identified. Perhaps energy should go to enhancing this effort before embarking upon a new one. Secondly, without a stamp of approval from interest groups and leaders, a new cooperative activity cannot progress very smoothly and probably will not outlast the PCV's presence in the community.

Knowing the other cooperative activities going on in a community, the PCV can estimate the amount of competition there will be for participants' time. Also, existing groups are the building blocks for cooperation now and for more sophisticated forms of cooperation in the future. Often the easiest way to solve a problem is to follow the local pattern of activity.

Almost every group at work in a community will have leaders. As the PCV is observing groups as they work, he or she should discern who leads them and how that leadership works. This yields clues as to how to organize the leadership of a new cooperative activity, and identifies potential leaders who might be able to participate in the new work.

Finally, it is important to remember that things change. People's interests, the membership, existence, and even the leadership of groups are dynamic and open to change. Initial assessments must be constantly updated to gauge these shifts.

Box 5-1: Field Notebook Entries Made while Assessing the People's Interests and Problems in a Community Contemplating a Cooperative Peanut Marketing Venture

JUNE 16: Met with Village Headwoman Kim. She sees the village's most pressing problem to be distance to the regional market town. Transportation is inadequate. She is a commercial peanut producer and operates a small dry goods store.

JUNE 17: Mohammed, master farmer, is also concerned about remoteness. He has no other livelihood aside from farming. He would grow more market vegetables if he knew he could market them. He is proud of his tature and skill and supports a large extended family.

Traveled the main road to the market road. They were rough miles but little traffic. The market town is connected to the highway and thrives. Good peanut and vegetable prices.

JUNE 18: Talked with Lin, village truck driver/owner. He also grows peanuts. He has stopped taking his own peanuts to market—petrol too expensive for it to be worthwhile. He'd love to be back on the road, though.

Ran into three other farmers in their peanut fields. Looks like a good harvest. One mentioned how a group of village people occasionally pool money for supplies from the market town.

Existing groups in a community may include:

- Village elders
- Elected local authorities
- A hierarchy among women (or men), an agricultural decision-making group, male and female societies or clubs, informal work groups
- Religious organizations; educational organizations; thrift, credit, or savings societies; parent-teacher associations; self-help associations
- Farmers associations, health committees, youth groups, marketing cooperatives

A partial list of problems that lend themselves to cooperative solutions:

- Marketing agricultural products
- Transporting agricultural products or inputs
- Grain storage
- Irrigation, wells (water systems)
- Farm land development
- Building construction
- Other public works projects (bridges, dams, etc.)
- Wholesale inputs procurement

Defining Issues and Tasks

As a result of assessing the problems and personal interests of members of the community, the PCV begins to discern the more pertinent themes dominating the situation. He or she begins to see how these concerns overlap or fit together and how the various views of a community problem shed light on those things that a group may be able to address. The extension worker analyzes personal interests to see if there are any common concerns.

These issues are really the meeting point between a big problem and personal interests. For example, a grain farmer has a strong sense of responsibility for, and pride in, maintaining and storing clean, serviceable tools. The farmer's village is wondering whether to build a community storage building for tools and seed grains. The store can become a strongly-supported issue to the farmer, because a community problem and several personal interests are addressed by the store.

Once motivating issues are identified, they must be transformed into action plans. An action plan is a series of tasks that a cooperating group defines with the help of the extension agent. The tasks are the steps in a practical problem-solving strategy. Large problems, like "inflation" or "lack of income," are often overwhelming in scope and size. Their very scale paralyzes people and reinforces fatalism and powerlessness. When large problems are broken down into motivating issues and even further into concrete tasks, however, they become manageable.

The PCV helps farmers or community people spell out tasks that are:

- Immediate—something which can be addressed right now
- Specific—something you can almost literally put a finger on
- Realizable—within the capacity of a normal person to do
- Unifying—something that brings people together

The manner in which the extension agent facilitates this process appears fairly informal. However, when organizing, the PCV tries to make every conversation count. Each encounter with community people is an opportunity to bring an issue and tasks to light. While working to make conservations into a forum in which problems are reduced to more manageable issues, the PCV must seek opportunities to bring people together to share their emerging common concerns. "Did you know that Mrs. Smart feels the same way you do?" and "Have you checked with anyone else on your street?" are questions the organizer asks at this point. In Chapter 4 there is an illustration of the process of directed questioning by which a PCV can help a farmer reach a conclusion by following the logic of a series of questions. That technique can be applied here with good effect.

As issues are being clarified and communicated to various people in a community, some specific tasks emerge and exert their influence on people. A cooperative activity is waiting to be born. When people feel a need to meet to verify the issues, it is time to set up an action plan like the following and to assign tasks to be completed.

Figure 5-3: Sample Action Plan for Cooperative Activity

Plan Sections	Content
Problem	Hungry-season rice shortage
Perceptions	• Kadi says she has two bushels of rice left but she knows it will run out before the harvest, and she has 12 people to cook for each day. • Momodu worries because he is trying to complete his new house before the rains come again. • HP must find enough rice to feed work crews or he won't finish on time. • Samba knows that her rice will be ready to harvest in two months. She doesn't know what will happen. If she eats all her rice, she won't have seed for next planting or enough money to pay her son's school fees. • Ishmael is the village chief. He knows that if the hungry season shortages are bad, he cannot expect repayment of seed rice and money loans he extended to farmers last season. He also will be affected.
Possible Issues	• The need for higher yields or double-cropping (shorter duration varieties) • The need for better storage facilities
Large Tasks	• Exact calculation of current yields and varieties • Troubleshooting yield-limiting factors • Soil test • Identification of locally-tested, higher-yield variety • Meeting to present findings and decide what to do • Cooperative procurement of seed and management practices • Method/result demo for all farmers on head farmer's field • Use of seed on farms • Cooperative seed procurement
Small Tasks	• Agree on variety and time frame • Collect pledges (price of seed) from farmers • Verify collection at meeting • Arrange transport for seed and buyer • Make appointment with seed seller • Procure seed and return • Distribute seed at meeting • Rest and recuperate

Following are guidelines for focusing a conversation on issues and tasks while organizing a cooperative activity:

- Concentrate on asking open-ended questions about the general problem you and the farmer are concerned about.
- Help the farmer see that the problem is common to other community members. Try to explore with him or her the extent to which the problem, especially a specific issue the farmer feels is important, is shared by others.
- Focus on what this particular farmer thinks should be done and especially on what he or she would be willing to do to help.
- Test the farmer's interest in pursuing the issue by ending the conversation by asking for some form of commitment pertaining to the issue at hand. ("Can I see you tomorrow again about this?""Would you see if we could chat with your neighbor about this tomorrow?")
- When the time is right, enlist the farmer's support in contributing to the contemplated cooperative activity.

Clarifying Roles and Responsibility

As group activities come together, their complexity usually comes into focus gradually. The previous action plan presents one level of tasks not specific enough, so they are broken down again into even more concrete, feasible steps. As this long list of details unravels, the question of organization and keeping track of things comes to mind. How does a group make certain that a long list of tasks contributing to a larger cooperative activity is completed?

Essentially this is a matter of planning. However, it is a special kind of group planning in which a variety of people are asked to carry out a number of different tasks. First of all, the list of tasks to be accomplished must be as specific, detailed, and complete as possible. Participants have to agree that this list is exactly what they wish to do. The method by which each task is accomplished must also be clear.

Having finalized the list, the organizer begins a process of contracting, similar to that described in Chapter 3 under "Working With Counterparts." To apply it to a group situation, the organizer begins by helping the participants clarify the purpose of their cooperation and the overall goal of their work. Then the participants might share expectations of their roles, what is to happen, and how things are to be done. In a follow-up discussion, carefully monitored by the organizer/PCV or a trained counterpart, various expectations are merged and adjusted to fit together into a rough work plan. The work plan is finalized through negotiation of the specific points in the work plan—what is to be done, by whom, and how and when. At this point people should match their skills and interests with the respective tasks. The organizer asks participants to review these details and agree on them and the overall plan of work.

Finally, the organizer asks each person involved to commit himself or herself to a specific role and set of responsibilities within the cooperative activity. A time is set to meet to do the work and another time is agreed upon to evaluate the results of the work.

The formula for this process is fairly simple, but the effort involved in group decision-making of this kind, especially among those new to this way of working, is enormous. It requires great patience and many hours of preparation. Participants must be ready to do this, and issues/tasks must be clear enough beforehand for this contract to evolve smoothly.

This rigorous process of role and responsibility clarification is important because unfamiliar forms of cooperation are often mistrusted until proven profitable to participants. Even in villages where family and communal cooperation is a norm, it is hard for individuals to perceive the value (for them) of other common efforts. Traditional cooperation has proven its usefulness over generations. If a West African farmer shares his bounty at harvest with his extended family and chief, the odd lean year will not be as problematic, because they will reciprocate. The pattern of contribution and return is well-understood and trustworthy in this instance. But cooperative efforts outside the strict circle of tradition require a special investment effort.

Furthermore, cooperative activities are sometimes poorly organized (especially by impatient or inexperienced outsiders). These result in disappointments, which reinforce suspicions about common efforts. By rigorously planning the manner in which participants play their parts, the organizer helps allay these fears and demonstrates the fact that everyone is contributing in an equitable way. The plan becomes a reference point for mediating disputes or clarifying misunderstandings. It also serves the practical purpose of keeping track of who does what, when.

It is here, during the discussion of tasks and roles, that the PCV must learn to say "No." The organizer's task is to organize cooperative activity. Participants do the cooperative tasks. If the organizing has been successful to this point, the PCV's role is to remain in the background, to depart from center stage. The PCV takes total responsibility for assessing the need for cooperative activity. He or she assesses interests and problems, identifies common issues with people, begins to see tentative tasks emerge, and, most importantly, moves people toward one another to decide on tasks, roles, and responsibilities. At this meeting the organizer should be behind the scenes, if his or her organizing efforts have been successful. When farmers look to him or her to solve the problem, the PCV needs to say, "No."

For the most part, this set of agreements is made in discussions with participants. The organizer plays the role of bringing people together and asking the questions that stimulate group decision-making. In rural communities in developing countries, the community meeting is a familiar forum for such discussions. The importance of the spoken word in situations like these is due to the fact that literacy is not often widespread and oratory is a

time-honored skill. Oral contracts, witnessed by others, are often the most legal and binding commitments in village communities. The organizer must learn what the most appropriate form of agreement is in his or her situation, and conform to it. The cultural appropriateness of contracts provides added weight and influence.

