

# Farmer Surveys – Theory, Practice and Logistics

*Handout for the session “Farmer surveys: theory, practice and logistics”*

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## Session Objective

At the end of the session, participants should be able to discuss the theory, practice and logistics involved in conducting farmer surveys.

## Learning Content

Use of surveys; types of surveys; survey designs; how to conduct a farm survey; using theoretical frameworks to develop belief and attitude questions; guidelines in implementing the field survey.

## Key Learning Points

### Use of surveys

Many of the frameworks that will help us gain an understanding of how farmers' decisions are made require interview and survey techniques. In this session, we focus on survey techniques used in collecting data. Further details on survey research may be found in standard social science research literature (Frankfort-Nachmias and Nachmias 1996, Kerlinger 1986, Oppenheim 1966).

To upscale the use of crop biodiversity in agroecosystems, researchers and extension workers must thoroughly understand the context in which farmers make decisions to maintain crop genetic diversity. This includes their perceptions of pests and disease problems, their knowledge on the link between pest and diseases and the lack of crop diversity, their current knowledge and use of available intra-specific diversity to manage pests and diseases, and their access to intra-specific materials and information. Adequate information on what farmers know, how they perceive biodiversity conservation and what their current practices are can be obtained through farmer surveys and focus group discussions.

In a farm survey, one collects data from a sample of a farming population to determine the important variables that influence their decisions. This not only enables us to understand the reasons for current practice but also provides a basis for predicting how farmers are likely to respond to certain factors, such as training. This can provide a useful guide to action. Sample surveys focus on people and their beliefs, opinions, attitudes, motivations, and behavior. In survey research, the goal is to infer the characteristics of a given population from samples drawn from that same population.

## Types of surveys

### *Interview*

The interview is a common technique used to gather sociological data. Interviews may be conducted in various ways -- talking with individuals or group or interviewing using formal questionnaires. Although the technique appears simple and straightforward, successful use depends on the kind of questions constructed and presented, the quality of answers recorded; the setting where the interviews is conducted, the kind of language

used, and the characteristics of the interviewers themselves. Thus, its value as a research tool depends on the context in which it takes place, the interviewer's skills, the framing of the questions and their adaptability to local rules of conversation. For instance, interviewers need to observe unspoken rules related to cultural sensitivities to show respect of personal boundaries. The best information is obtained when good rapport and mutual trust exist between interviewer and interviewee.

For a question to be valid, it must have the same meaning to the interviewee as to the interviewer. It needs to be formulated in a culturally meaningful and appropriate manner.

Questions are not legitimate when they are based on concepts or assumptions alien to the system of meaning of the culture, such as asking a farmer whether he practices integrated pest management (IPM), a concept that may be well known only to scientists.

Sometimes, a term may exist in the culture but may have a different meaning the word "grass" in many Asian languages means weeds in general, while for weed scientists, it means species of the family *Graminacea*. It is thus important to find appropriate expressions in the local context; failure to do so will result in erroneous data since they are based on answers rooted in a misunderstanding or desire to please or to save face. For instance, when asking a farmer if he is practicing IPM, he may give a positive answer to please or to save face. The use of native language is essential as language is a major cultural filter. Many concepts and categories have no semantic equivalents and inappropriate translation can easily occur. The concept of insect resistance, for instance, has been translated to mean being "immune to all insects" in many cultures. Familiarity with the way interviewees think and speak is the key to successful communication, permitting a free flow of meaningful questions and accurate interpretation of answers.

In general, questions should neither be too complicated nor too short or ambiguous. Leading questions -- questions that explicitly suggest the answer-- should be avoided. They convey to interviewees that there are expectations in their replies, like asking farmers if they have stopped spraying after learning about IPM. Interviewees will have the tendency to provide distorted answers to meet expectations. It is important that interviewers do not show signs (through unconscious facial expressions) of disapproval or disbelief to answers as these reactions will alienate the interviewee and create mistrust.

