Social Science Department
Training Document 1982-2

THE ART OF THE INFORMAL AGRICULTURAL SURVEY

Robert E. Rhoades
March 1982

INTERNATIONAL POTATO CENTER
Aptdo. 5969 Lima-Peru

PNADN 764

THE ART OF THE

INFORMAL AGRICULTURAL SURVEY

Robert E. Rhoades

The ideas that we have in research are only in part a logical product growing out of a careful weighing of evidence. We do not generally think problems through in a straight line. Often we have the experience of being immersed in a mass of confusing data. We study the data carefully, bringing all our powers of logical analysis to bear upon them. We come up with an idea or two. But still the data do not fall in any coherent pattern. Then we go on living with the data – and with the people– until perhaps some chance occurrence casts a totally different light upon the data, and we begin to see a pattern that we have not seen before. This pattern is not purely an artistic creation. Once we think we see it, we must reexamine our notes and perhaps set out to gather new data in order to determine whether the pattern adequately represents the life we are observing or is simply a product or our imagination.

William Foote Whyte (1955)

Table of Contents

THE ART OF THE INFORMAL AGRICULTURAL SURVEY*

Robert E. Rhoades**

I. Introduction

The informal survey has often been called "quick and dirty," the approach of rural development "tourists." This put-down derives from the belief that short-term surveys yield impressionistic and "soft" data. Formal surveys based on the written questionnaire, however, are thought to be "objective," capable of producing "hard" data amendable to quantification and computer analysis. Nevertheless, budgetary, time and personnel limitations in Third World countries and international agencies frequently require use of informal surveys for agricultural development planning (Chambers 1980).

The informal survey is in fact a form of appropriate technology: cheap, practical, and fast (Bradfield 1981). If properly executed such surveys can produce at minimum cost a rich description of life in a farming community, an understanding of how farmers, merchants, extension workers, and others perceive their conditions and make decisions. On top of this, a properly conducted informal survey can give an accurate comprehension of local farming ecology and practices.

And anyone can do it --agronomists, extension workers, biologists, and social scientists. All you need is a little time (a few days to two weeks), pencil, paper, common sense, and a down-to-earth approach to farm people and their circumstances.

Surveys are only tools -means to an end-- to provide information for intelligent decision-making in solving rural development problems. As the springboard of planning, the informal survey places project implementors in contact with their clients for the first time and on the client's home turf. In this early phase the researcher is like an explorer, making a rapid survey of the horizon before plunging into the thickets from which the wider view is no longer possible. If we observe keenly at the start, the remainder of our journey stands a better chance of success. However, if we gather faulty information we may wander aimlessly throughout the project or lose precious time and funds backtracking. The purpose of this paper, therefore, is to suggest a few basic ideas on how to guarantee the efficient and successful execution of the informal survey.

---

* Funds for the development of this survey method came from the Rockefeller Foundation, IDRC-Canada, and CIP core budget.

** Agricultural anthropologist, CIP.

II. Why Conduct Informal Surveys?

The Feasibility Survey

Informal surveys can function to provide basic information on the feasibility of beginning a project in a region. This is especially the case when dealing with areas or farming systems about which little is known. In this situation, the informal survey may be of more immediate use to policy makers than to field agronomists, and it will probably be less concerned with specific production problems than with a balanced overview of the region, unless the introduction of a specific technology is under consideration.

Reconnaissance Surveys to Prepare Formal Surveys

The objective is to quickly obtain basic information specifically for the design and execution of formal surveys or more in-depth investigations which may, in turn, lead to on-farm experimentation. Thus, the immediate purpose is to help focus a subsequent formal survey that will utilize random sampling and quantify critical aspects of the production system. The need is not simply to get a "feel" of the area, but to discover important, albeit tentative, organizing concepts upon which to base future research. For example, we may want to map agroecological zones, develop a working typology of producers, and find out how farmers describe their problems. The exploratory, informal survey can also help insure that the questionnaire is written in a manner understandable and relevant to farmers' circumstances and sensitive to local issues.

Informal Surveys for the Direct Planning On-Farm Agronomic Trials

In this case, the formal survey stage is skipped and on-farm experiments are designed on the basis of an informal survey which aims to pinpoint farm-level problems. Most developing country projects will, out of financial necessity, opt for this approach.

For this reason, we need to rationalize the informal survey and make it a powerful tool capable of yielding accurate data upon which to base our research decisions. In this case, we may wish to ask more specific production questions or attempt to rank constraints in order to make sure the trials answer important local problems. In cases where the informal survey is the only planning investigation the team should be interdisciplinary, made up of at least one technical person and one social scientist. If this is not possible, team members should try to incorporate the missing perspective, be it social or biological, into the research.

III. The Frame of Mind

Long used by anthropologists in their study of everyday people, the informal survey is more in the vein of art than a set of fixed procedures. And like art, it involves creativity and technique which, if properly applied, make the difference between success and failure. And there is no substitute for experience as the teacher.

The informal survey is methodologically simple but usually physically tough. And dirty. It normally can't be accomplished by driving along a main road looking at fields, although a "windshield survey" may be a way to begin. The successful survey may require sloshing through muddy fields, scrambling along rocky paths and dangerous slopes, or whiling away hours in fly-ridden tea shops casually talking with farmers. The surveyors must be country-oriented, grubbing out information in fields, market places, bars, or wherever farmers' daily routines carry them. Those unwilling to face a few village hardships have no business doing informal surveys.

The successful informal survey also requires mental and methodological flexibility. It does not proceed like the formal questionnaire survey where pre-determined hypotheses are tested. Instead, important questions and the direction of study emerge as information is collected. This is not to say the informal survey lacks logic, but that one must be able to accomodate new information and adjust research plans accordingly. As the survey advances, you will pass from initial vagueness to a mid-way focussing and finally arrive at a stage where you can begin pulling the threads together and test specific ideas.

IV. Getting Ready: Pre-Fieldwork Preparation

Literature Review

Before going to the field, assemble and review any relevant secondary socioeconomic and production information about the general area to be studied. A surprising amount of data can be found if an effort is made to dig it out of libraries, research stations, and government offices. Secondary materials, especially government statistics, should be taken as suggestive of possible lines of inquiry and not as gospel truth. Attempt to acquire secondary data on rainfall, soils, population, markets and prices. Do not forget to consult studies conducted by other disciplines; it is a mistake for an anthropologist to read only anthropology, an economist only economic studies, or an agronomist to consult only agronomic reports.

Defining the Region

The most difficult early decision in the informal survey centers on delineating the geographical region to be studied. This depends, of course, on time, available manpower, and the project's aim. One must be careful, however, not to define the study region too broadly or narrowly. If the target area is vast, covering more than 300 square kilometers, it will be better to plan mini-surveys in representative areas.

In agricultural research, a target region will most likely share common physical and economic characteristics or linkages. In Peru, for example, the highland area selected for on-farm research was the Mantaro Valley, a high intermontane river valley marked clearly by right and left marginal slopes. On the arid coast, research was conducted in Cañete, a lowland valley, the territory of which is defined precisely by its irrigation system. In the Peruvian jungle, however, the informal survey was carried out in selected farming communities located at various points along the major river which served to link communities with the nearest commercial center. In this case there was no concept of a valley or plain but a broad study area linked by transportation arteries.

