Young man next to purple yam (Dioscorea alata) locally known as "hingurala," Milleniya, Sri Lanka. Photo: D. Mijatović
5. HOUSEHOLD SURVEYS

Household surveys are used to collect information on agrobiodiversity from a sample of households in a community or larger area using a questionnaire. The households sampled are usually from diverse socioeconomic backgrounds and are selected using stratified random sampling (see ‘Probability sampling’ under Section 2.5: Sampling strategies and sample size).

Annex 5.1 provides an example of an agrobiodiversity survey questionnaire that can be adapted to meet different research objectives. This questionnaire was designed to collect basic information about households, farming systems, the amount of crop and animal diversity, and use of wild plants. Surveys can also provide more detailed information about livelihoods, diets and consumption, climate-change adaptation or any other topic of interest. The objective is to generate data and statistics about diversity and production practices and to identify some of the constraints to, and opportunities for, increasing diversity.

The survey takes the form of a structured interview that involves asking a set of simple short-answer questions. Each question is asked in the same way to each informant and may be open-ended or fixed choice or may ask for some kind of scoring or ranking. While most of the questions will involve a verbal response, diagrams can also be used to obtain information where this is easier for the respondent (e.g. on seed supply in part D). The household questionnaire should be designed to enable the answers to be easily recorded and to allow sound analysis and interpretation of the data. It should be translated into the local language with precise, brief, simple and culturally appropriate wording. Unless otherwise stated, all questions concern the current production season or year, not previous years.

Note: In many parts of the world there are two cropping seasons per year. During the survey you should ask only about the current cropping season; a second survey may be needed to capture all the information about what is grown in the other cropping season.

5.1 CONDUCTING THE HOUSEHOLD SURVEY

Inform the community well ahead of time about the planned survey and discuss the best timing with them in detail (e.g. month, week, day, time of day). The research team should test the questionnaire by completing it ahead of time to make sure there are no problems with any of the questions. Make plenty of copies of the questionnaire available in the local language and share them with those who are interested. Jarvis and Campilan (2006) provide general advice on individual interviews for crop diversity. It is best to have two people carry out the survey so that one can continue a conversation with the respondent while the other records the answers. Farmers will be giving up quite a lot of time to help with completing the questionnaire and their concerns and the other demands on their time should be respected.

At the end of each day, check the completed questionnaires to make sure they have been filled in correctly, that there are no major gaps and that different interviewers have used the same approach.

The example questionnaire in Annex 5.1 consists of the following parts:

A – Identification and validation information
B – General information
C – Land-use diversity and practices
D – Crop diversity (species and varietal)
E – Livestock diversity
F – Use of wild plants

Parts A and B should be included in all such questionnaires, while the precise content and inclusion of other sections will depend on the research questions.
A – IDENTIFICATION AND VALIDATION INFORMATION

Record the number of the questionnaire in the field ‘Questionnaire ID’ to keep track of the number of interviews conducted at each site. Fill in the site name, surveyor identity and survey date. Record the identity of the person who checked the survey and date when the questionnaire was checked.

B – GENERAL INFORMATION

Use this part of the questionnaire to collect the information about the household. This should include the name, gender and age of the informant and some basic information on the household (e.g. number of household members, gender, children and involvement in farm work). This can be expanded to collect additional socioeconomic data where needed.

C – LAND-USE DIVERSITY AND PRACTICES

This part of the questionnaire gathers information on the household’s land use and practices. These might include home gardens, irrigated and non-irrigated fields, pasture, agroforestry areas, orchards and fishponds. Other production systems identified during the transect walk (e.g. rotational fields) should also be included. For each land-use type, record ‘yes’ or ‘no’ and whether it is privately owned, rented or community owned.

The results can be used to determine the total number of production types available to the community, the most commonly available and used production types and the extent to which different households use the same production types or different ones.

D – CROP DIVERSITY (SPECIES AND VARIETAL)

This part of the questionnaire gathers the information needed to determine the amount and distribution of crop and varietal diversity used by households and communities. It is essential to record the identity of each crop and (where known) variety grown and the areas planted with each crop and each variety. In the case of tree crops, it is often better to ask questions about the number of trees being grown rather than the area they occupy. Questions about the area under production are often quite difficult for informants to answer and it is often necessary to ask follow-up questions that provide good estimates (e.g. Do you grow more than this area here or less? How much more?). In some cases, it may be easier for the farmer to draw an outline map of the land they cultivate and fill in the different fields with their crops and varieties on the map. Answers to the questions in this section can be used to calculate richness, evenness and divergence (see Section 14: Richness, evenness and divergence for crop species and varieties).