Decision-Making Procedures

Many decisions are made in groups before full consideration has been given to the effects these decisions will have on other members. Some people try to impose their decisions on the group, while others want all members to participate or share in the decisions that are made. It is important to reflect on the following questions while decisions are being made:

- Does anyone make a decision and carry it out without checking with other group members (self-authorized)? For example, does anyone decide on the topic to be discussed and immediately begin to talk about it? What effect does this have on others?
- Does the group drift from topic to topic? Who topic-jumps? Do you see any reason for this in the group's interactions?
- Who supports other members' suggestions or decisions? Does this support result in two members deciding the topic or activity for the group? How does this affect others?
- Is there any evidence of a majority pushing a decision through over other members' objections? Do they call for a vote (majority support)?
- Is there any attempt to get all members participating in a decision (consensus)? What effect does this seem to have on the group?
- Does anyone make contributions that receive no response or recognition? What effect does this have on the member?

Meetings

Even after all the footwork detailed in the previous sections, meetings do not just happen. However, the process of assessing interests and problems and defining issues and tasks is the most important part of initiating meetings. Meetings actually are the end result of this long process, even though they often signal the beginning of cooperative activity. This footwork is the organizers' responsibility, while the meeting itself is the forum in which the organizer transfers all responsibility for group cooperation back to the group, through local leaders.

The end result of the preparation process is a series of individual commitments not only to come to a meeting, but to participate in specific ways as well. Each member of a cooperating group has something to offer—some skill and some overriding interest to pursue. This potential energy source is harvested for the group's cooperative needs by means of the commitment the organizer hears from each participant. Having solicited and orchestrated these commitments, along with the issues and tentative tasks to be discussed, the organizer

begins to plan the meeting with local leaders. A "map" of the terrain of the probable discussion is made. A formal map of this kind is called an agenda.

Planning a meeting involves deciding upon the subject matter to be discussed, setting up the logistics of the meeting itself, and clarifying the process by which decisions will be made. The subject matter is dictated by the issues and tentative tasks that have evolved through individual discussion of the overall problem. Priorities can be established by answering questions like: What specific thing is best to accomplish in this meeting? What is possible in the time allowed? What will be presented as the specific purpose of this meeting?

The logistics of a group meeting must be well planned so they contribute to, rather than detract, from the meeting's success. Determining the number of people to come and the type of meeting it is to be, leaders can decide upon the most appropriate site. The time, place, and date must then be set, considering competing interests and local custom. The participants should be asked if the logistics (especially time) suit them, so final adjustments can be made.

The organizer and leaders should make sure there is maximum participation, no one is left out, and items are considered carefully and systematically. An understanding of how groups work and make decisions is crucial to guiding the meeting process. The subchapter "Group Dynamics" explores this in depth. At this stage, leaders try to define steps the group can take that will bring people, through fruitful discussion, to agreement on the tasks and roles they will take on. Leaders leave room in this plan for variations and options the group may exercise, because meetings never go exactly as planned and arbitrarily tight control that is not sensitive to the needs of participants can hinder group efforts considerably. The plan of how things may go is a tentative and fluid guide by which leaders can keep the meeting on track while adjusting to needs as they arise.

An agenda or list of the steps of the meetings and topics to be discussed should be devised and shared with participants, if possible, before the meeting commences. In the case of oral cultural situations, this can be done informally by word of mouth, although written agendas are also common. By sharing the agenda beforehand, each participant is clued in to how he or she fits into the meeting: "Oh, this is where I can say my thing." A shared agenda may also be used as the meeting guide without being an arbitrary source of power. The agenda can be discussed, adjusted, and agreed upon to begin meetings, in order to assure group allegiance.

By sticking to an agreed-upon agenda based on rigorous footwork beforehand, a meeting can progress fairly smoothly. Each meeting takes on its own characteristics and nature, however, and going with the flow of things as they come up (as long as they are not too far off the subject) helps a meeting move toward its conclusion. Leaders function best when they balance the need for orderly progress with an ability to adjust to the way ideas and topics come up spontaneously. Meetings are most successful when they are lively and well-paced.

A meeting should always end with a summary in order to remind participants of concrete results and commitments made. It is important to end a meeting, business-wise, with an agreement as to the time and place of the next meeting. As for the style of meetings beyond these suggestions, local customs should dictate the details.

Westerners find it normal to sit in a circle and act as equals without a real authority figure. In some communities, tradition dictates a clear line of authority and a formal process of discussion involving spokespeople, parliamentary procedure, or other conventions. These various styles must be respectfully employed, tailoring the suggestions made here to fit into any cultural patterns. That kind of sensitivity can itself lend weight to the process of group decision-making and contribute to the overall success of cooperative activity. Following is a useful checklist to review the success of a meeting.

Tool 5-1: Review Checklist for Meetings

Question	Yes/ No
Did the meeting show careful planning?	
Was proper selection made concerning those who attended?	
Did the leader do all necessary preparation in advance of the meeting?	
Were materials and equipment ready?	
Were the seating, ventilation, and lighting properly arranged?	
Did the meeting start on time?	
Was the group at ease?	
Was the problem or objective clearly defined?	
Was the group genuinely interested in the subject?	
Were facts and ideas clearly presented?	
Was the leader skillful in the use of questions?	
Did the leader keep the discussion moving progressively on the subject?	
Did the leader utilize the thinking of everyone in the group?	
Was the discussion clarified and accerated by the effective use of a blackboard or other visual aids?	
Was the leader open-minded?	
Did the leader help the group weigh and analyze points that were made?	
Did the leader get general agreement from the group?	
Was the meeting effectively summarized?	
Were logical decisions reached, actions planned, or the objectives otherwise accomplished?	
Did the meeting close on time?	

The following figure provides useful pointers for leading a meeting.

Figure 5-4: How to Lead the Meeting

1. Open the Meeting
Be at ease.
Tell the story.
Relate to current events.
Use a well-modulated, low voice.
Make introductions.
State overall objectives.
State immediate objectives.
Let the group make every decision possible. • Who will take the minutes? • How long will the meeting last? • What about tea breaks? • Are individual notes necessary? • Are questions permissible? • Are special speakers needed? • Will individual assignments be made? • What form of summary will be given? • Will meeting summaries be mailed to members?
Arouse interest • Develop a friendly attitude toward the group. • Establish a need for their thinking and cooperation. • Associate objectives and the subject with the group's experience. • Point out personal benefits. • Use friendly competition. • Use visuals, etc.
2. Present the Facts
Present the facts clearly. • Clear thinking precedes clear expression. • Present one idea at a time. • Relate ideas. • Use language for a group level.

Stimulate and direct discussion. • How would you do it in your district? • Where would you get the information? • What evidence is there that this is true? • Give us an example of what you mean. • If this is true, what shall we do? • When shall we put it into effect? • Who is most concerned in your district? • How would Mr. X's idea work? • Why is it necessary to do this?
Keeping discussion moving. • Use a chalkboard to spell out the objectives. • Re-state the objectives. • Ask questions. • When the purpose of the meeting is accomplished, bring it to a close.
Encourage thinking by every individual present. • Do not allow one or two persons to dominate the discussion. • Keep a participation chart.
3. Weigh the Facts
Help the group weigh the facts. • Condense ideas into a short statement. • Weigh actions against objectives.
Get group acceptance. • Use a blackboard to list objectives.
Summarize frequently. • "Let's see where we are now." • Use questions to clarify the objectives. • Use questions to steer the group.
4. Summarize
Summarize agreements or conclusions. • The chairman is responsible for "nailing down" conclusions. • Get down in writing the cold facts concluded.

Indicate the action needed. • What is going to be done about it? • Where are we going from here? • Get the group to indicate action needed.
Make follow-up assignments. • Who is to do the work? • Write down the assignments. • Appoint a committee for further study. • Request special reports from individuals. • Write up, distribute, and file minutes. • Report the meeting to the press. • Inform absent members of actions. • Assign responsibility for future meetings.
5. Close on Time
• Think of your audience • If it runs over the time alloted, excuse those who must go. • Unfinished business can be carried on at future meetings. • Do not plan to do more than is possible in the time scheduled.

Group Dynamics

Types of Groups

Groups exist for a variety of reasons and have different methods of pursuing their purposes. Often, several of the functions described below are performed within one group. For example, an educational group may impart information and give practice in skill acquisition. Rarely does a group concern itself with a single function. These functions of groups are:

- Imparting information. A group performing this function emphasizes passing information among group members, or between a resource person and the group.
- Skill acquisition. A group concerned with this function emphasizes the acquiring of abilities. While an information imparting group, as described above, would stress the knowledge of theories or techniques, a skills acquisition group focuses on the practical application of this information. An example of this kind of group is a workshop where participants learn and practice new counseling techniques.
- Actualization. This group focuses on the members themselves. It stresses feelings, awareness, and self-expression. Consciousness-raising groups and groups practicing values clarification are two examples of actualization.

- Setting objectives. The focus of this kind of function is on choice and commitment—on making a decision. The group is choosing among alternatives in order to take a stand, develop a policy, or select a specific direction of action. An example of setting objectives is when a group passes judgment on recommendations of a subcommittee.
- Task performance. A task group is one whose function is to do a job, whether it is a specific job (develop a new curriculum for a new school) or a general job (increase public understanding of pollution). The first three kinds of functions are education; the fourth kind of function (setting objectives) involves characteristics of both educational and task groups.

Dividing lines between these categories are not always sharp. A group's purpose may vary from meeting to meeting, or may involve a combination of the above types. For instance, a committee appointed by a mayor to recommend guidelines for developing youth programs in the city may act initially as an information-imparting group as it studies existing programs. It may resemble an actualization group when members try to identify and understand human needs. It is setting objectives when it selects which needs are most relevant and what programs are most worth supporting. Finally, it is a task group as it prepares a proposal to return to the mayor. As leaders plan for facilitation, it is valuable to keep in mind the functions of the groups they will be working with.

Stages of Group Development

Whatever their goal and term of existence, all work groups move through several predictable stages of development as they grow from being a loose collection of individuals into more cohesive and productive teams. In reality, few groups ever reach the final stage of being completely self-sustaining.

As a PCV, you can help your group(s) move through these stages more gracefully if you are able to recognize the specific stage they are in and offer the appropriate kind of support.

Stage 1: Forming

- Everyone is uncertain about what is going to happen.
- There is no organization and there are no officers.
- Members wonder about who they are, how they will work together, and what their roles will be.
- Establishing common expectations is the main issue.
- Leadership begins to emerge informally.
- Membership is relatively small.
- Some groups disband without ever getting beyond this stage.

This may mean you will need to:

With any group—

- Get to know the members individually—what are their interests, concerns, lifestyles?
- Build a relationship of trust. Help people whenever possible and expect help in return.

