Participation: Identifying the Places, People, and Procedures for Research

Three key decisions for a scientist using a participatory approach are deciding *where* to work (in other words, selecting a site), *who* to work with (who participates?), and *how* to work with them. These decisions depend fundamentally on what researchers, in conjunction with farmers, are trying to achieve (i.e., the research objectives). These decisions are critical because the scientists will rely on the selected persons to provide information about problems, resources, and constraints; to elicit local knowledge effectively; and to collaborate in conducting experiments. The selection of the site for fieldwork will to a great extent define the comparisons and lessons that can be drawn, and it will influence whether they are local comparisons and lessons or may be generalized to other regions or conditions. The method of interaction between scientists and farmers will delineate the types of analysis that can be performed, because the interaction will define the degree of aggregation of the data.

Farmers and their households, even when they are part of the same community, are not homogeneous. By failing to recognize the differences among farmers, scientists may end up working with a small subset of farmers, unaware of how they relate to the rest of the farming population in the study area. Working with a subset of farmers is not necessarily incorrect, but ignoring their relationship to the rest of the community can lead to erroneous generalizations and limit the scope of research and its results. For example, working only with farmers who own cattle, who can apply manure to their fields, and who can use ox-drawn implements may result in the development of technologies that are irrelevant for farmers who do not own cattle.

Where to Work: Site Selection

The first step in deciding which farmers to work with is deciding *where* to work. In many cases this decision is pre-ordained for administrative, political, or logistical reasons. It may be possible, however, to choose villages or communities within a given region and thus select sites with particular characteristics that can enable the researcher to make generalizations from the results. The key is to select sites to maximize the possibility of meaningful comparisons based on a few key exogenous factors that are hypothesized to influence farmers' conditions and/or

decisions. The choice of these factors may vary according to the specifics of the country, the region, the farmers, the technologies of interest, and other variables, but the choice is usually based on researchers' prior understanding of the specific situation.

There are limits, however, to the number of factors that can be considered explicitly (usually no more than three). Within a region, for example, villages with contrasting infrastructures (access to markets) and population sizes can be selected. These two variables are important because they influence access to information, access to inputs, and the availability of land, labor, and capital. For example, population size with respect to available agricultural land plays a key role in the intensification of agricultural production. The agroecological environment, such as areas with contrasting soils or rainfall patterns, is another major variable.

All of these important exogenous conditions influence farmers' decisions, and scientists may want to know their relative importance while maintaining other factors constant. Scientists may think, for example, that the adoption of green manures is more attractive to farmers located in isolated areas (with less access to purchased inputs and fewer opportunities for off-farm labor) where population density is increasing (in other words, fallows are becoming shorter and more labor is available). By locating research sites in areas with these characteristics, researchers can test these hypotheses. Furthermore, discussions with farmers in such areas can confirm or dispute the hypotheses.

Villages in the region to be studied can be classified into a matrix[2] (Figure 1) through consultation with local experts (local officials, scientists, or extension workers). Another option for site selection is to use secondary information if it is available, including previous studies, older diagnostic reports, or a census. If the number of villages is not too large, yet another option is to conduct a short survey with the local authorities, focusing on village characteristics such as population, infrastructure (schools, electricity, roads, stores), sources of income, animals, and crops.

By locating research in villages with contrasting conditions, it may be possible to assess the impact of different factors while maintaining the others constant. For example, it may be possible to assess the importance of the availability of family labor and land versus the availability of purchased inputs and paid labor in the adoption of green manures. The village selection process can be thought of as a quasi-experimental

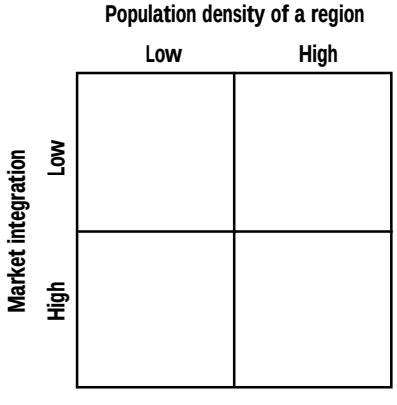

Figure 1. Hypothetical matrix to classify villages.