Start by asking what crops are cultivated by the informant, making sure that all the different crop types are covered (cereals, tubers and root crops, vegetables, fruit, oilseeds, legumes and pulses).

The questions might be as follows:

- What crops do you grow?

For each crop:

- Do you grow different varieties of the crop?

For each named variety, ask:

- Is the variety local or commercial?
- What is the source of the seed? (see Section 8 for categories of seed sources and further questions)
- What is the area planted of the variety?
- What is the total production?
- What are the most important reasons for choosing this species or variety (e.g. high yield, adapted to local soil, medicinal properties)?
Not all crops will have named varieties and it is often possible to obtain variety-level information for only a few of the major crops. Note also that individual farmers often have their own names for varieties and the four cell analysis process (Section 6: Four cell analysis) will help in developing an agreed list of varieties. Where there is more than one cropping season per year, ask about the current one and remember that different varieties might be grown in the other cropping seasons.

**Note on crop classification**: Farmers may have their own classification of crops that differs from the scientific one. For example, in northeast India, people group potatoes, sweet potatoes and taro under one large group. The interviewer should use these local terms during the interview and, wherever possible, take photos or make notes on the different types discussed.

**Note on units of area and production**: Use the same measures for the area under cultivation and for production for all informants. Use local measures of areas and production during the interviews and then convert these to international units when transferring the data.

**Additional questions: Past status of crop and varietal diversity**

To understand changes in cultivation and production, ask about the crops and varieties grown in previous years. Ask the same questions as for crop and varietal diversity but in past tense.

- What crops and varieties did you grow last year?
- What was the area under cultivation?
- What was the total production?

### E - LIVESTOCK DIVERSITY

This part of the questionnaire gathers information on the number of households that keep animals, what these are and how many breeds of each there are in the community and households. Section 10: Diversity of domesticated animals and breeds provides ways of obtaining more information on the importance of animal diversity in a community.

Ask the following questions:

- What animal species do you keep?
  - For each species, ask:
  - How many different breeds do you have?
    - For each breed, ask:
    - What do you use this breed for (e.g. eggs, milk, meat, leather, manure, etc.)?
    - How many females and males are of reproductive age?
    - Is the number of female animals stable, increasing or decreasing?
    - Is the number of male animals stable, increasing or decreasing?

Determining the identity of breeds is often quite difficult. Informants may not make much distinction between different breeds and just regard their animals as local or exotic.

Knowing the numbers of female and male animals in a population allows one to calculate the effective population size at household and community levels.

### F - USE OF WILD PLANTS

This part of the questionnaire gathers information on the use of non-cultivated plants, asking informants which wild plants they use and for what purpose. Ask the informant:

- Which wild plants do you use?

After they have listed the plants they use, ask each of the following questions about each plant:

- Where do you gather it (e.g. near the river, in the forest, in fallow land, other)?
- What do you use them for (food, medicine, fodder, firewood, building material, other)?
- What part(s) of the plant do you use (leaves, roots, shoots, bark, flowers, fruits, seeds)?

**Note**: List options for responses in the questionnaire to facilitate consistent recording.

Where possible, take photographs of wild plants that respondents identify as useful; these can help confirm the identity of the different plant species and check that the same local names are used by all informants.

The data provide information on the general use of wild plants by a community. Combine these data with the information on wild plants obtained through the key informant interviews to complete the identification and analysis of information on the use of wild plants (see Section 9: Uses of wild plants).
5.2 DATA ANALYSIS

Transfer the information on the individual record sheets to an electronic version, preferably an Excel spreadsheet, as soon as possible. The way in which the data are organized is important and will affect how they can be analyzed (see Section 15: Data organization and analysis). Some helpful guidance can be found in Jarvis and Campilan (2006), Broman and Woo (2017) and Ellis and Leek (2017).

Where diagrams have been used to answer questions, you will need to have developed agreed ways of converting the information to data sheets (see Section 2.4: Agrobiodiversity data).