With groups needing more assistance—

- Collect information on issues of importance to them.
- Lead initial planning meetings.
- Do intensive follow up after the meetings to make sure tasks are being carried out.
- Build commitment among members by helping them gain recognition.
- Help the group set realistic goals.
- Do everything you can to ensure the group's first steps will succeed.

Stage 2: Start Performing

- The group has agreed upon at least a general purpose and has decided on an initial project.
- Some standard ways of doing things begin to emerge.
- Small successes are achieved; members are optimistic; and no bad experiences have occured.
- Procedures and protocols for getting things done have become more established.
- Formal organization begins to take shape (elect officers, etc.).
- Members begin to take the group seriously and believe in it.
- Commitment is high.
- Members feel that their goal is realistic and they expect success.

You may need to still be directive at this stage, but begin to transfer skills and responsibilities to those in the group.

- Discourage overconfidence by helping the group maintain realistic goals.
- Anticipate problems that may be building beneath the surface and prepare the group for them.
- Encourage the group to expand its membership.
- Help the group improve its skill in getting things done, running meetings, and performing the basic functions of maintenance.
- Reinforce the commitment of the members.

- Avoid taking credit for the group's success—pass recognition along to the group members.
- Pass on information to the group.
- Encourage and help members to take leadership and responsibility even when this takes more time than doing it alone.
- Encourage group members to sign up for and perform routine duties such as making arrangements for the meeting place and so forth. The members should be doing these tasks now, not you.

Stage 3: Storming

- Group experiences first crisis, a serious unexpected obstacle.
- Only two or three members come to an important meeting when many were expected.
- Hidden conflicts within the group emerge or become apparent.
- Members start blaming one another.
- Less commitment and a "wait and see" attitude develop.
- Dropout rate (or threats to drop out) increases.
- Less work is accomplished.

Virtually all groups experience a fall—the idea is not to help group members skip over this phase, but rather to help them survive it, learn and grow from the experience, and move on to the next phase.

- Don't get depressed.
- Help group members and yourself refrain from blaming other individuals in the group.
- Provide a little humor, a little perspective, and a lot of faith and confidence.
- Help the group analyze the reasons for the crisis.
- Train the group in problem solving and conflict resolution.
- Encourage the group to set new goals, if necessary.
- Help the group develop new leadership, if necessary.

Stage 4: Norming

- Recovery from an initial crisis results in stronger organization and clearer objectives.
- Members know each other better and work together more easily.
- Active membership may be small, sometimes less than 10, but is effective.
- Others do not come to meetings regularly but help in other ways.
- Members are very strongly committed to the group's goals.

- Leadership is stable and well developed.

Skills transfer may be easiest at this stage.

- Pass the responsibility for planning on to the group as soon as possible.
- Train group leaders and others.
- Help the group develop and refine the essential processes to carry on. These include:
  - planning and goal setting
  - meeting and celebrating its goals
  - recruitment
  - leadership development
  - group maintenance
  - resource identification and mobilization
  - problem identification and problem solving
  - partnership building/networking (getting outside help and advice)
  - evaluation of the group's work and identification of areas for strengthening

Stage 5: High Performing

- Goals are likely to be achieved.
- Members are exuberant—"on top of the world."
- Group is likely to receive publicity and favorable notice from the rest of the community.
- Local politicians and others who perhaps have been enemies in the past may approach group leaders. Group's leadership may be invited to join the establishment.
- Self-confidence is at an all-time high.

At this stage, you might want to:

- Strengthen and support the group; serve them as a resource.
- Encourage celebration of accomplishments.
- Refuse to take credit for the group's success.
- Help the group decide if it wants to continue and, if so, encourage members to begin looking for new opportunities and setting new goals.
  - External relations and getting outside advice
  - Evaluation

Stage 6: Adjourning or Aligning Stage

- Pace slows down; self-confidence turns into complacency.
- Number of people at meetings drops sharply. Some new members may attend one meeting, but they are not made to feel welcome and rarely come back.

- Commitment drops; members shift energies to their families or jobs, which they may have neglected during the height of the group's activity.
- Leaders become discouraged; some members, including leaders, may wish to retire. They believe they have made their contribution.
- Group's action becomes social rather than issue-oriented.

As necessary, facilitate the group's decision making.

- Explain what is happening and discuss it openly; talk frankly about motivation and help the group make decisions about renewal or disbanding.
- If the group wants to continue, support group members in setting new goals and work plans; help the group broaden its horizons.
- Help the group institutionalize the gains it has made so they are not lost in the slowdown.
- Help the group find new members and rotate its leadership.
- Encourage members to draw on their networks and coalitions for support (e.g., new ideas, training, etc.).

Stage 7: Self-Sustaining Stage

Ultimately the group becomes stable and established in the community. The group is also acknowledged and respected in the community. It is no longer dependent on the Volunteer or other external groups for its survival, but rather has mutually beneficial partnerships with groups and individuals. It has developed effective procedures for carrying out essential functions, including:

- Planning and goal setting
- Accomplishing its goals
- Leadership development and rotation
- Solving problems and handling crises

At this stage:

- Share your admiration for group members' work with the group itself and with others.
- Feel proud for everyone in the group, including yourself.
- Look to this group as an example for others.
- Have members from this group work with you in other groups that may be at a different stage.

Case Study 5-1: Rachel Learns about Group Dynamics in her Village

The island people have been meeting at 2 p.m. the first Wednesday of every month for the few years since it had been organized by Ernie Camphill, the dynamic leader who used to work here. It had been some time since he had the time to work with island folks. Rachel, the new county agent, comes over on the county boat wondering what to expect.

At 1:45, the children begin filing out of the one-room schoolhouse where the meeting is to be held. Slowly some of the island folks drift toward the school. The chairman and the secretary sit in front. County community service workers like Rachel sit in the school chairs facing them. Nothing happens for a while. Finally, the co-op meeting being adjourned, a few more island folks come in. The chairman opens the meeting in his soft voice and the secretary reads the minutes of the last meeting.

After a few moments of silence, the secretary asks if someone from the island would please move to accept the minutes. The majority of those attending the meeting are visitors and are unaware of the meeting process. Finally a motion is made and seconded.

The chairman asks if there is any "old business." A woman asks a question about land taxes, even though neither the old minutes nor present agenda mention taxes. A 10-minute discussion of taxes sidetracks the meeting. Finally, the chairman asks for any new business. After a pause, several of the community service people rise to speak about the purposes of their visit and items of interest to them. Two islanders leave. Of the remaining islanders present, three stand against the wall near a side door. One sits in the front row attentively, but she is on-call with an emergency unit so she looks worried.

An older woman who is president of the island co-op reports that the co-op needs a considerable loan. She asks the island association for help. This prompts a tall, angular island woman to rise from her position leaning against the far wall. She proceeds to speak eloquently and sarcastically about the poor motivation of the co-op and organization members. She asks how the organization can extend a loan when members do not even pay their dues. She pulls out her $5 dues and gives them to the secretary in a dramatic fashion.

The secretary proceeds to call the roll of members dutifully. Several islanders leave before their names are called. Only a handful pays their dues. "See what I mean?" the tall woman declares. The president of the co-op wearily asks the meeting for a clear decision concerning her loan request. After another pause, the secretary reports there is not enough money to loan even if members agreed to do so.

Rachel is confused. She is not even sure what the purpose or function of this meeting is supposed to be. Some participants came to impart information while others came for action. Rachel herself wonders, after seeing the islanders exhibit such alienated behavior,

what the group's feelings are about their group. She notices that participation seems haphazard and limited; there is rivalry in the group; decisions are not made clearly; and membership itself is in question. The group atmosphere seems vague and uncomfortable, and no one seems to be maintaining group cohesion or purpose very well. She wonders how open the chairman and secretary are to some suggestions about how to facilitate their group activities better. Even on an island where everyone is very close to begin with, Rachel realizes that groups do not necessarily work well together. She leaves, resolved to plan a way to help the island group function more effectively.

Group Growth Model

As a group begins its life and at several points during its growth, the leader and members might individually fill out the following scales and then spend some time sharing the data that is collected. Through these scales, it is possible to get a general picture of the perceptions that various members have about the group and how it is growing. It is also possible to pick up areas in which there may be some difficulties that are blocking progress.

Tool 5-2: Group Growth Assessment

1. How clear are the group goals?

1.	2.	3.	4.	5.
No apparent goals	Goal confusion, uncertainty, or conflict	Average goal clarity	Goals mostly clear	Goals very clear

2. How much trust and openness in the group?

1.	2.	3.	4.	5.
Distrust, a closed group	Little trust, defensiveness	Average trust and openness	Considerable trust and openness	Remarkable trust and openness

3. How sensitive and perceptive are group members?

1.	2.	3.	4.	5.
No awareness or listening in the group	Most members self-absorbed	Average sensitivity and listening	Better than usual listening	Outstanding sensitivity

4. How much attention was paid to process? (The way the group was working?)

1.	2.	3.	4.	5.
No attention to process	Little attention to process	Some concern with group process	A fair balance between content and process	Very concerned with process

5. How were group leadership needs met?

1.	2.	3.	4.	5.
Not met, drifting	Leadership concentrated in one person	Some leadership sharing	Leadership functions distributed	Leadership needs met creatively and flexibly

6. How were group decisions made?

1.	2.	3.	4.	5.
No decisions could be reached	Made by a few	Majority vote	Attempts at integrating minority vote	Fully participated consensus

7. How well were group resources used?

1.	2.	3.	4.	5.
One or two contributed, but deviants silent	Several tried to contribute, but were discouraged	Average use of group resources	Group resources well used and encouraged	Group resources fully encouraged and used

8. How much loyalty and sense of belonging to the group?

1.	2.	3.	4.	5.
Members had no group loyalty or sense of belonging	Members not close but some friendly relations	About average sense of belonging	Some warm sense of belonging	Strong sense of belonging among members

Training Leaders

Group leaders are not always the titular leaders one encounters in a community. Often leaders vary depending on the task or the nature of a group. Ideally, leadership in group activities emerges as the process of planning and working together progresses. On the other hand, the extension worker should not take the training of leaders for granted.

During the early stages of organizing cooperative activity as problems and interests are being assessed, the PCV should also look for people whom others follow. Opinion-leaders, skilled craftspeople or technicians, orators, and charismatic characters can be identified. At this point it is useful to let leadership fluctuate and change naturally in order to minimize rivalry and to allow the most appropriate leader to arise.