## **Types of interviews**

Informal methods such as diagnostic surveys, focus group discussions, and key informant interviews have been employed in some of the more innovative and cost-effective farmer surveys. In most cases, diagnostic surveys and key information interviews often precede a formal baseline survey (Fujisaka1991). These methods can be used to structure the formal survey and ensure that it is focused and appropriate in the local context. Issues that may emerge during a key information interview can be probed in the focus group discussion. While the key informant interview can provide leads, the focus group discussion can be used to clarify points raised and explore whether there is a consensus on the concerns voiced by key informants. The research areas can be probed in focus groups to help generate ideas and develop hypotheses that will then be fully assessed in the formal study. For example, in planning a major national survey on farmers' knowledge, attitudes, and practices related to beliefs on weedy rice and its management, separate focus groups may be conducted with farmers to identify key issues. Focus groups could help researchers generate hypotheses and develop the wording for specific questions to be used in a formal survey.

### **Key informant interviews**

Used as a tool to explore related issues and problems associated with a given topic, a key informant interview involves talking to persons such as extension workers, key farmers, local government officials, traders, and community leaders who know the area or certain aspects of the problem (Jimenez 1985). Taking an unstructured interview approach, this type of interview enables the researcher to gain new insights, raise questions, and examine phenomena from different perspectives (Bogdan and Taylor 1975, Okamura 1985). These informal interviews are useful for providing background information for defining the issues to be addressed by a formal survey and as a guide for developing a more structured questionnaire (Bryman 1988, Siebert 1973). An interview guide that contains questions to gather information relevant to a certain issue may be used to carry out the key informant interview.

## **Survey designs**

Surveys attempt to measure people's attitudes or behavior by asking them questions and then exploring the relationships among the variables. The most common survey design is **cross-sectional or one-shot**, where the data are collected at one point in time. This kind of survey may be unable to analyze the direction of causal relationships. If resources are available, the longitudinal design is more useful. There are three types of longitudinal design - trend study, panel study, and cohort study. The **trend** study interviews different samples of the target population at different points in time; the **cohort** study tracks the same specific populations over time; and the **panel** study investigates the same sample time after time. Trend studies examine how concepts change over time; cohort studies at how historical periods change over time; and panel studies at how people change over time.

## **How to conduct a farmer survey**

Because the cost of implementing surveys is often high, it is important that they are planned and conducted with utmost care. In conducting a farmer survey, the following steps are recommended:

### **1. Identifying the problem/issues**

The first step in planning a farmer survey is to identify the problem and issues that need to be addressed. In pest management, the choice of pest problem to focus on would depend on the needs associated with specific research priorities or the information needs of a given Ministry or plant protection organization. Where such priorities have not been articulated, the farmer survey could gather information of value for developing research priorities.

### **2. Developing survey objectives**

Once a priority problem has been identified, the next step is to develop the survey objectives. For instance, the objective might be to determine the likely impact of farmers' maintaining a wide range of local varieties of banana or faba bean. Drawing up a list of variables that will help find answers to the survey objectives could put the researcher on the right track in designing the questions to ask in the survey. Specific questions that are aimed at various aspects of the problem could help clarify the research problem. It is important to remember that the choice of questions should be guided by the survey objectives.

### **3. Developing the survey instrument**

In a farmer survey, a popular instrument used for data collection is a questionnaire which contains a series of questions designed to gather information from the respondents. Depending on the survey objectives, the survey questionnaire may contain questions that will measure farmers' current knowledge and use of available intra-specific diversity to manage pests and diseases, and their access to intra-specific materials and information, among others.

### **Types of questions**

Several types of questions may be used in interviews. It is important to be able to choose the appropriate type of questions for the right situation. **Open-ended questions** allow the interviewee to give a range of answers, such as "Tell me about this variety". **Direct questions**, on the other hand exert some control over the responses, such as "What are the causes of this problem?" **Closed questions** usually require a yes or no or a set of fixed alternative answers. In some countries, yes-no questions should be avoided as there is a tendency for interviewees to answer yes when they do not understand the question. We used closed questions to quantify farmers' beliefs by asking each respondent to assess his/her degree of belief using descriptor phrases in a five-point Likert scale (Heong and Escalada 1999). The descriptors were "definitely not true," "in most cases not true," "maybe true," "in most cases true," and "always true".