[2] Obviously, the specific matrix may vary from one situation to another according to the specific exogenous factors selected. A matrix such as this was used by Pingali et al. (1987) to locate the sites for their study of mechanization in Africa.

design that ensures enough variation in the sample to make meaningful comparisons. Often cells in the matrix may be void, which indicates that exogenous factors are correlated (e.g., villages with high population densities have good infrastructure and vice versa). In this case, although the effect of population density cannot be disentangled from that of infrastructure, at least we know that this is the case.

Example: For the Oaxaca Project, researchers had to decide where to work in the Central Valleys. The region encompassed many villages and thousands of people. Though maize landraces were collected from 15 communities, a smaller subset of communities had to be selected because the project lacked resources to cover even this limited number. Researchers consulted local authorities in each community to gain an idea of its general socioeconomic characteristics. These authorities estimated the number of households in each community, the major sources of income, supplies of infrastructure and transportation, and types of markets.

Little variation was apparent between communities in distance to markets or basic physical infrastructure. Local authorities were then asked to classify a set of different sources of income (i.e., crop production, animal husbandry, off-farm labor—agricultural and non-agricultural—and remittances from within and outside Mexico) into three categories according to their importance to the village economy (i.e., very important, moderately important, and not important). An analysis of this classification showed pronounced differences in the extent to which the villages relied on non-farm income and remittance income from migrants. This information was combined with data on ethnicity, derived from census data, and on maize yield potential, derived from previous work by the national agricultural research organization. The 15 communities were located in a matrix of these variables, and six communities representing contrasting circumstances were selected (Figure 2). The horizontal axis in Figure 2 represents increasing dependence on local sources of income (local agricultural and off-farm labor) versus non-local sources of income (remittances from within and outside Mexico). The vertical axis represents location in zones of increasing maize yield potential, which also correspond to a gradient of rainfall (from low to high).

Who to Work With: The Selection of Participants (Informants/Experimenters)

In participatory research we always work with *informants* and *experimenters*. The informants are farmers, understood in the broadest sense as all members of a

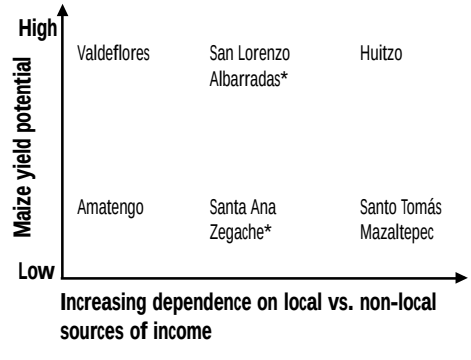

Figure 2. Classification of survey sites by source of income, ethnicity, and maize potential.
Source: Smale et al. (1999).

Note: * > 30% indigenous population.

farming household, whom scientists query about their knowledge, practices, needs, priorities, and resources. The experimenters are the farmers with whom scientists perform experiments and evaluations. The central question is how to select these informants and/or experimenters. (Note that usually an experimenter is first an informant but that not all informants become experimenters.) The content and quality of the information gathered, and the experimental results obtained by scientists and farmers together, depend fundamentally on the people scientists work with and therefore on how they select informants and experimenters.

Participants can be categorized into at least four types:

1) *Incidental:* Persons that researchers encounter who are willing to talk to them, without any *a priori* effort on the researchers' part to identify them.
2) *Key:* Persons researchers select based on well-defined, pre-established criteria. Key participants are usually selected with the help of local contacts who know the communities of interest well. These contacts include local authorities, extension workers, health workers, teachers, and secular and/or religious leaders.
3) *Randomly selected:* Persons who are chosen following statistical sampling procedures.
4) *Self-selected:* Persons who volunteer to participate.

Incidental participants are usually easy to find; an incidental participant can be a farmer who gets a lift from a scientist or the owner of a store where researchers buy supplies. The information collected from such people should be treated with caution, since researchers do not know who these people are in the context of the community (which socioeconomic, political, or religious group they belong to), what interests they represent, or what biases they may have. Incidental participants can provide a starting point for scientists' interactions within a community, however, and they may give scientists an initial set of hypotheses about the local farmers and community.