In certain kinds of cooperative activities, specific qualities of leadership should be sought out. For example, when the activity is a field day to arouse interest in new practices among neighboring farmers, a charismatic, eloquent, and respected farmer might best lead. On the other hand, if the activity is a tough physical task like digging out a fish pond or constructing an earthen dam, a forceful and hard-working leader might be best. The point is to become aware of potential leaders and to earmark them for specific leadership tasks as work begins. Following are some desirable characteristics of leaders:

- Self-awareness, including a sense of the impact of his or her own behavior on others
- Ability to receive feedback from the environment
- Ability to encourage the taking of risks without humiliating participants
- Ability to deal with own feelings and the feelings of others
- Understanding and ability to manage group process
- An ability to make appropriate interventions, especially feedback, even when it is perceived as painful
- Ability to make clear presentations
- Ability to establish objectives and to move a group toward them
- Group facilitation, including the ability to let the group work on its own
- Cultural sensitivity to the many different ways of viewing things
- Ability to understand group process and the stages of group life
- Flexibility and adaptability in regard to the group's needs
- Planning and organizing presentations, the how and when of interventions
- Good delivery skills; stand-up skills
- Respect for needs of adult learners and ability to put adult learning theory into practice
- Holds all group members in "unconditional positive regard"

- Has patience and paces self in accordance with the group's developmental phase; has communication skills
- Can deal with volatile material; can evaluate the training event
- Able to model behaviors that are taught; can allow criticism of self

Following are undesirable leader characteristics:

- Uses warnings and threats to get group moving; intervenes excessively
- Is the center of the process; does not allow group to work on its own; subtly or overtly insists on particular behaviors from group members; has little awareness of his or her impact on others
- Is not able to receive feedback; humiliates participants into taking risks; is unable to respond to process
- Avoids giving feedback when it is painful; poor delivery skills
- Gives unclear or disorganized presentations
- Lack of sensitivity to cultures or viewpoints different from his or her own; rigid and unadapting with regard to group's needs
- Unable to plan and organize events; violates needs of adult learners
- Does not expect to have respect or positive regard for all participants; poor communication skills
- Impatient and poor at pacing himself or herself
- Spends no time or is unable to evaluate a training event; is intolerant of any criticism directed at him or her

Leadership in small rural communities must maintain a strong tie to tradition and local custom. Where women are typically in charge of a certain kind of activity, for example, suggesting a man would be foolish. Similarly, leadership of cooperative activity works best when it parallels the lines of leadership in the local community. This minimizes rivalry and, where possible, avoids the issue of politics. Leaders, for this reason, should be chosen ultimately by group participants.

The process of training a potential leader in the skills of organizing is the same process as that of training a counterpart outlined in Chapter 3, "Working With Counterparts":

- Demonstrate and explain a task
- Do it with the leader's help
- Ask the leader to do it with the PCV's help
- Ask the leader to demonstrate it to the PCV
- Ask the leader to do it in a real situation

The same three elements pertain: transferring responsibility, helping the person acquire skills, and defining clear and consistent roles. Skill and responsibility are transferred by means of the same deliberate process as well:

Group situations tend to exert considerable pressure on leaders learning new skills. That is why they often feel dependent on the organizer, feeling "I can't make any mistakes, not on this scale." But as was illustrated in the previous section, it is essential that, having prepared a leader adequately, the organizer learns to say "No" to allow others to make decisions.

Giving and receiving useful feedback is an essential skill when training leaders. They must feel free to come to the organizer both for help and helpful criticism, and to give the organizer feedback as well.

By training leaders to take over the roles of organizer and guide of cooperative activities, extension workers promote a lasting form of "competent autonomy" among farm communities. When groups of farmers can organize and carry out cooperative activities successfully, they have gone a long way toward discovering their own resources for growth and change.

Case Study 5-2: PCV Works with a Co-Op

Upon arriving in the village, the extension agent was introduced to local farmers at the monthly co-op meeting. The president, vice president, treasurer, and other officers, as well as neighborhood leaders, all greeted him. The agent found the co-op to be highly organized and he wondered where he could help. He found, after several months of observation and inquiry, that the co-op had been approached several times by a regional businessman to be the supplier of vegetables and grain to the market. Due to past experiences that failed, and to the limited market analysis skills of the co-op's leaders, the co-op had never considered the matter seriously, even though the extension worker was reasonably sure the co-op could profit enormously. The limit of the co-op leaders' skills and experience really seemed to restrict the group's ability to grow. The PCV drew on his college economics background. He solicited the help of an amenable co-op officer, who had also studied economics. Together they calculated the cost/benefit of selling crops to the town market. They then sold a small amount, realizing a modest profit. The co-op officer talked informally to other officers and finally made a presentation to the entire co-op, explaining very simply what the market venture cost and what the profit was. The co-op officers and members took the idea of working with the town market into serious consideration.

Leadership Styles and Groups

In the extreme leader-oriented (autocratic) style, the leader determines the problems and makes the final decision. He or she is often concerned that the group functions efficiently and accomplishes the tasks set before it. The process of the group, or how the members work together, is of little interest to the autocrat. This leader focuses almost exclusively on content.

In the extreme group-oriented (laissez faire) approach, the group is allowed to determine the problems and to make the decisions. This leader keeps a very low profile and is content to let the group set its own course. To the laissez faire leader, the end result is much less important than the question of how the group gets there.

Between the two extremes is any number of combinations of group and leader orientation. Most often, the style of a group leader is somewhere in the middle. Such a leader might determine the area on which the group should focus and then will help the group work through the issue.

Figure 5-3: Leadership Styles

Although everyone has a style of leading with which he or she is most comfortable, conditions often exist that create pressures to adopt a more leader-centered or group-centered approach. Factors that generally favor greater leader involvement are the following:

- The urgency of the problem: When a decision must be reached quickly, the leader may need to make the decision. Decisions made by the leader are usually reached more quickly than when the group makes decisions.
- Lack of group skills: When a group has not developed a system for processing issues or is unclear about its goals, the leader is likely to assume a larger role.

- Expectations of the leader: In many groups, members have unrealistic expectations of what the leader can do for them. Sometimes the group will pressure the leader (as the "expert") to make decisions for them.
- Leader discomfort: The novice leader, especially, may feel uncomfortable when he or she perceives that nothing is happening in the group. A common response to this is to try to initiate some activity by taking charge.

Parallel conditions exist that promote greater involvement by the group:

- No time pressure: If a group has no time limits, the leader can afford to sit and wait until the tension level of the group rises and the group initiates its own activity.
- Group skills. When a group is established and the members trust each other and are comfortable in their roles, the leader often can stay in the background and let the group lead itself. But even this mature group may require direction from the leader if it becomes counterproductive.
- Group potency. When the group has developed cohesiveness, the members often will not rely on the leader, but will look for leadership from within the group.
- Leader comfort. The leader who has been through uncomfortable situations before is likely to be less threatened when they recur. He or she may choose to sit back and allow tensions to build to the point where the group must examine the problem.

The question of appropriate leadership styles arises in every group. Of course, many factors are specific to each group (for example, the composition of the group) and these affect the style of leadership. But many groups also progress through stages where different functions may be required of the leader. For instance, in the early stages of a group, the leader may have to be more directive, setting norms and goals and helping the members get acquainted. The leader must be careful, though, not to establish a precedent where the members rely on him or her to resolve group issues. Then, at a later stage, the leader may want to become more nondirective and let the group resolve its problems through procedures established since the group's inception.

No leadership style can be considered foolproof. A directive leader probably will be confronted with aggressive and blocking behavior and challenges to his or her authority. The nondirective leader will encounter demands for more structure by group members. The effective group leader must be aware of the different leadership strategies appropriate to the stage of group growth and to the problems the group is facing. Finally, he or she must realize that, even with appropriate leadership, tensions are bound to arise occasionally. Although these tensions can make the leader uncomfortable, they often are helpful in promoting group growth.

Forming Associations

If a PCV helps a group of farmers successfully take part in cooperative activities following the guidelines described in the previous subsections, the group will likely feel it has a definite identify and purpose. If the activities become important enough to be regularly-scheduled, the group has achieved the status of an association or a cooperative organization.

Because cooperatives so rarely succeed, and even fewer survive, the word "cooperative" is not always associated with successful, conflict-free group activity. The word "association" has a less emotional history and has a more appropriate meaning for PCVs working with small-scale farmers. Associations are groups that have a thematic connection (such as small-scale farming) that crystallizes into cooperative activity when conditions are right. In rare instances these associations do indeed take on continued formal organizational structure, but most do not.

Usually an opportunity to form an association of farmers exists when there is a long-standing history of shared interests and experience among farmers, and some relatively permanent form of cooperation is involved, like a community farm or store. This ongoing cooperative interest becomes an impetus for continuing cooperative effort. As long as it serves member needs, the effort will continue.

In order to ensure the continuation of the cooperative association, the PCV must make sure that the leaders and membership have the skills and training to keep things going. In this instance, the task-person scale is tipped almost completely to the person side. The PCV must be willing to work on every task in such a way that he or she is passing on skills. The association needs this infusion of new human resources to carry on.

The financial and material needs of an ambitious association are not small either. Here the PCV can help make the connection between the association and outside resources, which the association's new influence can command. It is imperative, however, that the PCV maintains a clear role as facilitator only, providing indirect service, leadership training, and behind-the-scenes advice. Otherwise, in its zeal to take on a new challenge, the association can lapse into a kind of meta-dependence, where the high stakes of cooperating are safely protected by the PCV's efforts. When the PCV leaves a situation like that, the effects are disastrous, and the loss of confidence engendered is incalculable.

In order to form an association, farmers and the organizer merely transform the process of cooperating into a regularly-repeated, formal procedure. The degree of formality is a matter of choice and scale. The larger the organization, the more formal it must become to maintain order. When a group of farmers work with a PCV to form a lasting farmers' association, they are exercising their ability to participate in the process of change to its fullest extent.

Introduction

There comes a time when a PCV's work becomes sufficiently complex and influential, warranting a formal management approach. Complexities arise when the PCV begins working on more than one project. Work then occurs on several levels at once, and disorder can set in. It is then time to consider, with more formal care and consideration, what is being done and how it is being done.

Throughout service, a PCV must maintain a clear sense of direction and purpose. Working at the village level and concentrating on details, this is not always easy to do. Management skills can help with this. Management is the art of "putting it all together."

There are three disciplines to master in management:

- Planning
- Carrying out plans
- Evaluating results

Evaluation always leads back to planning because management is cyclical and its disciplines are regularly repeated in sequence. There are four general levels of management:

- Oneself
- One's own work
- Counterparts and co-workers
- Projects

For each level, the three basic disciplines of management pertain.

When a management approach is employed in agricultural extension, the overall extension process is similar to the following for the example of teaching Jo to make a raised bed for vegetables:

- Plan out how, when, where, what to do.
- Teach Jo to make a raised bed.
- Follow up with Jo to see if he understands, if he will do it on his farm, if he can do it himself, and whether his bed turns out well when he does it.