Using Aerial Photos and Maps

The best way to get a rapid overview of a region is to acquire aerial photos, land-use, relief, or ecological maps. In fact, do not even think of going to an area without at least one map, preferably a topographic map. A few hours studying such visual materials can reveal more than years on the ground trying to figure out agroecological zonation or land use patterns. Contrary to popular belief, excellent maps and aerial photos now exist in the geological or military survey offices of most underdeveloped countries. Satellite imagery already provides excellent coverage for some of the most remote areas of the world.

The ability to read maps and aerial photos is of greatest importance for conducting informal surveys. The images on an aerial photo may at first seem strange because one is not accustomed to a view from the air. With a little practice, however, the kaleidoscopic patterning of an aerial photo can tell us a great deal about both the historical and present structure of man-land relationships. By tracing field distribution and size, shadows and tones which reflect variations in crops or soil texture, irrigation channels, location of towns and roads, one can rapidly understand in a very general way the regional organization of agriculture.

Later, on the ground, the reality of the photo (called "ground truth" in satellite imagery interpretation) can be checked. For example, in planning on-farm research in Cañete, an International Potato Center survey team examined aerial photos of the valley. Three outstanding images were observed: (1) marginal belt circling most of the valley's edge made up of tiny fields, (2) center region made up of medium to large fields, (3) area of seemingly mixed field sizes and perhaps wasteland

reflecting a light tone. The team hypothesized that these images may represent distinct agroecological belts. The aerial photographs and the agroecological map developed from them are shown in photos I, II and Map I.

With additional data on communities in each zone and soil maps from the national resources office, the team conducted a windshield survey of the valley for two days and talked to farmers. By using aerial photos, field clusters were located. It was discovered that the zonation reflected in the photos did correspond to ground level reality, although some modification was required. The marginal zone, characterized by poor, rocky soil, was inhabited by small-scale producers. The center zone, historically the location of large estates, turned out to be a zone of large fields and the best soil in the valley. The third zone was mixed in terms of landholding size but was characterized by a common problem of extreme soil salinity and poor drainage and thus better suited for livestock and saline adapted crops such as sweet potato, peppers, and cotton. Field observations and interviews with farmers revealed that each zone was characterized by distinct combinations of crops, farming practices, and production problems. The differences between zones and similarities within zones were taken into consideration in implementing on-farm trials (see supplement I for the summary recommendations of this survey).

Basic Questions and Techniques

Before we ever set foot in any farmer's field, we need to go to the drawing board and decide: what kinds of information are we after and for what end? Our general objectives should be clear, even though we may not yet know relevant questions. Draw up a list of tentative topics for investigation:

. What are the agro-climatic zones?

. What are the principle crops?

. What is the cropping (or post-harvest) system?

. What are the types of farmers?

. What are the farmers' practices?

. Why do farmers follow these practices?

. What do they feel are their main problems?

Photo I. Aerial photo of Peru's Cañete Valley. Such photos are available from a government office for public use. Most developing countries now have such photos available.

(Photo: Courtesy of the Instituto Geográfico Militar).

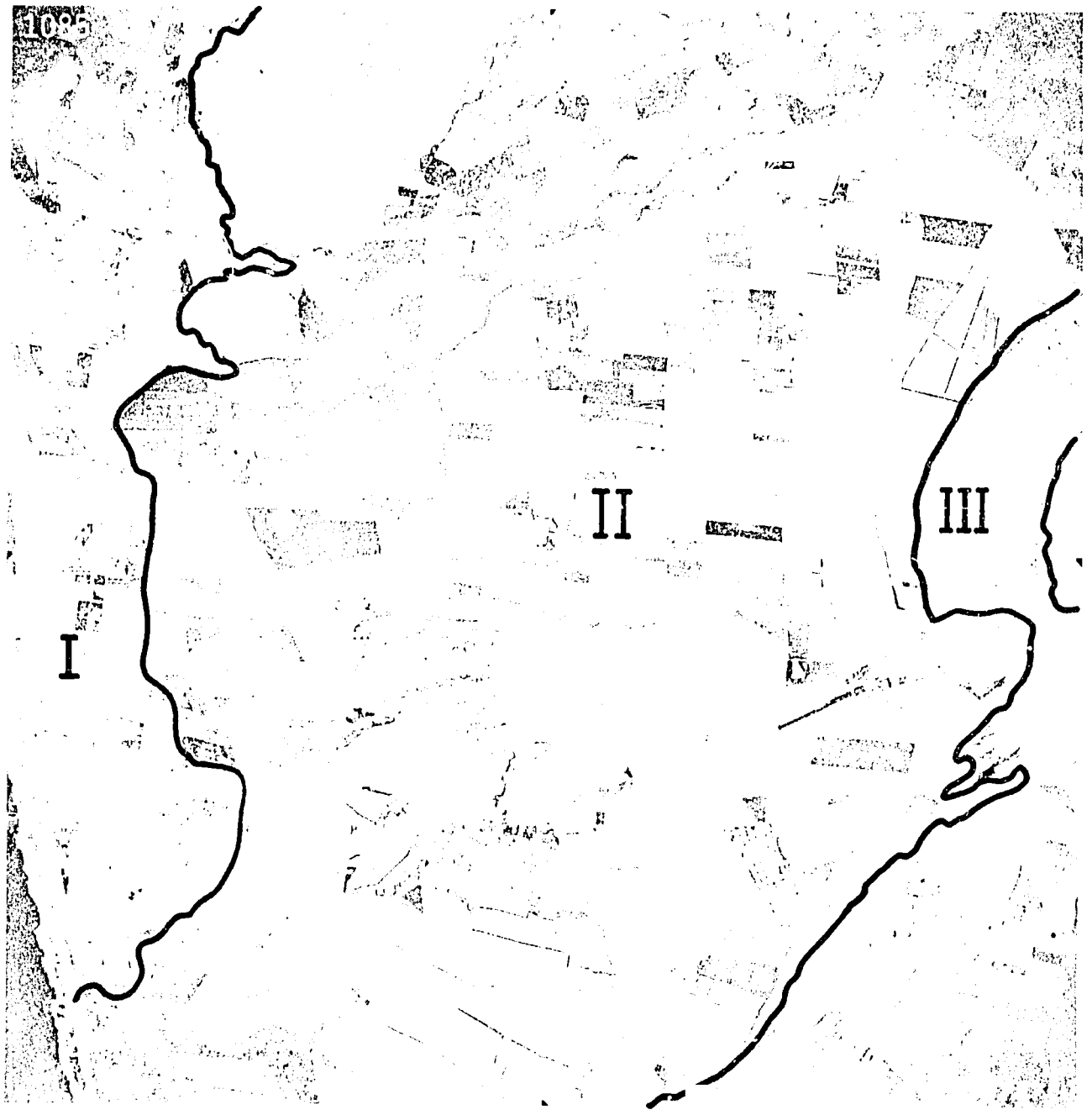
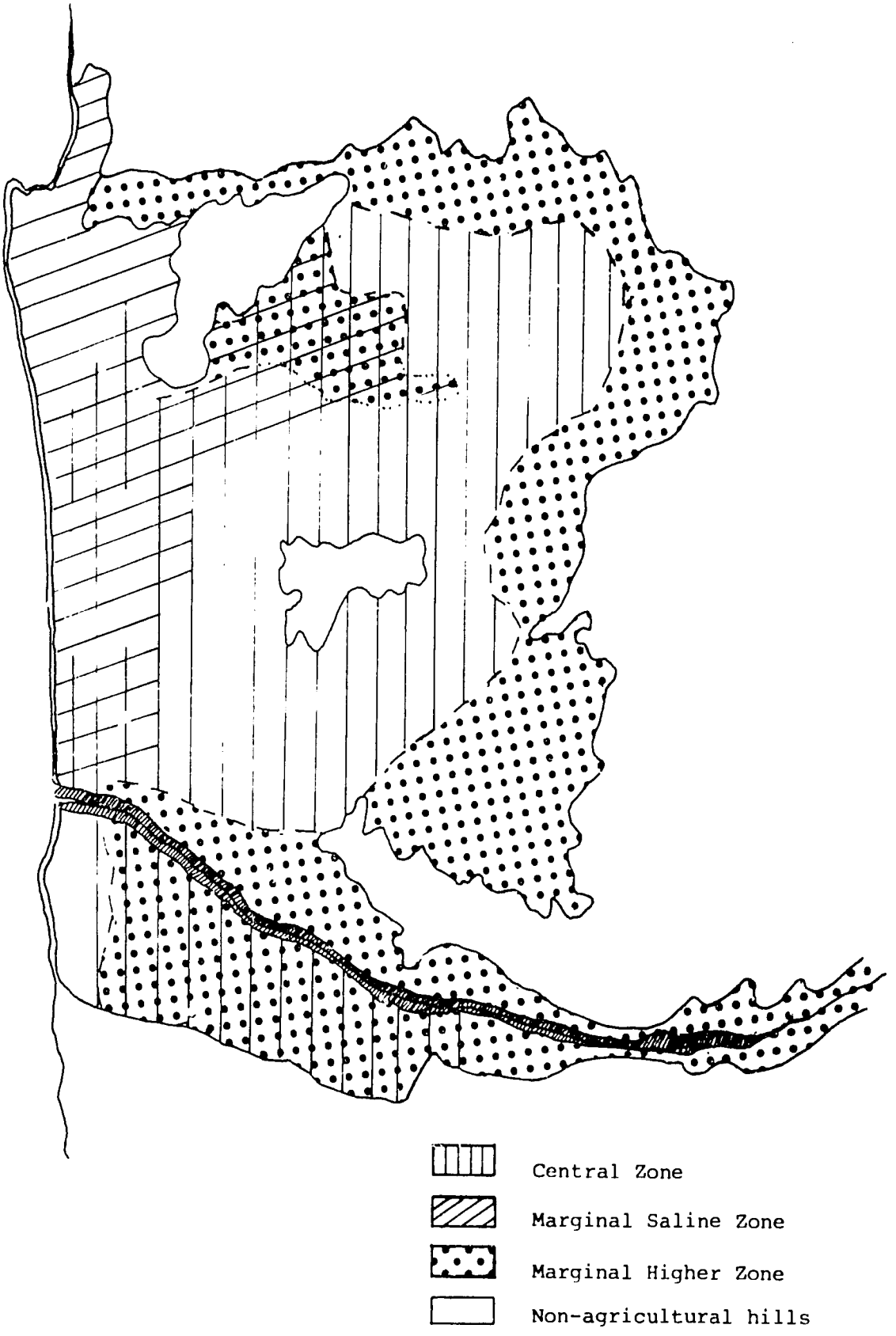