Key participants are selected systematically. They should have certain well-defined characteristics that provide either an idea of the variation within a community or information about a particular group. Selection criteria could include:

- farmers who plant many crop varieties,
- farmers who have a reputation for good workmanship or for having an inquisitive turn of mind,
- young or old farmers,
- male or female farmers, or
- farmers with large or small land holdings.

These criteria are defined by the type of information scientists seek. Criteria may be established to avoid or at least diminish biases (that is, to avoid focusing on one group and ignoring others), or, when different communities are being compared, to ensure that informants are as similar as possible and therefore comparable. To focus on one group is not necessarily wrong, but to generalize from one group to others may be. Clearly, the process of selecting key informants depends on other informants (researchers' contacts in the community), but by establishing criteria researchers minimize their contacts' ability to choose whoever they want, without researchers' knowledge.

Each time scientists arrive in a community or contact a group of farmers, the scientists must notify and possibly obtain authorization from local authorities, such as the chief/headman or leaders of farmer groups. Frequently researchers already know useful people who are familiar with the community and its members, although they themselves may be outsiders, including extension workers, health workers, or teachers. These contacts are a primary source of information for identifying key informants.

Randomly selected participants provide the best perspective on a community of farmers in terms of their representativness. The probability of including all the subgroups that may exist depends on how common they are, not necessarily on the views of particular informants, and random selection can help minimize biases. The information collected from these informants can be analyzed statistically, allowing us to make inferences with a defined level of probabilistic confidence about the farmers with whom we work. However, when a research project is directed at a particular group of people with specific characteristics, this selection method may not be the best or most cost-effective, because many people of no interest to the research objectives may be included.

Statistical sampling procedures also have problems, however. Before the sample can be drawn, ideally a census of the target community or communities must be conducted, but a census may not always be feasible. The census can be done using lists of farmers or households, compiled for other purposes, or by mapping all of a community's dwellings. If lists of farmers or households exist, it is important to note that they may be biased. They may focus exclusively on a specific group within the community, such as farmers with irrigation, or farmers who grow cash crops, or farmers who participate in government programs. By combining different independently compiled lists, however, scientists can produce a comprehensive list. If the community is mapped, it is still possible to miss people, particularly in sparsely populated areas. Even though generating lists or maps may require a lot of time and money, it can produce accurate and comprehensive information. It is also possible that the randomly selected case sometimes turns into the self-selected case (especially in methods that require more than a brief meeting or interview) because of drop-outs and refusals.

Self-selected participants are usually highly motivated and may perceive advantages in participating, such as learning new techniques and getting access to new technologies. Their motivation may make them easier to work with, but researchers should be careful not to assume that they know their motivations. These people may choose to participate because they expect a political favor, whereas researchers think they are interested in acquiring new information. As usual, scientists should ensure that participants' expectations are explicit and that false impressions are not created. It is essential to know who these farmers are in the context of the community (i.e., which socioeconomic, political, or religious group they belong to and therefore which interests they represent or which biases they may have).

How to Interact: Types of Interviews/ Interactions

Once the informants/participants have been identified, two forms of interviews or interactions can take place: *individual* or *group* exchanges. The individual interaction consists of a one-to-one interaction between the interviewer and the informant, while the group interaction brings together a group of informants, and the interviewer provides a series of questions or topics of discussion. In an individual interaction, the person with whom scientists interact is well defined and his/her characteristics (age, education, household resources, and so forth) can easily be established. The outcomes of the interaction can be related to these characteristics in a relatively straightforward manner. If many individual interactions take place, researchers can relate the variability of outcomes more specifically to the diversity of individuals participating and their conditions. In a group setting this is much more difficult to do, because it is harder to disaggregate the specific relationships between outputs and participants. A group setting provides a broader and more comprehensive perspective on the issues, however, and allows agreements and disagreements among individuals to be identified relatively rapidly. Individual interactions are relatively more suitable for generating an analysis, whereas group interactions are relatively more suitable for generating a synthesis, although results of each type of interaction can be used for analysis as well synthesis.