The drawbacks of undertaking a management approach to extension work need to be taken into account. The role of the manager can easily become self-serving and the PCV can become a despot. There is also the danger of inappropriate formality, resulting in "mini-bureaucracy."

By being ever-mindful of the goal of capacitating farmers and promoting their autonomy, by managing with and not for farmers, these tendencies can be curtailed.

Another common pitfall of energetic PCVs is to take on too much work. By trying to do too many diverse tasks, the PCV may promote chaos instead of wholeness and shallowness instead of thoroughness. Management planning includes the skill of defining priorities and assessing limitations.

Many of the tools provided in earlier chapters are management tools with which to plan, carry out, or evaluate village extension activities. The management point of view (the three disciplines) can become second nature after a while. Through diligent practice (even when events seem uncomplicated on the surface), a PCV can cultivate a coherent work style.

A simple way to practice management is to think in clear categories that form a whole picture. Following is an example of categories and seeing how thoughts fit together.

Figure 6-1: Example Activity Management Process

Plan	Carry out		Evaluate
Self and work	How do you plan your own work, that is, what you do each day, week, month?	What is your working style; which methods do you use to accomplish things?	How do you measure your own progress, effectiveness, growth, success?
Co-workers	Who do you work with? How do you decide who does what, etc.?	What is your working relationship? How do you work together?	How do you measure your co-worker's effectiveness? Do you solicit feedback?
Projects	What projects do you work with? How do you decide? How do you plan them?	How do you start a project? How do you keep it going? What role do you play?	How do you decide if a project is a success?

Planning

Good planning proceeds from careful, continuing research and systematic record-keeping. As stated in Chapter 2, planning must be done with farmers, village leaders, counterparts, and government officials. The extension worker researches carefully and involves local people in planning to maximize local input into the decisions and plans that affect local life.

How can local people be included in the planning process realistically? First, the extension worker must become fluent in the local language and comfortable working with interpreters.

Language differences can provide a rich diversity of meanings, rather than barriers, to communication. Secondly, the PCV should proceed slowly and plan to some degree informally in order to be accessible. It is important to maintain records in such a way that they can be easily shared. Extension workers should be sure to focus all plans on local people's goals, not on their own ideas. This will help local planners maintain interest. Concepts and ideas developed must be cross-culturally appropriate and understandable to local people. Finally, the extension worker can develop a disciplined habit of always asking others to be a part of the planning process. This may help cultivate a new expectation among village farmers that they should be involved in planning.

Planning involves assessment of community needs and identification of the resources to meet those needs. This can be done using the following list of questions, the answers to which provide a community with the information it needs to design a project:

- What problem is the project being designed to address?
- What is the primary objective of the project?
- How will this objective be reached?
- What resources will be needed to achieve this objective?
- How will these resources be used?
- How long will it take to complete the project?
- What are the main obstacles to the project's success?

The extension worker can play a part in articulating these questions.

Planning also involves a selection process. Given the limited resources available to any community, priorities must be set as part of any plan for development. Resources should:

Bring about greater community involvement in the project

- Be available locally
- Use appropriate technology
- Be culturally acceptable
- Be ecologically sound

Priorities must be aligned with the interests of participants in a planned project and consistent with the goals and values of the local community. Prioritizing begins with a clarification of goals, values, and participant interests. Interests could include:

- Financial security
- Financial access to goods normally unavailable in villages
- Pride in work, an outlet for skills

- Community recognition as a technician or leader
- Advancement in ministry hierarchy
- Friendship and access to American culture
- Opportunities for further formal or informal training

Then it involves brainstorming (listing without argument) alternatives. When goals are clearly understood, a list of best alternatives can be selected to act upon. Those of lesser importance are discarded, included in more important ideas, or held over for future consideration. These prioritized alternatives are often called objectives.

For example, for a small village livestock project just getting started, a goal might be: "To provide storage space for livestock feed" and a related objective would be: "To clear out the old storehouse."

Once priorities are established, they are broken down into steps or tasks. As described in Chapter 5, a practical task is immediate, specific, and realizable. For example, tasks for the example in the previous paragraph would be:

What	Who	When
1. Get storehouse key	Juan	Tuesday
2. Get brooms, white wash, plaster, etc.	Anna	Tuesday
3. Clear out old stuff	Farmers	Wednesday
4. Clean up	Farmers	Wednesday
5. Plaster walls	Mason	Thursday
6. Whitewash walls	Farmers	Friday
7. Check storehouse with extension worker	Master farmer	Saturday

If it is a group task, it also is unifying. By using the following tool, tasks can be assigned to specific people, times, and places so a detailed plan of an activity can be kept. The specific responsibilities of each person are charted in this way, making evaluation easy. Just by going back over a task list of this kind, a planner can see who did what, when, and where and can assess progress toward a goal.

Tool 6-1: Task Assignment List

Goal: _____

Objective: _____

Time	Who	Method Used	Tasks/What to do	Materials Needed

Weekly Planning Calendar

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday/ Sunday

Task and Commitment Chart

What	Who	When
For Field Day at Kamala Village:		
1. Pick up tables at ministry office	Joe and Lorry	Thursday
2. Set up meeting hall for ceremony	Alayisius and Tom	Thursday
3. Cook meal for visitors	Families of farmers	Friday a.m.
4. Greet official visitors	Chief, master farmer	Friday noon
5. Set up demonstrations	Participating farmers	Friday a.m.
6. Coordinate stations	Jo and Tom	Throughout
7. Translate for officials	Aloysius	Throughout
8. Speak at ceremony	Chief, master farmer	Friday 3 p.m.
9. Follow-up letters to officials	Jo and Steve (PCV)	Monday
10. Clean up site	Farmers	Friday and Saturday
11. Party for participants	All	Saturday evening

Carrying Out Work

Extension work involves carrying out plans. Each small step begins with a well-thought plan. Carrying out plans is the art of doing well-defined and specific tasks while remaining clear

about an overall purpose. Paradoxically, one needs to keep little details and larger goals clear at the same time. Good extension work both accomplishes concrete tasks (details) on the farm and enables farmers to accomplish more themselves (larger goal). This is a management approach to work.

By carefully researching plans and defining tasks and commitments, PCVs and co-workers can orchestrate a high level of motivation for a particular project. When the personal interests of farmers are in line with work plans, the farmers are motivated to work. When that link is not established, motivation for that particular work is lacking. PCVs must learn to formulate work plans with the motivation of participants in mind.

A management approach to work does not have to be formal and inflexible. In most village settings, this is neither possible nor appropriate. Work can be thorough and well-organized while being informal and flexible. There is a great deal of difference between informally-planned and unplanned work. Unplanned work does not serve farmers well.

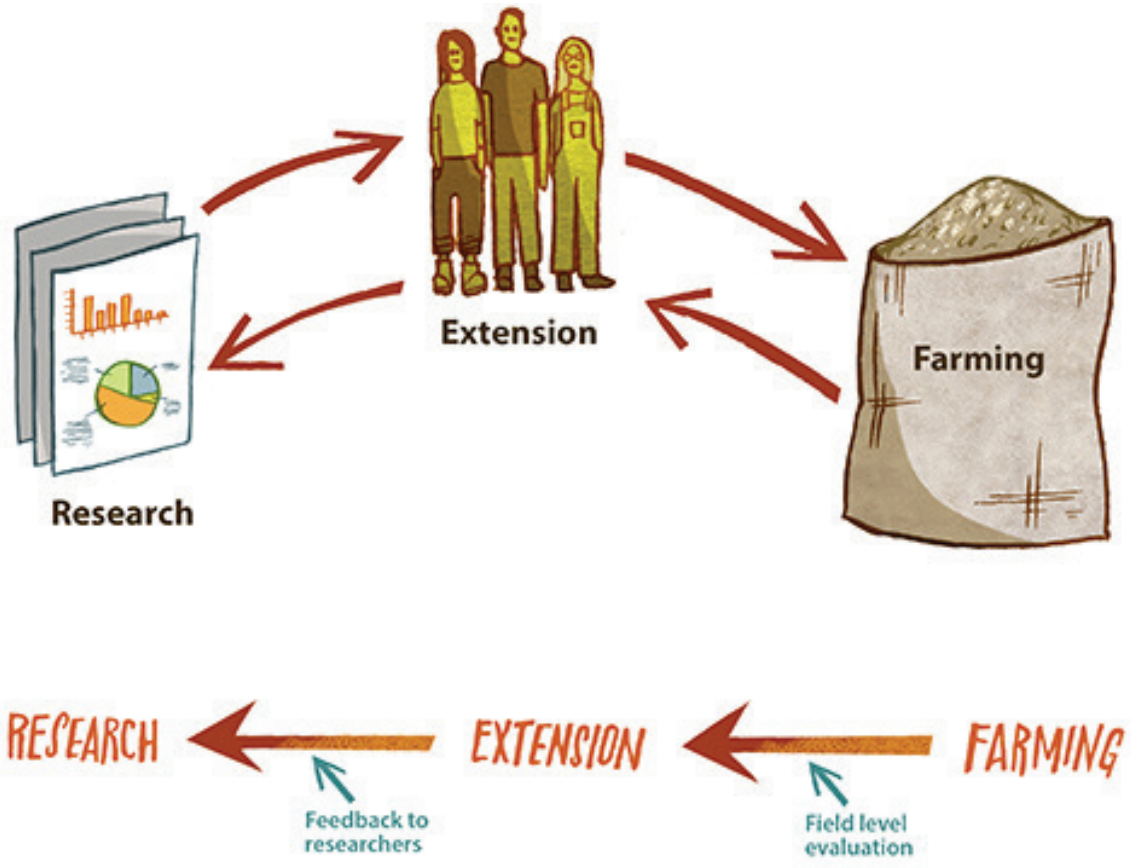
Evaluating Work

Evaluation measures the effects of work planned and carried out during the extension process. Evaluation helps PCVs and farmers answer questions like:

- Which planned activities did we do? Not do?
- How much did this cost?
- What is the result of this work?
- What are the benefits/ill effects of this work?
- What did we learn?
- Are we closer to our goal?
- How well did we do?
- Did the plans work?
- Why did we succeed or why did we fail?
- What should we be doing now?
- What do we do next?
- If we made mistakes, can we keep from making them again?

Evaluation, like planning and work, must be done with community counterparts. In fact, evaluation is the most neglected part of the extension process. Two-way communication can only occur between scientists and farm families when field and community-level evaluations of extension work occur.

Figure 6-2: Evaluation in Cyclical Agricultural Extension



Evaluation is the closing link in effective two- way communication. Honest and open evaluation of community work gives small-scale farm families a real voice in the process of change and growth.