Photo II. By examining field size and distribution, shadows, tones, and other features, organization of agriculture in a region can rapidly be understood, albeit in a general way. Later, "ground truth" can be checked by visiting selected areas and surveying farmers and fields. In this case, three hypothetical zones were determined.

Following further study on the ground, an agroecological map (see Map I next page) was drawn.

(Photo: Courtesy of the Instituto Geográfico Militar).

Map I: Agroecological Zones. Cañete Valley, Peru.



Note: Some areas showed mixed characteristics of more than one zone. These are shown on the map by overlayed markings.

During the informal survey, seek out "key informants," those talkative individuals with great depth of experience and knowledge about farming. Don't fall into the bias of interviewing only men. Normally all family members are involved in agricultural decision-making and especially in regions of high male labor outmigration, women, old people, and children are the backbone of farming.

V. In the Field

Armed with the questions you decide are relevant and available secondary material, you are ready to begin. At first, everything will seem a booming confusion in the field. This initial disorientation is inevitable, so don't let it concern you. Just remember three simple bread-and-butter techniques and before long your region will become comprehensible.

OBSERVE. Keep your eyes open for patterns in crop production, land use, and farmer behavior.

CONVERSE. Talk with people and listen to their concerns and views.

RECORD. Discreetly, write everything down. Try to keep as complete fieldnotes as possible. This is essential in the early stage to help organize your thinking.

Interviewing Farmers

The key to a successful informal survey, especially in relation to understanding how farmers see their problems, is the successful interview. It is important to decide early whom you want to interview. A frequent bias in agricultural development is to think in terms of "the farmer." Farmers, however, usually do not live in isolation. They belong to groups --families, communities, nations-- and decisions about farming are often made by these groups. Although you may talk to individuals, place their comments in the context of social pressures and beliefs. Interviews with groups of farmers are frequently more lively than with only one person. Be sure that local leaders know what you are doing. Informal does not mean incognito. In fact, in many parts of Asia and Africa you must go through the local headman or village leader to gain cooperation. Don't try to shortcut the local chain of command. Although be aware that local leaders will selectively introduce you to the people that support their biases.

One way to understand the total farming system (not just on-farm production) is to construct a chain of "key informants." The key informant is an individual who is accessible, willing to talk, and has great depth of knowledge about an area, certain crops, credit, marketing and other agricultural problems. Do not believe everything key informants say but do not pass up the old-timer who enjoys talking. In any community it won't take long to construct a chain of key informants: banker or money-lender, landlord, ministry official, extension agent, farmer, merchant, and middlemen. Each person in the chain may see the problem differently.

Executing the Interview

The mechanics of the informal interview itself can be arbitrarily divided into five stages (Rhoades 1980).

1. *APPROACH*
2. *WARM-UP*
3. *DIALOGUE*
4. *DEPARTURE*
5. *RECORDING*

1. The Approach - With our general objectives in mind, information from secondary materials, and possibly names of local "key informants," we are ready to enter the field. It is best to keep as low a profile in the rural setting as possible. Oversized vehicles bearing official looking numbers driven by chauffeurs should, if possible, be avoided. Walk as much as possible. Do not go in large numbers. Two in a team is often best. If you have a sizeable team it is advisable to divide the study area into a number of zones in order to avoid duplicating efforts or interviewing the same farmers. Once you spot a man in a field or a woman in her garden who appear as persons to interview, don't drive around indecisively creating suspicion. Approach him or her directly. However, avoid the "opinion poll syndrome," where you startle the farmer by driving up to him in his field and jumping out with notebook in hand ready to interview. Try to blend into the local context as much as possible without "going native." Be sensitive to the fact that people may be suspicious of you.

Timing is extremely important. One has to be aware of the daily work schedule, seasonal activity, work habits, climate, and how these affect farmers' willingness to talk. In Peru's highlands, we have found that interviewing is acceptable early in the morning before the day's activities get underway. In Indonesia, however, the best time for interviewing is between 4 pm, after prayer, and the evening meal when people are in their homes.

If one is willing to take the time and physical effort to walk to the field, interviewing is often more successful since discussions can center around ongoing agricultural activities. If appropriate lend a helping hand without getting in the way. The slack season is also an excellent opportunity for informal interviewing.

2. The Warm-Up - Informal interviewing is a dynamic process in which important information develops out of casual conversation. The first interviews may be very simple but soon, as our knowledge of an area increases, questions will become more penetrating and valuable.

One purpose of the informal survey is to communicate with farmers. If large numbers of researchers descend upon a farmer, the result is likely to be like this. The farmer is the man on the left, isolated and alienated. When he works with only one or two researchers he is known to be an excellent and talkative informant.