### **Using theoretical frameworks to develop belief and attitude questions**

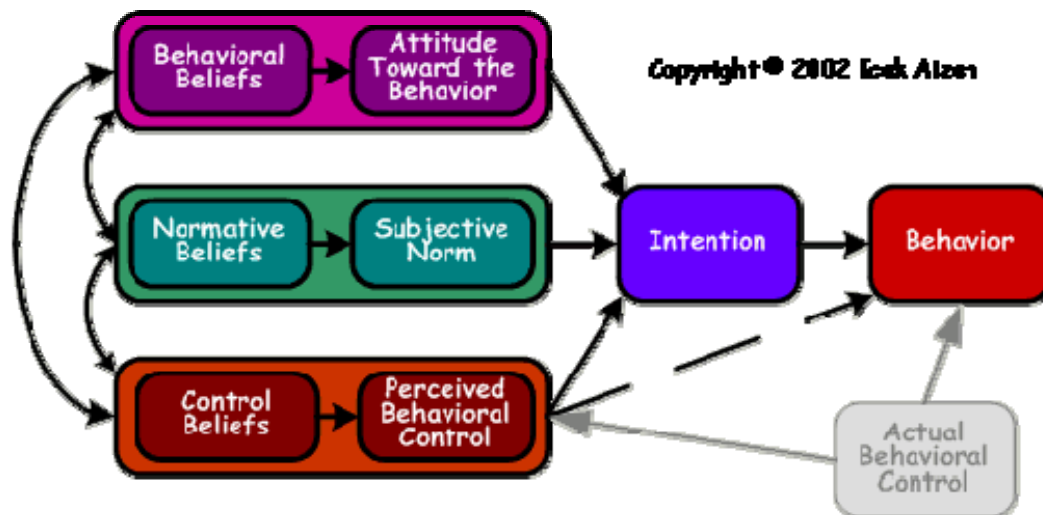
#### *Theory of Planned Behavior*

Ajzen's (2002) theory of planned behavior provides a framework for studying human action (Fig. 1). Human behavior is guided by three kinds of considerations:

- beliefs about the likely outcomes of the behavior and the evaluations of these outcomes (behavioral beliefs)
- beliefs about the normative expectations of others and motivation to comply with these expectations (normative beliefs)
- beliefs about the presence of factors that may facilitate or impede performance of the behavior
- perceived power of these factors (control beliefs).

Behavioral beliefs produce a favorable or unfavorable attitude toward the behavior; normative beliefs result in perceived social pressure or subjective norm; and control beliefs give rise to perceived behavioral control. Attitude toward the behavior, subjective norm and perception of behavioral control lead to the formation of a behavioral intention. As a general rule, the more favorable the attitude and subjective norm, and the greater the perceived control, the stronger should be the person's intention to perform the behavior in question. Intention is assumed to be the immediate antecedent of behavior. However, it is useful to consider perceived behavioral control in addition to intention because many behaviors may be difficult to perform which may limit volitional control.

Figure 1. Theory of Planned Behavior (TpB)



### Sample TpB questions

- **Intention:**

How true is this? Next season, I will plant more varieties of maize in my farm.

1. Definitely not true
2. In most cases not true
3. May be true
4. In most cases true
5. Definitely true

- **Attitudes towards behavior:**

How true are these statements? Planting several varieties of maize in my farm:

(A) will lessen the incidence of pest and diseases.

- \_\_\_ 1. Definitely not true
- \_\_\_ 2. In most cases not true
- \_\_\_ 3. May be true
- \_\_\_ 4. In most cases true
- \_\_\_ 5. Definitely true

How true are these statements?

(1) Low incidence of pest and disease on my maize crop is important to me.

- \_\_\_ 1. Definitely not true
- \_\_\_ 2. In most cases not true
- \_\_\_ 3. May be true
- \_\_\_ 4. In most cases true
- \_\_\_ 5. Definitely true

- **Subjective norms**

How true are these statements?

(1) My neighbor expects me to plant several varieties of maize to minimize the incidence of pest and diseases.