With respect to practical guidelines for the individual interaction, researchers should be sure that the informant understands the questions being asked. Researchers should be careful to use phrases, words, and examples that the informant readily understands. (Providing examples also enhances understanding.) The questions should be pre-tested for vocabulary and content and modified accordingly.

Some common problems with these interviews should be avoided. Friends and family members are frequently present during an interview, volunteering information or answering instead of the informant. In this situation, researchers have no control over—or background information on—the people providing the information, which later complicates its interpretation. It is the informant's information that researchers want. In many cultures, when a woman is interviewed in the presence of her husband, son, or father, she may be inhibited to answer questions freely, or the men may answer for her. Again, this situation should be avoided, because the information of interest is hers, and it should be as truthful and open as possible. It is particularly important to get women's unhampered point of view, since researchers will want to avoid gender biases in the information they collect.

In group interviews, it is important to limit the number of questions. This type of interview is excellent for generating inventories of things or issues (e.g., soil or crop types, problems, activities, and technologies) or for generating discussions among participants. In the latter case, however, scientists should

be careful not to impose a false consensus by forcing participants to agree on something when they find it difficult to do so. It may be unrealistic to expect consensus on many issues if the group is truly heterogeneous. Instead, the interviewer should aim to identify the points of agreement and disagreement among informants, especially the disagreements, which are of great value because they allow the interviewer to probe into the informants' differences. It is very important to try to establish the basis for the disagreements and to relate them to specific characteristics of the informants (e.g., poor versus wealthy, young versus old, men versus women). Background information on the informants can therefore be extremely useful; recall that such information should have been collected when the informants were selected. Another point to bear in mind with group interviews is that sometimes they provide information on what participants think "should be" rather than on what "actually is." Researchers should be careful in interpreting the results and should probe to establish whether the group is referring to an ideal rather than an actual situation.

Like individual interviews, group interviews have some problems that should be avoided. Often a few informants tend to dominate the discussions. They may be of higher social status or belong to a certain ethnic or politically dominant group, and they can give a biased view of the issues, while the perspectives of other group members are completely ignored. To avoid this situation, ask the quieter members of the group for their opinions. In many cases, they will not respond freely, since they may feel intimidated by the dominant members. If necessary, the interviewer should talk to them individually or separately. The interviewer can also split the group into dominant and quieter members and repeat the group interview separately. Distinguishing among informants in a group is particularly important when one is trying to rank problems or solutions. Different groups within a community may have different problems and solutions or attach distinct levels of importance to them.

Gender

Any participatory research methodology should consider the importance of gender. From a practical point of view, this means that researchers should be sure to include participants who play different roles within households, such as women, children, spouses, parents, and female heads of households. This also means paying special attention to interactions among household members. Depending on where the research is being done, it may be necessary to form same-sex groups (i.e., groups of only men or only women), since in mixed groups women may not participate at all. In other contexts, however, mixed groups may provide an excellent opportunity to elicit gender differences and concerns. Even in individual interactions it may be necessary for men to interview or interact only with men, and for women to interact only with women.

In the past, agricultural research focused mainly on male farmers and assumed that all household members shared the same goals, had the same access to resources and outputs, and faced similar constraints. Now it is clear that in most cases this view is incorrect. Just as

differences between farmers and households may be attributed to differences in access to resources, knowledge, and information, differences within households also exist and may be attributed to different factors. Household members may have diverse responsibilities, perform different activities, and have varying work loads and access to resources. They may also have conflicting interests. These differences can be particularly striking in Africa,[3] where household organization can be extremely complex (for example, with polygamy or with members of the same sex in a household there may be hierarchies—the first wife, second wife, the mother in-law, and so on). Regardless of where the research is being undertaken, however, gender considerations are always important and relevant. Researchers must also be careful to go beyond a simple concern with females or female-headed households and to look carefully at the way household members are organized and interact.

3 Doss (1999) presents an excellent review and discussion of gender and agricultural technology issues for Africa.