Don't go directly to the subject at hand. The farmer should first be greeted according to local custom. Farmers should be treated with respect (if the local language requires it, use the "polite" form of address). Here, avoid what I call the "sahib syndrome" which is condescending and aggressive. Treat farmers with courtesy. Don't talk to the farmer from a vehicle; try to avoid positioning yourself above him. Open the conversation with locally accepted polite talk about the weather, how his crops are doing, or the price of potatoes. Tell him exactly who you are, why you wish to talk, and the nature of your work.

Observe the situation to make sure the context is conducive to an interview. For example, if the farmer is irrigating and receives water only once a week for an hour, he may not be interested in small talk. Ask for an appointment. Sometimes farmers can suggest the best time and place to continue.

3. The Dialogue - The key to the successful informal interview is to be natural and relaxed while guiding the conversation to a fruitful end. Let the discussion flow and mix up your questions. At first avoid sensitive questions. Don't fall into the "Joe Friday syndrome" (The famous TV policeman whose interrogation always began with a blunt "just give me the facts, ma'm"). Allow people to stray onto another topic or tell stories. You are seeking general information and what is said may be revealing of local customs or pshychology. You can return to the main line of thought later. By all means, don't ask too many questions back to back. Intersperse the conversation with personal comments of your own.

One method that gains farmer cooperation anywhere in the world is the straight forward, honest admission on your part that the farmer is the "expert" about farming in his area and you are the learner. Just say "I am not from around here and I don't know much about how you farm. Would you kindly explain ...?" Then, go to your specific questions. If you have personal farm experience from your region or country, farmers always like to compare notes.

If you ask a question that causes silence or it is obvious he can't answer it, don't try the socratic method of suggesting answers to lead the conversation where your bias thinks it should go. Rephrase the question. Always use plain understandable language with farmers. After all, they have a rich vocabulary tied to their profession and area, but they do not understand scientific jargon. There are advantages to working in pairs with at least one person from the same culture although not necessarily from the target area. Don't ask questions that are too abstract or sensitive. Don't extend the interview beyond 30 to 45 minutes unless the farmer is in a talkative mood. Observe facial expressions as they may reveal a great deal about farmers' concerns or reservations. Make sure your questions are culturally sensitive. Frequently, you may get information on sensitive matters through indirect questioning. But always remember that what people say and do may be two different things.

This field notebook is indispensable to the informal survey. Although you have to discreetly use pen and paper in front of farmers, write down in detail your observations and thoughts during or immediately after interviews. Without a complete data-packed notebook the informal survey will likely fail.

4. The Departure - After you have covered all relevant topics or exhausted the time the farmer can afford to give you, bring the conversation to an end. Not too abruptly, however. If the weather is unfavorable (too hot, raining) or the farmer seems pressed for time you may wish to prematurely stop the informal interview. Remember to do it gracefully and naturally. Avoid the "gringo syndrome," the abrupt, business-like "gotta go" departure. Thank him for his time and depart with the proper local farewell.

If locally accepted the camera can be an important research tool. Photos can be used later to help design formal surveys or experiments. Sometimes you can do the farmer a favor (and win his confidence for future on-farm work) by sending or returning with photos of the farm or family. Do not let the family down by failing to send promised photos. Also, in most world areas farmers appreciate receiving small packages of vegetable seed for their gardens or technical brochures written in plain language.

5. Recording of Information - Immediately after (or if permissible during) the interview jot down memory-jarring notes. Agricultural scientists, in particular, tend not to write down what farmers say or their own personal observations. However, it is amazing how facts, ideas, and important observations that one "will never forget" quickly slip away. It is estimated that 50 per cent of the details of an interview are lost within 24 hours and by the end of the second day, over 75 per cent. After that, only skeletal notes can be salvaged. Thus, remember during the interview to take mental notes reminding yourself: "don't forget to write that down." Jotted notes will serve to aid your memory later when you write out full field notes on interviews and a day's observations.

Whether one should take notes in front of farmers depends on the situation. Be sensitive to your actions. The best rule is to abstain from using pencil until you feel the situation is truly relaxed. Informal interviews lasting more than 30 minutes will usually be casual enough to allow the writing of some notes. Don't pull out an official-looking questionnaire in any case. This will surely destroy confidence. Test the ground first by "interacting" with the farmer on paper by drawing a field layout or cropping pattern. If he does not react suspiciously to the pen and paper, you can probably continue to take some notes. However, if issues turn sensitive, stop writing. Try to get the farmer's name and address unless he prefers not to give it so that you can contact him or if you visit the area again you can make specific personal reference to your previous visit.

How long one waits before jotting down notes or writing full field notes depends by and large on the setting, people interviewed, and personal style. In cases of team research, it may be best to appoint a scribe, a person whose job is to write everything down. After interviewing farmers in the morning, for example, stop around midday and write out field notes while they are still fresh in mind. It is also valuable

for the research team to meet daily in the evening to go over notes and plan for the next day (Hildebrand 1979).

Think by writing in your field notebooks. One method of recall is to think in terms of a "sequence of events," that is writing while remembering the activities surrounding an interview. If you discover your questions are not yielding new information it may be time to ask them in a new way or change the questions themselves. Through this rethinking process and "brainstorming" with your team workers, you will have analytical flashes where sudden realizations will consolidate into a pattern. For example, when at once you saw isolated fields and crops, now you can see how they associate to form an agroecological zone.

VI. Informally Organizing Data: Types of Farmers and Cropping Systems

One purpose of the informal survey is to define relatively homogeneous types of farmers and agroecological or production zones. Technology is frequently locational and group specific. What works for one group of farmers in one ecological zone may not work elsewhere. This fact is complicated through a widespread tendency by technical agriculture scientists to select larger, "better" (more successful) farmers for experimental research since this group is more accesible and has resources to carry out experiments. Also, agronomists have been known to prefer level fields with quality soil near roads rather than perhaps more representative sloping, rocky, fields located far from the main road. Thus, one should be aware of the representatives of the experimental plot for extrapolation of research results.

Types of Farmers

Early in the informal survey one can begin to develop a typology of producers. Typically, such groupings are based on a predetermined and quantifiable landholding size (e.g. 1-5 hectares is small farmer, 5-10 hectares is medium, over 10 hectares are large farmers). However, care must be taken not to assume size is necessarily correlated with specific cropping patterns or even economic status. Often both large and small farmers in the same area pursue similar cropping strategies. And it may be that the "small" farmer with his limited farm size is more efficient or a better farmer because he must be able to subsist on a much smaller landholding. Thus, multiple factors have to be considered in developing a typology of producers; e.g. size of holding, purpose of production, and cropping system. In terms of potatoes, for example, one might develop a technology involving large to small commercial seed growers, small-scale subsistence farmers, and large, medium and small-scale commercial growers of ware potatoes. However, remember that typologies are merely ways of organizing thinking and that farmers cannot be so easily stereotypes. Do not automatically assume that all farmers in a type will behave the same.

Agroecological Zones

An agroecological zone represents an association between a set of natural conditions (climatic, topographic, soils) and agricultural activity (farming, herding) utilized to exploit that environment. The usefulness of zones resides in the possibility for extrapolation since conditions within zones are more similar than between zones. Presumably, farmers living in the same zone would have similar problems and technological needs.

Studying agroecological zones can be facilitated by two simple techniques: agroecological transects and field plotting.