By using the planning tools illustrated earlier in this chapter as checklists, the detailed quantitative results of extension work can be measured. Progress toward material goals can thereby be assessed. Possible kinds of measurements you might use to evaluate your project, if planned from the beginning, are:

- Quality or amount
- How many persons were reached?
- How many posters, pamphlets, home visits were made?

In reference to quality, what do the people think? Leaders? Participants, villagers? Other health workers? Pupils? Changes in knowledge are shown by:

- Discussion among farmers
- Answers to questions posed by an extension agent
- Changes in attitude

- Community support for the program
- Requests for further cooperation by government agencies
- Less opposition by groups in the village who had previously been against the project
- Public opinion poll

Changes in knowledge are also shown by a change in behavior, such as:

- Increase in visits to the agricultural station or worker
- Improved habits and conditions noted on farms
- Increase in production
- Increase in the sale of milk, meat, vegetables or other good foods
- Increased need for post-harvest support
- Increased interest in marketing

Changes in community life are shown by:

- Improved nutrition
- Food surpluses
- Signs of economic prosperity (new houses, material goods)
- Improvement in health as shown in individual cases

There are "higher" goals than the material ones, however, that are harder to describe and harder to measure progress toward. These other goals include:

- Increased two-way communication
- Working oneself out of a job, or increased competent independence of farmers
- Ecological soundness of work
- Cultural appropriateness of work
- Moral or spiritual goals
- Personal satisfaction or fun
- Relationships with co-workers, farm families, host community

All of these goals have some relation to the overall goal of agricultural extension as described in this manual: helping small-scale farm families participate creatively in growth and change.

Expert advice may be needed to evaluate progress toward some of these "higher" goals, such as ecological soundness. Very few village-level PCVs have the rural sociology or cultural anthropology resources to formally evaluate the cultural effects of work, but it is important to care. Philosophical, spiritual, and relational issues often arise when PCVs and farm families

are engaged in a process of change. Indeed, development is fraught with them. These issues cannot be evaluated in a normal sense, but they must animate the PCV to stop and consider, to pause and reflect, and to open himself or herself to change as it occurs. The most thrilling and challenging aspect of extension work consists in being at the center of change. Being at the center brings into focus an enormous responsibility to others. Evaluation on all levels, careful consideration in all that is done, is responsibility and care in action.

There are several types of evaluation that can be done:

- Everyday observation, which yields a subjective impression that can helpfully guide work. Such information is collected from casual conversation during farm and home visits, meetings, and individual discussions.
- Informal studies that involve review and analysis of information obtained from records, reports, checklists, questionnaires, census data, etc. Done periodically, these studies should form a fairly objective basis for judging extension work. These may also include periodic reflection on the "higher" goals mentioned above.
- Formal studies are more structured. They are often planned and carried out according to scientific rules to provide more objective information on the achievement of objectives or the effectiveness of methods used. These studies may include formal interviews, questionnaires, data collection and analysis, etc. Cost-benefit analysis is a good example of this (see Appendix), as are aspects of "Agricultural Survey" (see Chapter Two).

Certain basic principles underlie effective evaluation:

- Evaluation of extension work should be well planned and clearly defined as to what is to be evaluated in a program.
- Extension personnel and community people should take part in any evaluation. Self-appraisal helps those who carry out a program and can be usefully combined with appraisal by an outside person.
- Everyday evaluation should be continuous and integrated with the program development process, from its planning stage to the end.
- Reliable and effective devices should be used, and a representative sample chosen according to means available.
- Evaluation should be more concerned with the achievement of behavioral change than with the number of participants, meetings, hours, items prepared, etc.
- Careful analysis and interpretation of findings should be considered when an evaluation study is being planned.

Since there are so many aspects to every extension activity, one must decide which are important to evaluate. Some aspects of extension activity are:

- Situation before/after
- Program planning
- Program action
- Methods
- Results
- Higher goals

By deciding which to evaluate, it may be easier to determine which evaluation method to use.

It is very important in evaluation to make conservative judgments and conclusions. No matter how scientific the device used or how objective the criteria for measuring, each evaluation made by a PCV is only one person's (or several persons') point of view. There are no absolutes in the process of change, only probabilities. Critical awareness and openness to various points of view is essential to the proper interpretation of evaluation results.

In the case of evaluating extension work, you will find it difficult to measure the results. The mere number of lessons or demonstrations and the ability of the people to repeat them are surely not the only measure. Behavior change is the goal, yet these changes are not easily evaluated immediately since they may occur slowly over a long period of time.

As always, throughout your work with a community, it will be necessary to record your observations. This is a form of written record, which you've already done during your community investigation. You should discuss with counterparts the importance of record keeping.

Most important of all is the awareness that community members and farmers are not to be victimized by evaluation results. It is often the case that extension project failure is attributed to farmer ignorance or non-cooperation, but it is rarely true. As it is an observed tendency in evaluation of extension work, PCVs are cautioned to be wary of such conclusions. In actual fact, assigning the cause of any result to one specific factor is often misleading or shortsighted.

By spending time and energy measuring the effect of extension work at various levels, PCVs close the final link in the chain of two-way communication. They bring farm families into direct contact with scientists and other agents of change. As the catalysts at the center of the process of agricultural change, PCVs are charged with an immense responsibility to others, which they can translate into action by means of sensitive evaluation.

Case Study 1. Ann

Ann is a Peace Corps Volunteer who has been trained in intensive vegetable gardening techniques. She arrives to replace another Volunteer in the village where she has been posted and within the first two or three days local authorities, agricultural workers, and townspeople hold a meeting to welcome her. She introduces herself by talking about where she has come from, her interest in helping with agriculture, and her appreciation for everyone's friendliness and assistance in getting her settled into her house. She asks the names of the local leaders and listens to each make a small speech.

During the next few weeks, Ann spends most of her time orienting herself to her surroundings. She tours the town with her official counterpart, Abdul, who introduces her to shopkeepers and religious leaders, shows her where local artisans perform their various crafts, and helps her arrange for language instruction. In the evenings, she spends time filling in a map with the day's information and paying visits to her neighbors.

Ann follows up her initial contact with village leaders by asking them to commit a small amount of time on some agriculturally-oriented task. She asks one leader to show his farm. She asks another to show her where he stores his crops and seed. She asks a third to introduce her to the "best" farmer he knows. In this way, she begins to piece together impressions of which leaders are actively interested or involved in agriculture and learns about the agricultural practices people employ in the area.

She also takes two days to travel to the district capital with Abdul to visit the Ministry of Agriculture office. During her stay she makes a special effort to get to know the ministry's office secretaries, the storekeeper, motor pool drivers and mechanics, and the paymaster because she realizes that these people hold important positions and provide key support services in the field. She meets with her supervisor for an hour or two each day, discussing this perception of previous development efforts at her site. He reviews the work of her predecessor who worked with vegetable gardens in three neighboring villages, and briefly describes some of the ministry's ongoing projects in the area. She is especially interested in learning about recently conducted on-farm trials of improved eggplant, pepper, and onion varieties. She is told about office procedures, is given a tour of facilities, and receives forms for her monthly reports.

When Ann returns to her site, farmers are harvesting their field crops and clearing ground for dry season vegetable gardens. She and Abdul decide to grow a small garden of their own on a plot of land in back of his house. They clear the ground together, and as they work they talk at length about gardening practices. He describes local methods of cultivation and she presses him for more information on the variety trials he helped conduct the previous year.

Appendix 1: Comparative Case Studies

One or two times a week, Ann offers to help farmers with their harvesting chores. Though she finds it awkward at first, she gradually improves in handling the scythe made by local blacksmiths and has an enjoyable time learning to tote loads on her head and being taught the local names of various plants and tools.

As the harvest draws to a close, more attention is focused in the community on planting the vegetable crop. Farmers had good success last year, especially with their onions. This is largely due to the relatively cooler temperature in Ann's site, which is at a higher elevation than much of the rest of the country. Some farmers were able to market some of last year's surplus and most are interested in expanding their efforts this season.

The main limiting factor to expanding production is the availability of onion seed, which can only be multiplied in a much cooler, temperature climate. Traders bring the seed into town from the capital city, but they charge a high price for it, demanding even higher prices than before. Ann hears much grumbling from her neighbors. She asks them what alternative seed outlets are available; no one seems to be aware of any outside the capital city. She discusses the situation with Abdul and he tells her that seed can be bought through the ministry, but that it takes a special request from Ann's supervisor, as well as several months advance notice so the seed can be brought in from outside the country.

The village vegetable crop emerges and Ann and Abdul work out a somewhat regular pattern of visits to farmers. Upon Abdul's recommendation, they focus attention on spacing of seedlings during transplanting and on weeding practices, the two areas where farmers have had the most difficulty in the past.

The onion crop matures and, though there are some losses due to insect infestations, the crop looks good. The regular field visits and the harvest prospects have been duly noted in Ann's reports to the ministry, and on a visit to the district capital near the end of the growing season Ann's supervisor refers to the onion crop and asks if the reports are indeed accurate, that the onion crop is going so well. His interest sparks an idea in Ann's head, which she discusses with Abdul that evening.

Ann's idea is to invite her supervisor and some of the other agricultural workers in the district to visit her site to observe the onion crop during the first week of harvest. This would give the farmers in her area a chance to request, from the ministry, a special seed purchase for the following year. It would also be an opportunity for Abdul to gain some recognition for the good work he has been doing if he were to take a very visible role in organizing a reception for the special quests.

Abdul becomes excited about Ann's suggestion and the two visit their supervisor the next day to invite him to a field day. He accepts and a tentative date is set three weeks hence.

When Ann and Abdul return to their site, they visit one of the village leaders who is also an onion farmer and tell him about the arrangements they have made with their supervisor. The leader is pleased that contact has been made with the Ministry of Agriculture concerning the seed problem in town, but he tells Ann and Abdul, much to their disappointment, that the field day cannot take place as planned. A special commemorative burial service will be held that day. The three talk further, some of the other leaders are called to join the deliberations, and it is decided to send a messenger to the district capital to invite the ministry supervisor to come a week later than had been arranged. The messenger returns after a day or two with the good news that Ann's supervisor will be able to visit on the alternative date.

Planning at this point is carried out at three different levels. Ann and Abdul sit down and discuss what their goals are for the field day. They choose two: to impress ministry officials with the needs of farmers for better access to onion seed and to demonstrate Abdul's accomplishments as a field extension agent as a method of enhancing his prospects for future promotion within the ministry. In order to meet these goals, the two extension workers discuss the roles they will each play during the field day, and they list several questions to be posed to village leaders to help ensure that the day will come off without a hitch.