- \_\_\_ 1. Definitely not true
- \_\_\_ 2. In most cases not true
- \_\_\_ 3. May be true
- \_\_\_ 4. In most cases true
- \_\_\_ 5. Definitely true

▪ **Perceived behavioral control**

How true are these statements?

(A) Planting several varieties of maize makes me feel in control of my maize crop.

- \_\_\_ 1. Definitely not true
- \_\_\_ 2. In most cases not true
- \_\_\_ 3. May be true
- \_\_\_ 4. In most cases true
- \_\_\_ 5. Definitely true

**4. Pretesting the questionnaire**

When the farmer survey questionnaire has been compiled, it needs to be pretested before being copied and implemented in the field survey. Pretesting involves interviewing a small group of respondents who are similar to the intended target group to determine their reactions to the prototype questionnaire. This is done in order to determine –

- the clarity of the wording and translation of the technical terms used,
- whether the questions are in a logical sequence ,
- the adequacy of the response categories (e.g. where there is a multiple choice),
- the clarity of questionnaire instructions, and
- the estimated duration of the interview.

Results of the pretest are used as the basis for revisions in the questionnaire and logistical arrangements for the fieldwork.

**5. Choosing sample respondents**

An important concern in survey research is deciding how many and which respondents should be included. A farmer survey uses standard social science methods in selecting the sample, e.g., multi-stage sampling, stratified sampling, systematic sampling, cluster sampling, and simple random sampling. The choice of sampling technique depends primarily on the nature of the problem, the cost and time factors involved, and the desired precision or reliability of the results. When a project can afford it, a larger sample is preferred to reduce sampling error. In a survey of, say, 300 farmers, it is recommended that the sample be drawn from a cross-section of the sampling population so that this group can be said to represent the larger population. In other situations, the main objective of the survey may be to identify the range of ways in which farmers might utilize a new practice, in which case, selecting farmers from very different farming systems may be more appropriate.

*How large should the sample be?*

Decisions on sample size depend on the degree of accuracy required, the degree of variability in the population, and kind of data analysis being planned. Sample size can be estimated statistically or by following certain rules. The statistical method requires some assumptions about the population and use statistical equations about random sampling processes. Such procedures are found in social science research methods books (Neuman 1997; Frankfort-Nachmias and Nachmias 1996).

Rules in determining sample size are based on past experience with samples that were drawn through the statistical method and are more commonly used especially in studying large populations. According to Neuman (1997), these rules are:

- A small population needs a bigger sampling ratio to have an accurate sample. For instance, a population of below 1,000 requires a sampling ratio of 30% to achieve a high level of accuracy. For large populations (over 150,000), smaller sampling ratios (1%) are often sufficient. In general, practical considerations, such as costs and logistics, are the more important deciding factors.

For small samples, small increases in sample size can produce bigger gains in accuracy than for large samples.

## **6. Implementing the field survey**

Once the questionnaire has been pretested, finalized and reproduced, the next step is to implement the field survey. Resources needed for the fieldwork include personnel, money and time. A field survey team is often composed of a survey coordinator, a supervisor, and interviewers. The survey coordinator is responsible for all aspects of the field work - selection, training and deployment of interviewers. The supervisor assists the survey coordinator in spot checking and monitoring the field interviews. Before they are fielded, interviewers are oriented on the purpose of the survey and trained on interviewing skills and how to conduct the interviews. Guided by the sampling plan and respondent list, the interviewers locate the respondents, conduct the interviews, and check the completed questionnaires after the interview.

### **Choosing a field interviewer**

An interviewer is an important link in the survey chain. Because of their important role, it is important that the interviewers selected are honest and objective. Our experience has shown that college students tend to be more objective interviewers because they do not have the inherent bias that professional agency staff may have. For example, in a survey of rice farmers' pest management perceptions and practices, it was observed that plant protection officers, who had conducted the interviews, tended to interpret rather than just record farmers' responses. Although many farmers reported that "green worm" was their most important pest, this was recorded by interviewers as either army worm or rice bug based on their perception of what the term, green worm, implied. In reality, farmers can use the term Green worm to refer to a variety of leaf feeders such as rice leaf folders, cutworms, case worms, and thrips.