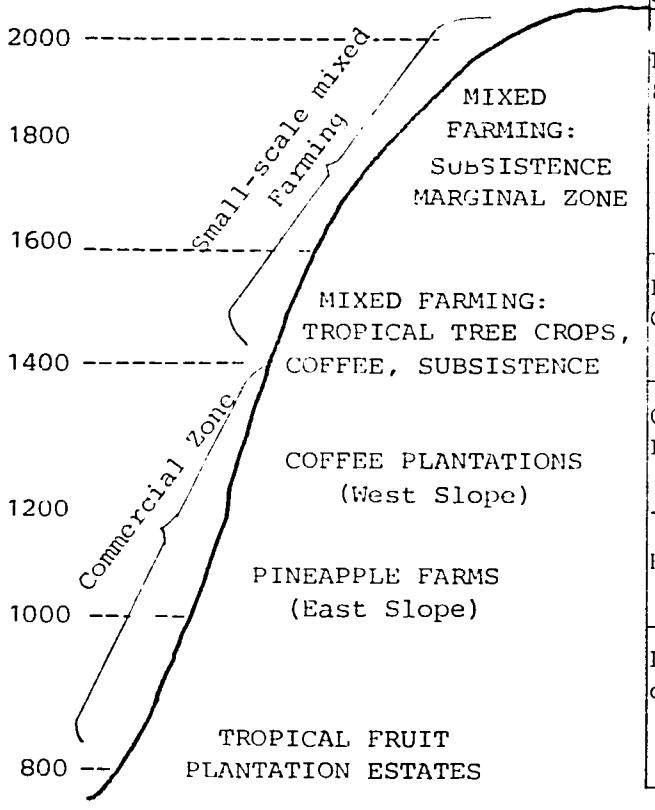
The transect is simply a cut or cross-section of a territorial expanse wherein fields are mapped, cropping patterns and practices observed through space, and the boundaries of agroecological zones defined. Transects are relatively easy to do, depending on the ruggedness of terrain and visibility as affected by topography and vegetation. The transect is especially appropriate where you have relatively rapid changes in topography and natural conditions, such as in mountainous regions.

For example, a transect was made in Peru's Chanchamayo Valley to determine agroecological zonation and crop distribution (Diagram 1). The Chanchamayo stretches between Peru's high jungle on the eastern Andean slopes down to the lower Amazon Basin. The region ranges in altitude from 500 to 800 meters on the valley floor up to surrounding 2,000-meter ridges.

Using an altimeter, aerial photos, and topographical maps, the survey team started walking from the valley floor along an access road toward higher elevations. Detailed notes were periodically taken of natural vegetation and sketches of field shapes and crop associations made Technological observations were likewise taken and, whenever possible, farmers interviewed. It is important to observe settlement patterns, distance of dwellings from fields and distance between fields. These aspects might be important, for example, in determining labor or time requirements in getting to fields or transporting a harvest to market. Transects similar to this were made in several parts of the valley and later the information assembled to give us a general idea about land use in the region.

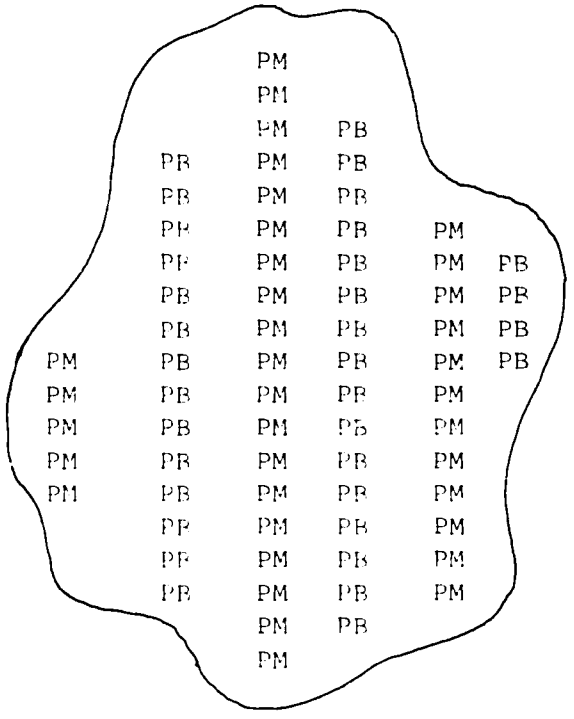
Field plotting is a second simple technique for rapidly understanding cropping patterns and practices in a region. It can be conducted in relation to the transect exercise or while systematically driving through a region. Periodically, especially if it is sensed that the ecology has altered, the team should stop and plot a field in terms of its crop associations and observed farming practices (Diagram 2). We do not even have to talk to a farmer to learn a tremendous amount. In a single day, data on several hundred fields can be recorded in an area of open terrain with good roads. For example, agronomists at the International Potato Center were considering trials related to intercropping in the Peruvian Highlands.

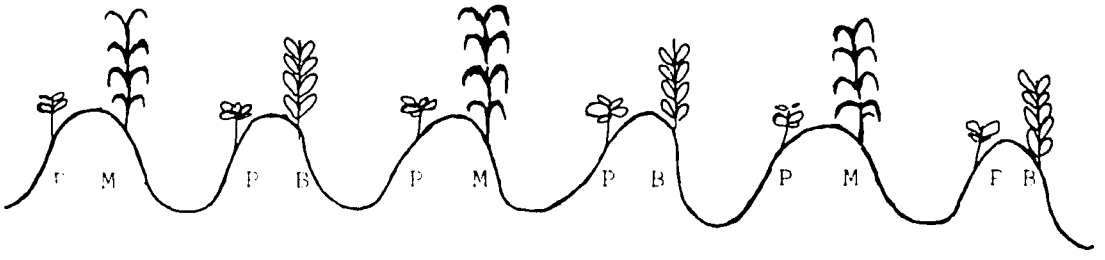
Diagram I: Agro-Ecological Transect. Chanchamayo, Peru.



	OBSERVATIONS		
Landholding	Cultivation Type	Associated Crops	Origin of Farmers
Family units 8 - 10 hectares	Semi-shifting cultivation Vegetable garden No pesticides No fertilizers Mixed cropping	Vegetables (potatoes) Livestock Maize Bananas	Recent settlers from highlands
Families tied to Cooperatives	Semi-shifting (until permanent crops put in)	Papaya Palta Banana	Recent migrants from highlands
Cooperatives Large units	Hired labor pest - fertilizer	Banana Palta Papaya	Long-term residents
Household; private	Hand cultivation	Yuca	Second generation settlers
Large units; coops (haciendas)	Permanent, mechanized, pesticides, fertilizers	Banana Palta Papaya	Old-timers

Diagram II: Field Plotting





PM = Potatoes-maize (same row)

PB = Potatoes-beans (same row)

Description: at 3,175 meters we encountered a field with intercropping of maize, potato, and broad beans. Appears potatoes planted first and with first hilling up, then maize and broad beans planted. This was confirmed by farmer met later on the trail. Apparent reason is to save labor by planting maize and beans while hilling up potatoes. Also, farmers spreading risks; in case one crop fails, will have others to fall back on.

Source: Chanchamayo field notes, 1979.

A subsequent informal survey conducted in one day yielded data on 275 fields. Field plotting was done for representative types. The results showed that 86% of the conveyed fields were monocropped and that potatoes are rarely intercropped even in the remaining 14 per cent. Agronomists dropped the idea of conducting on-farm intercropping trials for this region (Werge, N.D.).

The sampling may not be random but after two to three hundred fields are covered, the cropping pattern should be generally understood. This, for example, can indicate whether experiments should be done with intercropping, monocropping, or what field trials might be considered.