A meeting is held between Ann and Abdul and the village leaders. Abdul points out to everyone assembled that the ministry official will arrive late in the morning and will probably be accompanied by several other ministry workers. Discussion focuses on who will greet the official on behalf of the town, what the official will be shown on his tour of the vegetable gardens, what special provisions will be made for food and entertainment, and who will represent the onion farmers in presenting their seed request to the official prior to his departure. A list of tasks is drawn up and the town leaders decide to call a town meeting.

This meeting takes place the next evening, after everyone has finished his or her day's work in the field. The leaders announce to the townspeople the impending visit and state that people will be needed to clear brush away from the paths to the fields, to cook a special meal, to provide entertainment, and to attend a meeting with the official to talk about onion seed purchases for the upcoming year.

On the appointed day, Abdul and Ann make a final check to make sure that all the preparations have taken place. Their supervisor arrives somewhat later than either of them expects, and some of the farmers grow anxious in the meantime. Nonetheless, the day is carried out according to plan. Abdul, Ann, and the village leaders greet the official when he arrives. Abdul and a couple of the best onion farmers show the official several of the onion patches. A large meal is served while local musicians perform. At the close of the day, the town leaders make a small speech praising Abdul and Ann for their extension efforts and asking the ministry supervisor about procuring onion seeds for the following year.

The official responds by saying that he has been impressed by what he has seen.

He asks how many farmers are interested in buying seed from the ministry, and after a rough head count is taken, he says that he feels confident that he will be able to get seeds for them for the next growing season.

The next few months pass slowly for Ann. The rains begin and travel becomes more difficult. Farmers devote most of their energy to traditional field crops. Ann continues to gather information about agriculture by making regular visits to farms in the area. She spends time with the women in the village who dye cloth, learning about their craft. She also takes a short vacation to visit friends in another part of the country.

Two or three months before the end of the rains, Ann checks back with her supervisor about the onion seed purchase. He tells her that the ministry has no funds to place a deposit with the seed company, but that he can go ahead and place the order if he gets half the money from farmers who intend to buy seed in advance. Ann had not anticipated this difficulty and returns to her site to confer with Abdul and village leaders. A meeting is called and the information is relayed to the rest of the onion farmers. Someone claims that the ministry official is trying to take advantage of them by stealing their money. Other farmers state that they simply will not have the cash to buy the seed until the field crop harvest is in. In the end, several farmers have to borrow money from relatives and five or six farmers drop out of the cooperative buying effort due to distrust.

The next few weeks are unpleasant for Ann. She and Abdul come under increasing pressure from villagers as the dry season approaches and the seed fails to arrive. With less than a month to spare, a message arrives from the district capital that the seed has come. A meeting is held to collect the remaining money required for the purchase. Again, two or three farmers are short of cash. They ask Ann to extend a short loan, but she chooses to remain firm and they are forced to come up with the cash elsewhere.

The seeds are bought at a price nearly 20 percent lower than that charged by traders and many farmers are able to acquire larger amounts than they have had access to in the past. Ann and Abdul continue to work with farmers on their cultivation practices and the harvest is bountiful. Several farmers rent a truck for a day to carry their bags of onions to the capital city to sell. Others store their produce for sale in nearby villages. Meanwhile, for future reference, Ann keeps careful records of yields, drying and storage techniques, and the names of those involved in cooperative marketing efforts.

The rains return and shortly thereafter Ann finishes her Peace Corps service. She is followed at her site by a Volunteer who is particularly interested in cooperative development. This Volunteer never seems to develop the same rapport with his ministry supervisor that Ann had, and the official is not willing to go out of his way to make the special effort to order seed early for the farmers the following year. Thus, though they continue to cooperatively market their onions and other vegetables, farmers in the village where Ann lived are forced to buy their seed once again from traveling peddlers.

Case Study 2. Tony

Tony is a Peace Corps extension agent entering a village that has never had a Peace Corps Volunteer. The Peace Corps program he is assigned to is considered a rural development program. It is just three years old and is just beginning to isolate the most pressing needs of the host country's rural people.

Tony's training primarily centers around a package of new innovations designated by government research stations as the central component in a "crash" Ministry of Agriculture program to dramatically improve maize production. The package includes: land preparation techniques, introduction of hybrid seed varieties, several different improved planting methods, recommendations for spacing and timely weeding of crops, use of chemical fertilizers, and the controlled use of pesticides. Construction of water wells and latrines and cooperative marketing were secondary subjects in the training course.

Tony arrives at his site accompanied by his supervisor in a Ministry of Agriculture Land Rover. After meeting the town mayor and several of his counselors, Tony discovers that, as yet, there is no place for him to stay in the village. There is some commotion and quite a bit of discussion that Tony does not understand as different landowners in town are sent for and the ministry supervisor tries to negotiate some arrangement.

Finally, everyone marches to one end of town to look at a house that has been selected for Tony's use. The house has not been completed yet, it lacks doors and windows, a cement floor, or a latrine. Still, it seems large and comfortable enough to suit Tony's needs. A rental agreement is made and it is decided that Tony will be the guest of the mayor until the house is finished.

As it turns out, Tony spends the first six weeks living in two adjacent rooms in one of the mayor's houses, waiting for work on his own house to be completed. At one point he decides to contribute some of his own money to buy the materials the landowner needs to proceed with construction. At another, work is delayed because the man digging his latrine becomes ill for several days. Finally, all but some of the latches on the windows has been completed and Tony moves in.

These first six weeks are, from Tony's perspective, full of frustration. He finds that he has to put a lot of time and energy into motivating people to keep working on his house. Consequently, he does not have a chance to get around the village and meet as many farmers as he wants to. It is nearing the planting season for maize and Tony has made only a few contacts with those who might be interested in trying some of the new practices he was taught in training.

To make up for lost time, Tony discusses with the mayor the possibility of calling a farmers' meeting. Its purpose would be for Tony to formally introduce himself and describe to farmers

some of the new agricultural techniques he has come to promote in the area. The mayor agrees to call farmers together three nights hence.

At the meeting, Tony gives a short speech, explaining where he has come from and that he has been sent to the village to work with farmers in agriculture. He tells the farmers present that he has special training in maize production and that, if any of them are interested, he can show them maize growing methods that will more than double their current yields. The mayor follows Tony's speech with a call to farmers to be cooperative with Tony. He says that it is a rare opportunity to have someone come in from the outside to help develop the town and that villagers should take advantage of such assistance while it is available. Before the meeting breaks up, Tony makes a list of more than a dozen names of men who say they are interested in the new maize cultivation techniques.

Over the next few weeks, Tony discovers that the meeting has served very little purpose. Within the ethnic group that is predominant in the village, maize growing is done almost exclusively by women farmers, not by men. The response at the meeting was apparently prompted by the mayor's remarks. This becomes apparent only after Tony has made several fruitless attempts to meet with some of the men who were present at the meeting to discuss plans for the upcoming crop season.

Tony forges ahead over the next three or four months with his attempts to promote improved maize production methods to women farmers, despite several difficulties he encounters along the way. The first is a language barrier. Most of the men in the village speak a dialect that is used all over the country for communication between ethnic groups. This is the dialect Tony learned in training. Most of the women, on the other hand, are less well-travelled than the men and can consequently speak only the very localized village dialect. Tony is forced to communicate with them through two women who can speak some of the outside dialect until he can learn to speak the local language himself. This is a cumbersome process and work moves slowly.

A second problem related to sex roles in the village is that most of the cash-generating enterprises—cash crops, government service jobs, etc.—are controlled by men. Women farmers, for the most part, do not have the capital to invest in the seed, agricultural chemicals, and labor requirements called for in the package of innovations Tony has been trained to promote. This places even greater restrictions on the work.

The final difficulty is a very basic lack of trust. Farmers simply do not believe what Tony says about the potential yields to be had in adopting the package of innovations he is recommending. A research station less than 40 kilometers away has achieved very favorable results for on-farm trials in villages only a few kilometers down the road, but it seems that Tony's neighbors are not to be convinced until they actually see results for themselves.

The immediate consequence of these difficulties is that Tony has to drastically redirect his promotional efforts from the plans he had originally developed for his work. His first step on the new course is to take soil samples from several of the farms in the area to the research station for testing. This gives him information he needs to know in order to recommend the variety of seed best suited to local farm management practices (e.g., the absence of chemical fertilizers).

Next, Tony procures quantities of seed to loan to farmers for use in small on-farm result trials. Many people have planted already by the time he brings the seed to the village, but a handful of farmers still take the chance to try a new variety. Of these, only three or four adhere strictly to the planting instructions Tony suggests, the others preferring the more traditional and time-saving practices of wider spacing and more seeds per hole.

A month or two later, Tony's focus has shifted to the need for timely weeding in the maize fields. This advice is either wholly ignored or only partially accepted. There are just too many other competing demands on women's time to allow for a thorough weeding of crops at precisely the correct stage of plant growth.

Only two women have enough money to purchase fertilizer, even though many of the women have heard of it and would like to try it sometime in the future when they can afford it. Tony works with the two women to show them how to make the most efficient use of the limited amounts of fertilizer they have purchased. Like some of the other efforts, however, the effects of fertilizer use are muted by improper application of other aspects of the extension package.

Harvest time rolls around and, as expected, the results show only a slight improvement over past years. No one is greatly disappointed and in one or two cases gains from the new practices are quite apparent. Still, Tony is frustrated. After a whole season's work, there does not seem to be much to show for everyone's efforts.

One curious fact about the harvest catches Tony's attention. Many of the women in the area live at the subsistence level, supplying most of their own food needs from what they grow themselves. This fact notwithstanding, Tony notices that no sooner have women finished harvesting than they carry most of their grain to the market for immediate sale.

Tony asks several of the women he works with why they are not keeping more of their harvest for personal consumption in the months ahead. They respond almost to a person that they cannot keep any more corn than the one or two bags they have already set aside because they will lose too much of it to rats and mildew in storage.

This is new information to Tony, and he spends quite a bit of time thinking about it. He has not been trained in effective grain storage techniques, so he is unsure how to go about helping

villagers with their problems. In order to better educate himself as to what practices are currently being employed, he conducts a farm survey.

What he finds is a wide variety of storage methods. Most farmers leave the grain on the ear during storage. The ears are stored in either large strongbox-type storage bins, or they are piled on mats in rooms set aside for grain storage purpose. Some farmers shuck the grain from the ear before storing the shell corn in burlap bags in lofts in their houses. In most cases, the condition of the stored grain is not good. The maize is generally not adequately dried, some is infested with insects, and rats are running rampant.