### **Guidelines in implementing the field survey**

To ensure efficient implementation of the survey and to minimize errors, the following guidelines for interviewers are suggested:

*Selection of respondents.* Only those farmers who are on the respondent list should be interviewed. If the designated farmer is temporarily not available at the time of the interview, schedule a return visit. Otherwise, choose another farmer from the list of replacements.

*Materials needed.* Advise interviewers to obtain the following before fieldwork: list of respondents to be interviewed, questionnaires, map, and pencils.

#### *Establish rapport with your respondent*

As a quick approach for obtaining information, a survey often relies on interviewers who may be unknown to respondents. Being strangers could pose difficulties in soliciting accurate information because respondents are often hesitant to give the right information out of an implicit mistrust of outsiders. In conducting field interviews, a first step would be to establish rapport with respondents by setting the proper atmosphere. This can be done by informing the respondent of the purpose of your survey and how it can benefit the respondent.

#### *Probing questions*

In many interview situations, some respondents tend to give vague replies such as “okay” or “good” which could mean different things. When this happens, try to have the respondents express themselves better by asking them why it is “okay” or “good” and encourage them to give more specific answers. If a respondent’s answer belongs to the “other” category of responses in the questionnaire, he should be asked to specify his response. These follow-up questions are referred to as *probes*, which are often used to elicit additional information, expand an idea already expressed by the respondent, or clarify the respondent’s response (Sedlack and Stanley, 1992).

Usually open-ended, probing questions ask for more than a “yes” or “no” answer and provide the respondent the leeway to respond to a question from his own perspective. These generic follow-up questions are suggested to elicit more precise information (Kidder, 1981; Krueger, 1988):

- “Could you give an example?”
- “In what way?”
- “What do you mean?”
- “Would you explain further?”
- “Tell me a little more about it.”
- “What do you mean when you said ...”
- “Tell me how it is so...”

Open-ended survey questions usually provide opportunities for probing, but the sequence of probe questions to ask would depend on the respondent’s initial response (see Box 1).

#### **Box 1. Probing Example**

After establishing that farmers face pest problems and that leaf feeding insects are important, we might want to proceed to try to identify which species. This can be done through a conversation using some of these questions:

- You said previously that *ulod*<sup>1</sup> are pest problems, can you tell me how they look like?
- Can you describe the color?
- How big are they?
- Where do they live?
- At what stage of the crop do you see them?
- At what time of day do you see them?
- How many such insects do you often see on the rice crop?
- What are they doing to the crop?
- Please draw the “ulod” for me here.

#### *Edit the responses well*

- 1) Always check after each answer to the question if the answer is complete.
- 2) Edit your questionnaire immediately after the interview to check for any unclear information and, if possible, clarify with your respondent before leaving.
- 3) Correct inconsistent answers by checking with your respondent

#### *Close the interview*

After editing your interview schedule for completeness, briefly thank your respondent for his or her help and cooperation.

### **7. Coding and analyzing survey data**

Once the completed questionnaires have been edited, the data need to be analyzed. Depending on the main objective of the survey, this analysis phase can be relatively simple – such as manually determining the % of respondents giving specific answers or listing the various ways in which farmers said they might utilize a new practice. For more complex surveys, particularly where the aim is to predict for the entire population from the results of the sample population, it is best that the data are encoded, processed and analyzed using a statistical package.. Ease of use, power, and cost are some of the important considerations in the choice of computer software for data analysis.

First, the responses to questions need to be coded and tabulated. Coding is the term used to describe the translation of question responses and respondent information to specific categories for analysis. *Tabulation* is the recording of the numbers of types of responses in the appropriate categories, after which statistical analysis follows: percentages, averages and appropriate tests of significance.

The analyzed data are interpreted and the results of this interpretative process are reported. The purpose of a survey report is to tell the readers the research problem, data collection methods used, findings, and conclusions. Like other research reports, the survey report should consist of an executive summary, introduction, description of the methods, results and discussion, and conclusions.

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<sup>1</sup> *Ulod* is a term for worm in Cebuano, a local language spoken in most of the Visayas and Mindanao provinces in the Philippines.

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