The problem is that such field observations are time frozen. To gain a long term view of a field or zone, interviews with farmers are necessary. This can be done, however, by having the farmer tell the history of a few parcels as far back as memory and time allow. It is important to gain an understanding of rotations and the overall cropping system so as to determine how a farmer views the role of different fields in his farming strategy.

Moving Toward Quantification: Satisfying an Impulse

If the informal survey lasts more than one week, you may feel the need for some degree of quantification, a first step toward a formal survey. It is at this point, that the development of a simple one-page interview schedule is suggested. The purpose of this is to gather some very basic numbers, perhaps on size of operation, rotations, crops, and farmer opinions on primary production problems. By this simple quantification, it can be seen if patterns emerge in different zones and among different types of farmers. You can also use it as ammunition with colleagues who won't believe you unless they see numbers.

One valuable technique is the farmers' ranking scale developed from responses to the open-ended questions: "What is the most important problem you have in producing potatoes? The second most important, the third, and so on (see Supplement 1). Although these are abstract questions, we have found that farmers always have three or four major technical problems on their mind. After the interview, write down farmers' perceived production problems, ranking them numerically. Later a ranking table can be constructed and the data used to select technology for on-farm experimentation which relates to farmers' felt needs. It should be remembered, however, that concerns are very seasonal. In Cañete, Peru, potato farmers in March always see cost or quality of seed as their main problem (because they are getting ready to plant); in August (just before harvest) it is an insect pest.

A table drawn from one of CIP's informal surveys is given below (see Table I). Farmers were asked to rank their first four problems in order of importance. Such tables are easy to construct and useful as a sort of intermediate step toward quantification.

Table I: Farmers' Perceptions of Production Problems Ranked in Order of Importance: Mantaro Valley

Problems	N° of Farmers' Responses				Total Responses
	Most Important	Next Most Important	Third	Fourth	
1. Climate	10	11	12	2	35
(frost)	(3)	(4)	(5)	(0)	(12)
(hail)	(3)	(6)	(3)	(0)	(12)
(drought)	(4)	(1)	(4)	(2)	(11)
2. Insects	9	6	5	0	20
3. Lack of Capital	8	2	6	3	19
4. Plant Disease	5	7	3	2	17
5. Cost of Inputs	1	3	3	1	8
6. Lack of Land or Poor Land	2	1	3	0	6
7. Cost of or Lack of Labor	0	2	1	0	3
8. Lack of Irrigation	0	2	0	0	2
9. Lack of Technical Knowledge	1	0	0	0	1
10. None	1				

VII. Use of Materials: Writing It Up

Immediately after fieldwork, the team should sit down and quickly write a summary report even if it lacks professional polish. Don't worry too much about grammar and style. Re-writing can come later. It is important to get the information down while still fresh on everyone's minds. The exact format or outline will depend on the purpose of the survey but be sure to write in a language understandable to everyone. If the report is to be used to implement on farm experiments, summarize only directly relevant material. Keep recommendations brief. Copies of summary and final reports should be sent to all offices, institutes, or interested individuals, especially those who assisted in the research. This final reciprocity is only fair. The people of the region have given you their time. The least you can do is give them a copy of the study which they have so kindly help you prepare.

It is important not to let the report be shelved away only to gather dust. Take it seriously: it should be your guide throughout future activities but constantly upgraded as you progress. The informal survey is for immediate utilization, not as an historical document. It should serve to keep us honest (or at least caution against slipping into our prior biases without reason). If, for example, our survey shows that the majority of potatoes in a target region are produced by resource-poor, small growers located in a high, marginal zone 1 hour walk from the main road, we should fight off the understandable desire to carry out trials with a few large-scale producers located on fertile valley floor lands (unless the technology being tested is relevant to all growers, large or small in either zone).

Unless we take seriously our findings and what farmers have told us, we are likely to discover that farmers will not take us seriously either. We have to be sensitive to their needs, opinions, customs, and capabilities. Otherwise, we may fall victim to what I call the "which way to Little Rock syndrome?" In a rural area of the United States, in the state of Arkansas, a farmer was hoeing cotton in his field near a forked road. A city "slicker" (country term for pretentious people from big cities) in a big, shiny car, was headed toward this fork trailing a cloud of dust behind. When he got to the fork and was obviously confused he yelled to the farmer: "Hey, buster (an insulting form of address not used in Arkansas), does it matter which road I take to get to Little Rock?" "No" yelled the farmer back. Satisfied the man turned left and sped away. The farmer with a sly grin paused, leaned on his hoe and yelled again: "No, don't matter to me no how" as he watched the city slicker drive away on the wrong road.

References

1. Bradfield, Stillman
   1981 — Appropriate Methodology for Appropriate Technology. In American Society for Agronomy, Transferring Technology for Small-Scale Farming. Chapter 2, pp. 23-33

2. Chambers, Robert
   1980 — The Small Farmer is a Professional. Ceres. 13(2): 19-23

3. Hildebrand, Peter
   1979 — Summary of the Sondeo Methodology Used by ICTA. ICTA: Guatemala (Mimeo).

4. Rhoades, Robert
   1980 — Some Notes on the Art of Informal Interviewing. Discussion paper prepared for workshop on "Methodological Issues Facing Social Scientists in Applied Crop and Farming Systems Research" CIMMYT: Mexico (April 1-3).

5. Werge, Robert
   N.D. — Interplanting Practices in the Northern Andean Sierra. Mimeograph. International Potato Center.

6. Whyte, William Foote
   1955 — Street Corner Society: The Social Structure of an Italian Slum. Chicago: University of Chicago Press.

SUPPLEMENT I

RECOMMENDATIONS FOR ON-FARM AGROECONOMIC TRIALS: CAÑETE, PERU

An informal survey was conducted over 10 days in late February and early March, 1980, to help CIP's agroeconomic team focus better on farm-level problems in conducting trials. In this case, the agronomic team had already been through one season of trials and had considerable knowledge of the area. However, they had conducted trials mainly with larger farmers located in the center of the valley and on problems generally defined from the outside rather than by farmers. The attempt then was to (1) define agroecological zones; (2) identify representative types of farmers and their perceptions of production problems; (3) interview local extension and ministry workers to better pinpoint relevant problems for which improved technology might be available. This report, highly simplified, presents the findings of this informal survey.

I. Agroecological Production Zones

We would strongly urge that the upcoming trials take into account the internal agroecological diversity of the valley. Mainly based on soil, irrigation, and socioeconomic conditions, we have determined the existence of three main zones: (1) Upper Valley Margin, (2) Valley Center and (3) Lower Valley Saline Margin (see Map I earlier in this report). In each of these zones farmers distinct sets of production problems or possibilities. Although we cannot present the mass of data we have available, we can briefly summarize the differences in the valley.

Valley Margin Zone

This is a zone of small agriculturists with most holdings varying from 1-3 hetares. It contains the poorest soil in the valley being quite shallow, sandy, and rocky. Since the agriculturists here receive water only every 8-10 days (by mita) and face water management problems, water supply is considered a major problem. They tend to opt for plants which require less water, mainly cotton (which also has price stability). The water problem has been severe for two years because of a lack of rains in the highlands and predictions are that this year will see an even greater scarcity of water. Here one finds the greatest variation in crops and intercropping. Potatoes are grown mainly in the sectors of Quilmana Alto and Nuevo Imperial (47% of all Cañete potato growers for 1980 are programmed in these areas according to ministry data).