To get a better handle on the storage problem, Tony does some additional investigating. He talks to officials at the research station and tours their storage facilities. The latter are quite impressive, but do not appear to be very appropriate to the situation faced by most of the farmers with whom Tony works.

Tony also travels to the capital city to do some checking at the Peace Corps' resource center. There, he finds two or three reference works on intermediate storage technologies. He copies several of the grain silo and storage crib designs and returns to his village.

He then continues monitoring storage conditions in bins around town. He convinces two farmers that their maize needs additional drying in the sun before it can be left in storage. And he talks to several others who are having terrible problems with rats. Most just shrug off the situation and say there is nothing they can do.

Even while making those rounds, Tony begins experimenting with some of the new storage designs to see if they are feasible when made with local materials. A neighbor helps him find vines and certain types of tree bark that can be used to lash sections of bamboo together. The two find, however, that the bindings suggested in the plans Tony has do not work effectively with some of the taller structures. By trial and error, they come up with a strong knot to use.

Together they make a set of scale models that Tony uses to talk with farmers about storage problems. Those who experience the greatest difficulties with storage offer suggestions on how to meet their particular needs. Those who have the greatest success in storing their harvest offer tips on how to improve the designs. Most of the attention in the discussions Tony has with farmers focuses on rat control devices—stilts and metal shields to prevent rats from gnawing their way into maize cribs and bins. Two or three of the designs seem to meet with approval from those farmers who look at the scale models. Tony builds full-scale models of these, with his neighbor's help, and fills them with grain to see how well they work in keeping the corn dry and free from rat damage.

By the time these are completely constructed, the "hungry season" is growing near and people are becoming concerned about whether or not the previous year's grain will last

until the next harvest. Tony judges that the time is ripe for a demonstration of the improved storage techniques he has been testing.

To set up the demonstration, Tony visits each of the farmers he has maintained contacts with over the past several months and checks with them concerning the current status of the maize in their storerooms. Many have very few stores remaining, most have problems with rats; several have suffered losses to mildew and insects. Tony talks with them about the new bins he has constructed and says that he is planning to make a demonstration of their effectiveness to farmers who might be interested in building one for themselves.

This first round of contacts gives Tony an idea of how many people are seriously interested in the new storage techniques. He contacts each of the farmers who seem most interested a second time to suggest two or three alternative dates for making the presentation. The general consensus is to wait eight days until a special religious observance has passed, and then give the demonstration in the early evening after the women have cleaned up from their cooking chores.

In preparing for the demonstration, Tony strives to keep several things in mind. He knows that farmers are acutely aware of storage problems because of their anxiety over the upcoming hungry season, and he wants to capitalize on their clear self-interest in improving the way they store their crops. He also knows that farmers are more likely to fully understand and accept advice from one of their peers than they would from him, so he wants to have his neighbor help him give the presentation. Finally, he tries to think of ways to get farmers actively involved in what he says and does during the demo. He believes that once farmers see and experience how easy it is to construct a well-designed bin and understand how well it works (Tony's bins are virtually rat-free), they will freely opt to build one for themselves. Tony's neighbor is willing to help with the demonstration, so the two men sit down together and come up with a plan for the presentation that includes the following steps:

- Invoking audience interest by passing around rat-damaged maize
- Pointing out the essential requirements of an effective storage bin
- Evaluating storage methods commonly practiced in the village
- Explaining and comparing the new maize crib designs
- Answering questions
- Asking for volunteers from the audience to help demonstrate construction methods
- Repeating steps, if necessary
- Answering questions
- Summarizing and offering follow-up help

Appendix 1: Comparative Case Studies

They decide who will take what role during the different parts of the demonstration, they assemble materials—additional bush rope and bamboo—they will need, and they actually rehearse, several times, the sequence of activities to make sure that things will run smoothly.

Two days before the appointed date, Tony makes rounds to all the farmers who expressed interest in coming to the meeting to remind them of the time and place where it will be held. The day of the meeting itself, Tony lays out materials so they will be handy during the demonstration. He considers where the expected audience of 15 or 20 people will stand so they can both see and hear the presentation. He also checks with his co-demonstrator concerning some last minute ideas he has to avoid snags.

Most of the women Tony expects to attend actually come to the demonstration. Six men even show up. The demo is carried out and Tony and his neighbor spend nearly 30 minutes answering specific questions about the time needed to build the bin, construction techniques, and results in terms of rat protection. One or two farmers remain skeptical of the amount of labor involved, and a third doubts that the new crib designs will be secure enough to keep thieves from breaking in and stealing grain. The rest of the farmers express strong interest in having Tony help them build a bin using one of the designs. Discussion at the end of the evening focuses on the best time to actually begin building the new cribs. Most feel that it will be best to wait until all the crops have been planted and more time is available to devote to the construction task.

The rains begin and Tony once again works with farmers on their planting methods, stressing that fewer seeds per hill will reduce a lot of the negative effects of crowding that farmers experienced the previous year.

When the planting is finished, Tony sets out to follow up on his earlier efforts to promote the new storage bin designs. At the demonstration, more than 10 farmers indicated that they would like to try building rat-proof maize cribs. By the time all the crops are in the ground, only six farmers remain interested. Tony helps each of them over the course of the next two or three months to construct their own facilities.

The next harvest comes in and the new bins are pressed into service. Farmers are very pleased with the way they work. There is still a small amount of rat damage, but compared to previous years, there is a vast improvement. Maize in the bins also dries thoroughly. In fact, the only real problem remaining is that a percentage of the harvest is still lost to weevils.

In his end-of-service report, Tony details the steps he followed and the progress made at his site in introducing the new storage technology. He also lists the problems he faced and the measures he took to try and meet the special needs of the ethnic group he worked with in promoting maize production. He recommends that his successor be interested in storage problems, and that he or she be well versed in use of pest control measures appropriate to the insect problems farmers continue to face with their new storage facilities.

Appendix 2: KLU Handbooks and Manuals Useful to Agricultural PCVs

M0053	*Participatory Analysis for Community Action (PACA) Training Manual*
M0086	*Using Participatory Analysis for Community Action*
R0084	*Soil and Water Conservation in the Tropics*
R0062	*Soil Conservation Techniques for Hillside Farms*
R0025	*Intensive Vegetable Gardening*
M0011	*Practical Poultry Raising*
R0041	*Rabbit Production*
M0017	*Small-Scale Beekeeping*
R0032	*Lessons Learned from Beekeeping in the Philippines*
T0029	*A Manual for Trainers of Small-Scale Beekeeping Development Workers*
R0015A	*Utilization and Construction of Pit Silos*
M0010	*Preserving Food By Drying*

Appendix 3: Extension Training

How can a person be adequately prepared to play the role of an agricultural extension worker with small-scale farmers? Some people attend agricultural colleges and, by virtue of formal technical training, become professional PCVs. The Peace Corps and other development agencies train people to work as paraprofessional extension agents. In still other instances, extension workers can work in the field with little or no formal agricultural or extension training.

Several things are common to the preparation of these different types of extension workers. None of them is adequately prepared to work in the field by virtue of their pre-service training alone. Each extension worker is the "stranger in a strange land" when visiting farmers' fields for the first time (even in spite of being from the local community). Agriculture and communication are so location and time specific that actual extension work begins with learning even after extensive training.

Almost all extension workers find themselves in an organization of some type. Most PCVs also follow another extension worker or come up against set ideas and expectations of extension work. These predetermined conditions cannot be anticipated very well, and constitute the first obstacle to successful communication. Extension work, like agriculture itself, is a process of adaptation.

This suggests that extension work is best learned by experience and apprenticeship. Extension training is an ongoing process that continues throughout extension service. The pre-service training that extension workers receive should offer two things: basic skills and knowledge to begin effective work, and the ability to continue learning about extension and agriculture.

The Peace Corps aspires to prepare paraprofessional extension agents through pre-service training in agriculture and extension and periodic in-service trainings on specific topics.

Appendix 4: Resources

African Forum for Agricultural Advisory Services: http://www.afaas-africa.org/. This site serves a mandate "to implement the Agricultural Advisory Services aspects of the Comprehensive Africa Agriculture Development Programme (CAADP)—an African-owned and Africa-led initiative through which interventions to transform agriculture are coordinated." The website contains a number of publications, some of which can also be found on the Modernizing Extension and Advisory Services (MEAS) site (shown below).

Consultative Group on International Agricultural Research (CGIAR): http://www.cgiar.org/. "CGIAR research is dedicated to reducing rural poverty, increasing food security, improving human health and nutrition, and ensuring more sustainable management of natural resources. It is carried out by 15 Centers that are members of the CGIAR Consortium, in close collaboration with hundreds of partner organizations, including national and regional research institutes, civil society organizations, academia, and the private sector.

"The 15 Research Centers generate and disseminate knowledge, technologies, and policies for agricultural development through the CGIAR Research Programs. The CGIAR Fund provides reliable and predictable multi-year funding to enable research planning over the long term, resource allocation based on agreed priorities, and the timely and predictable disbursement of funds. The multi-donor trust fund finances research carried out by the Centers through the CGIAR Research Programs."

Farmer Field Schools are a methodology for training farmers that has been developing over the last 25 years, and brings together farmers with curriculum that emphasizes agroecological approaches and community development. It was first developed in Southeast Asia and focused on the biological control of insect pests. Since then, the approach has expanded and has been tailored to different circumstances and objectives.

Global Farmer Field School Network (FFSnet) and Resource Center: http://www.farmerfieldschool.info/. "The objective of FFSnet is to create a network capacity of governmental and nongovernmental organizations in the South to respond to the needs of programmes and projects (particularly FFS master trainers and facilitators) for knowledge, discussion, and information on the FFS approach, particularly on institutionalization and scaling-up strategies and mechanisms, and quality control."

Appendix 4: Resources

Modernizing Extension and Advisory Services (MEAS): http://www.meas-extension.org/. This website contains some of the most up-to-date thinking on the role of extension and how extension services must be designed and executed, given contemporary circumstances. In contrast to the old T&V (Training and Visit) system, modern extension methodologies emphasize collaboration and participation. Many of the materials on this site are illustrative of that thinking. You may want to view the video "Top Five Skill Sets for Smallholder Farmers" at http://www.meas-extension.org/meas-offers/training.

SUSTAINET EA 2010. Technical Manual for farmers and Field Extension Service Providers: Farmer Field School Approach. Sustainable Agriculture Information Initiative, Nairobi. Available online at http://www.fao.org/ag/ca/ca-publications/farmer_field_school_approach.pdf

TNAU Agritech Portal: http://agritech.tnau.ac.in/govt_schemes_services/ffs.html. This site discusses the concepts underlying FFS, outlines what a typical session might look like, and compares how the T&V and FFS approaches differ.