Valley Center

The valley center was historically the location of the large farms which are today cooperatives. This region contains the "alluvial plains" soils, considered to be deep and the best in the valley for agriculture. Scattered throughout the valley are sections of small and medium-size agriculturists. The cooperatives and medium-scale producers concentrate on 3 or 4 main commercial crops (cotton, potatoes, maize, sweet potato). They farm with tractors and have a strong market orientation. The small agriculturists in the zone also plant commercial crops but also pursue cultivation for home use (pan llevar). The cooperatives receive water at all times so there are no major water problem. A typical rotation is cotton-potatoes-maize.

Coastal Saline Zone

The main characteristics of soil are: salinity, clay texture, and poor drainage. Farmers complain especially of salinity which they note prevents the growing of potatoes. Cotton, maize and pasture for cattle are the main crops here. The zone has a mixture of CAPS (cooperatives) and small to medium producers. Under a land rehabilitation project, more than 3,000 hectares will be improved for cultivation purposes. Since most irrigated, arid zone have problems with salinity, Cañete would be an area for fruitful investigation with application to other world areas. Many farmers in this area wish to plant potato but are not willing to take the risk because of salinity.

II. Types of Farmers and Farmers' Perceptions of Problems

In addition to identification of major zones, we also studied 6 areas within the valley. It was learned that significant variation occurs in agricultural practices even within our larger zones. Each area has its own special characteristics (demographic patterns, crops, irrigation system, etc.) and anyone doing experiments would benefit enormously from the detailed studies on 17 areas of the valley carried out by the agronomists of Valle Grande. This information includes complete and detailed questionnaire, often covering every farmer of the selected area.

Contrary to popular belief, Cañete is not a valley of only large farming operations. It is also a farming community made up of small landholdings. According to 1976 data, 84.2% of all farm units contain less than 3 hectares, 11.2% with 3-9.9 hectares and the other units are medium or CAPS. It is also not an established fact that mainly medium size farmers and CAPS grow potatoes. In fact, according to the ministry's registration (all farmers must submit a cultivation plan) the average size planting is around 4 hectares. The vast majority plant only 2-3 hectares. Furthermore, since 1976 the CAPS have drastically cut the number of

hectares they plant in potatoes. According to 1980 ministry data (not quite complete for 1980) only 25% of total hectareage will be planted by CAPS this year.

Table 1 gives a general breakdown of the 1980 programmed planting. The sectors Quilmana Alto, Quilamana Bajo and Nuevo Imperial Alto contain most of the potato farmers (69.75%), and nearly all of those farm less than 3 hectares of potatoes. These three areas account for 48.25% of the programmed land area. Only in Quilmana Bajo do we find CAPS and a significant number of medium farmers. In Nuevo Imperial the average size of planting will be 1.73 (N = 99). It should be further noted that 86.74% of all planting will take place in April and May. Thus, if one can speak of an "average" farmer (representative of the majority of the region) it would be a farmer with 2 to 3 hectares who lives in one of the marginal communities and plants in April and May. In any case, these available data suggest that if representativeness is a concern then at least 70% of the experiments should deal with these small farmers.

III. Farmers' Perceptions of Production Problems

To acquire a better understanding of farmers' perception of problems we conducted a non-random survey with farmers from various zones. Among other things, we asked them to rank their production problems.

The ranking of all farmers was the following:

		N° of Farmers	% of Total
1.	Cost of seed	32	65
2.	Cost of inputs (besides seed)	31	63
3.	Irrigation problems	19	39
4.	Insects	18	37
5.	Soils (poor or saline)	13	26
6.	Disease	11	22
7.	Marketing	11	22
8.	Climate	6	12
9.	Others	8	16

The farmers of Cañete are presently weighing the decision whether to plant. This may have biased our survey, but there is little doubt that the prevailing cost of seed (105 soles/kilo) is a major concern in the valley. Nearly all farmers mentioned risk in conjuction with cost of seed and other inputs. Potatoes are extremely expensive and a crop failure would be a strong financial setback for small farmers.

Each agroecological zone has its own type of production problems. In addition to their concern with costs, the farmers of the marginal zone rank irrigation as a major problem (N = 14, 50% of total farmers

in the zone). In the central zone (where they mainly receive water continuously) problems with insects (mosca minadora) was a major concern (N = 7, 50% of central zone farmers). Along the coastal-saline zone, farmers perceive soil problems as the next problem after cost of seed. This is due to high salinity, poor drainage, and what they call a lack of "agua dulce" (sweet water) since they are at the end of the irrigation channel and receive the water after it has gone through the entire system. The implications of this data on perception of problems are that seed storage experiments may benefit farmers in all zones (including CAPS in the center of the valley), irrigation experiments may be most beneficial on the margins where water problems exist. Of course, experiments with salinity along the coast may be worthwhile if the transferability to other world zones is an objective of the experiments (as stated in the justification of the Cañete project).

IV. Interviews With Extension Workers and Ministry Officials

In addition to our work with farmers we also interviewed extension workers and ministry officials. Eng. Trelles, who is in charge of the potato section at the ministry, recommended three broad categories of experiments:

1. *Nematode Control* (cultural practices, chemical control or resistant varieties).

2. *Water/Irrigation* (any experiment to help solve water problems of small farmers).

3. *Salinity* with the opening of 3,000 new hectares, potatoes could play a role if we had the varieties or agronomic techniques to deal with salinity.

Other extension workers added the following: (1) storage experiments; need to store "criolla" seed from September/October to March; (2) insect control, especially "mosca minadora;" (3) fertilizer trials, incorporating more organic material in soil or trials with "guano del corral ; (4) biological control of insects.

V. Conclusions

Based on all the evidence we have available we would recommend the following:

1. Most of the experiments (70%) should be carried out with small farmers living in the marginal zone, the remaining 30% among medium size and CAPS.

2. The experiments should aim to increase efficiency in seed use, decrease cost of seed and inputs while increasing output (high cost complex packages will only increase the risk factor).

3. The key problems identified by farmers should be addressed: "mosca minadora," water problems, cost of seed, and salinity (in one zone).

4. Most farmers did not identify nematodes or storage as problems but these were stressed by knowledgeable extension workers in the area.

5. The experiments should be relevant to the agroecological zone where the experiment is conducted and to the majority of farmers in the zone.

6. Traditional fertilizer trials should be pursued only after an extensive review of the data on current farmer fertilizer practices available in Valle Grande, a local private research institute.

Table I: Programmed Potato Planting by Sector: Cañete (1980).

Sector	Agriculturists		Has. Month of Planting				Total Has.	Average Size of Planting	Sector % of Total Programmed
	N°	% of Total	March	April	May	June			
Nuevo Imperial Alto	99	18.9	8.46	70.62	61.76	30.79	171.63	1.73	7.42
San Luis	18	3.44	1.71	134.76	93.20	14.70	244.37	13.57	10.57
Herbay	3	.57	13.05	4.0	22.23	-	39.28	13.09	1.69
Quilmana Bajo	115	21.98	76.48	287.57	56.87	12.40	433.32	3.76	18.74
Quilmana Alto	151	28.87	-	284.51	206.52	19.65	510.68	3.38	22.09
Imperial	42	8.03	18.42	79.67	51.06	5.98	155.13	3.69	6.71
San Vicente Alto	23	4.39	1.00	142.87	143.32	28.00	315.19	13.70	13.63
San Vicente Bajo	30	5.73	10.70	57.86	33.62	14.00	116.18	3.87	5.02
Imperial	42	8.03	26.46	156.39	118.34	24.30	325.49	7.74	14.08
TOTAL	523	100.00	156.28	1218.25	786.92	149.82	2311.27	4.42	100.00
		% of planting by month	6.76	52.70	34.04	7.78	100.00	CAPS = 20.1% of Total area to be planted	

SUPPLEMENT II

GUIDE FOR INFORMAL SURVEY OF A POTATO PRODUCING REGION

The following set of questions and topics might be covered in an informal survey. It emphasizes socio-economic and farming systems aspects. They are by no means exhaustive and it may be convenient to discard many which may not bear on the specific needs of the researcher. It is suggested that the field surveyors study the topics and use them as a memory guide for exploring possible problem area, but not that the team necessarily collect data on each topic.

I. History of Potatoes in the Region

A. Gain an understanding of the agricultural history of the area, emphasizing

1. When were potatoes first introduced?
2. Why were potatoes introduced?
3. Who first introduced potatoes?
4. Any additional historically - relevant facts?

II. Agroecological Setting of Potato Production

A. Obtain and study relief maps, aerial photos, and land-use maps of the target area.

B. Obtain or develop more detailed maps of study area showing major agroecological zones.

C. Describe potato-relevant agroclimatic conditions using simple language and readable charts and tables.

1. Rainfall data (monthly rainfall averages).
2. Discuss predictability of rainfall, water availability.
3. Hail, frost, wind patterns.
4. Incidence of sunshine/temperature patterns.
5. Altitude, slope.

D. Describe the relevant topographical and soil conditions.

1. Identify different soil types in study area, extent in region, local names, and selective use by local farmers. Do farmers prefer a specific type of soil for growing potatoes?
2. Collect soil sample for analysis if possible.
3. Discuss strategies farmers use to exploit different ecological zones and soil conditions.

III. Socioeconomic Profile of Local Population and Potato Producers

A. Obtain data on population, population density, and population distribution (i.e., how are the people distributed according to agro-ecological zones).

B. Regional settlement patterns.

1. What proportion of population is rural and urban?
2. Are farms dispersed or nucleated?

C. Brief economic profile (what are the main sources of livehood?).

D. Ethnic groups and their relationship to the economy and agricultural production.

E. Others involved in potato production (middlermen, creditors, fertilizer seller, laborers, etc.).

F. What kind of people produce potatoes? (Develop a typology).

G. Develop a typology of potato producers by size of production, for example:

1. Small-medium-large (based on landholding size).
2. Commercial-subsistence (purpose of production).
3. Seed-ware (type of crops).
4. Combinations of above.

H. Units of production and decision-making: describe.

1. Households.
2. Coperatives.
3. Farms or plantation estates (large-scale)
4. Communities or kinship groups.

I. Land tenure: describe the major types.

1. Private
2. Communal
3. Cooperative
4. Share cropping, renting

J. Strategies and purposes of land use and production: A general overview.

1. Distribution of fields (nucleated or dispersed and why?).
2. Objectives of production in different fields (sale, home consumption, seed, exchange).
3. Intensity of land use and types of fields (gerdens, permanent, temporary pastures)

4. Rotation patterns (crops, fields, fallow periods, and possible reasons)
5. Importance of potatoes in the area in regard to area, labor, absorption, income, relative to other crops.
6. Purposes of potato production and relative importance: Is potato expansion possible?

   a. on-farm consumption
   b. exchange
   c. sale of consumer potatoes
   d. sale of seed potatoes
   e. processing
   f. combination of (a-e)

K. Labor

1. What is the busiest month of the year for local farmers?
2. What demands are placed on farm households over these year? How do these demands relate to the potato production period?
3. Do they hire temporary or permanent laborers or is family labor sufficient?
4. Do they hire machinery?
5. What is the sexual and age division of labor in decision-making and farming activities.
6. Seasonal out-migration of family members forcing changes in family labor use strategies.
7. Production strategies to better use family labor.

L. Cash sources and uses

1. What are the main crops sold by farmers?
2. What is the estimated proportion of total farm income from each main crop? (based on different types of farmers?
3. What are other non-farm sources of income?
4. What are the main expenditures by farmers? For agricultural inputs?
5. Are potatoes increasing in importance as a cash crop, remaining stable, or declining?
6. Main sources of credit and related problems.

   a. Government
   b. Private (money lenders or middlemen)
   c. Kin groups
   c. Cooperatives, voluntary association

M. Organization of marketing

1. Link between marketing, production and storage.
2. Methods of marketing potatoes

   a. Middlemen
   b. Exchange or sell within communities
   c. Direct sale to markets by farmers
   d. Other

3. Relationships between size of holding, farm type, etc. and type of marketing employed.
4. Other marketing problems.
5. Data on price mechanisms and trends and any information on seasonal or locational variability.

N. Socioeconomic infrastructure

1. Are inputs available (fertilizers, pesticides, fungicides, materials, etc.)? Sources of inputs (government, private companies, etc.).
2. Extension services.
3. Transportation facilities.
4. Condition of transport arteries and difficultires of transport.
5. Are markets available for their produce.

Other social aspects and farmer opinions

1. Problems with agricultural robbery.
2. Social demands for food exchange.
3. Religions beliefs concerning production.
4. Farmer's opinions on:

   a. Ranking of potato production problems (in order of importance
   b. Yield variability (what does he expect to get and what does he think prevents that goal?)
   c. Risks related to weather
   d. Risks related to marketing and prices
   e. Risks related to pests and diseases
   f. Taste or color preferences of varieties

IV. Agricultural Calendar (For Each Variety and Agroecological Zone)

A. General planting times for each crop or variety (over several years).

B. Range in planting times, including earliest and latest possible dates of each variety (including points of highest frequency).

C. Growing time for each variety.

D. General harvest dates (over several years if possible).

E. Asses why farmers plant the varieties they do and when.

V. Farming Practices

A. How does a farmer decide where he will plant his next potato crop? Why does he plant in one field versus another available field? What factors does he consider in the decision?

B. Land Preparation

1. When and how is the land prepared?
2. What is the sequence of work?
3. How does the farmer prepare the field? With what tools? Does he prepare a whole field, before planting, or prepare and plant a bit the same day, or what?

C. Planting

1. Where are seeds obtained and how are they prepared?
2. Are potatoes planted in association with other crops or alone in a field?
3. In cases where associated with other crops, what is sequence and why?
4. How do farmers decide when to plant?
5. Describe present planting methods (density, methods of putting in ground, coordination with water, etc.)
6. How and when is irrigation used, if at all? What is the organization of irrigation?

D. Weeding, thinning, fertilizing and cultivation

1. Implements used in weeding and thinning (if any)
2. When and how many times is weeding/thinning done?
3. What determines weeding/thinning pattern?
4. Are there any cultivation activities during growing season?
5. Fertilizer practices - What, how much, when?
6. Use of leaves, stalks, etc. for animals?
7. Action taken if crop fails completely during growing season

E. Pest and disease control

1. What do farmers consider as their main potato diseases and pests?
2. When and how is control carried out? Methods and frequency of application.
3. Asses damage to crop by pests.

F. Harvest

1. Method of harvesting.
2. Timing and frequency.
3. Tools used.

G. Storage

1. Description of storage techniques (with drawings)
2. Types of stores (government, in-field, in-house, separate buildings).
3. Why and for how long is storage required and how does this vary according to price fluctuations, climate, etc.?

References

1. Collinson, Michael
   1979 Understanding Small Farmers. Paper presented at Conference held at the Institute of Development Studies, University of Sussex, Brighton, U.K. Dec. 4-7, 1979. Mimeo.