The data provide an overview of agrobiodiversity in a community. The data can be used to explore the extent and distribution of agrobiodiversity as follows:

- **C** – number of land uses and access to production options
- **D** – richness and evenness of crop and variety diversity (Section 14)
- **E** – richness and effective population size of animal species and breeds (Section 10)
- **F** – richness of wild species and their uses (Section 9).

The data can also be combined for further analysis of relationships between different components of diversity and between diversity and household or land-use features using, for example, multiple regression and multiple factorial analysis. An example of this would be the relation between animal diversity (richness and effective population size) and household numbers or respondents sex. See Section 15 for further suggestions.

### MARKET SURVEYS

Surveys can also be conducted in local food markets. Such surveys can help explore local food diversity as well as market systems including supply and value-chains. Every individual household is likely to consume a mix of foods grown by themselves, gathered from the wild and procured from markets. Visiting a few local markets (main as well as small farmers’ markets) can help understand plant and animal resources such as foods consumed in an area and import/export movements of the key food items and groups.

During market visits one can record what is sold, sources of food items, price per unit, etc. These are not only observations, but data are collected through interviews and conversations. An informal market visit is recommended before carrying out a formal survey.

Market visits and surveys provide a quick overview of foods in each season and give an understanding of how important each food is. Information to record includes:

- Names of food items sold
- Food groups
- Price per unit
- Sources
- Type of sellers (see Annex 5.2).

Recording each food item by taking photos is an effective way of clarifying the information with key local informants after the market visit. Regular observations and measures will capture the patterns in seasonal availability of food diversity.

### FURTHER INFORMATION / REFERENCES


Another way of collecting information about diversity from households is through the documentation of local ‘foodways’ (Maundu et al. 2013). In this method, local community members are invited to document their foodways in order to capture food diversity within local food systems over the seasons, and also the cultural aspects of food: its uses and symbolic meanings and its relationship to health and nutrition.

Foodways include the knowledge, practices, beliefs and other cultural aspects related to how a community acquires, stores, prepares and uses its food. They also include describing gender aspects and seasonal dynamics. Documenting foodways provides an understanding of how people acquire food (e.g. market, cultivation, hunting, gathering), how it is prepared and processed, who prepares it, what tools are used, when it is prepared, and who eats it.

Foodway documentation in Gumuz region, Ethiopia. Photo: Bioversity International / Y. Morimoto
ANNEX 5.1 A SAMPLE HOUSEHOLD SURVEY QUESTIONNAIRE

SECTION A: IDENTIFICATION AND VALIDATION INFORMATION

Questionnaire ID: ________________________________________________________________
Site name: ____________________________________________________________________
Survey conducted by: ____________________________________________________________
Survey date: __________________________________________________________________
Survey checker: __________________________________________________________________
Data of check: __________________________________________________________________

SECTION B: GENERAL INFORMATION

1. Village name:
2. Respondent’s name(s):
3. Respondent’s sex: Male/Female
4. Age (in years):
5. Number of family members:
   Male_____  Female_____  Children, under 15 years_____
6. Number of family members involved in farm work:
   Male_____  Female_____  Children, under 15 years_____

SECTION C: LAND-USE DIVERSITY AND PRACTICES

7. Land use type (add extra rows as necessary)

<table>
<thead>
<tr>
<th>Homegarden (Yes/No)</th>
<th>Pasture</th>
<th>Agro-forestry</th>
<th>Fruit orchard</th>
<th>Fishpond</th>
<th>Irrigated fields</th>
<th>Non-irrigated fields</th>
<th>Are the fields in different parts of the landscape?</th>
<th>Which wild areas are used (forest, wetland, meadows, fishing grounds) and for which purposes?</th>
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SECTION D: CROP DIVERSITY INFORMATION (SPECIES AND VARIETAL)

8. What cereal crops do you grow? (add extra rows as necessary)

<table>
<thead>
<tr>
<th>Species</th>
<th>Variety name</th>
<th>Local or commercial</th>
<th>Source of seed*</th>
<th>Area planted</th>
<th>Unit for area</th>
<th>Total production</th>
<th>Unit for production</th>
<th>Reasons for choosing this variety?**List all that apply</th>
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9. What root/tuber crops do you grow? (add extra rows as necessary)

<table>
<thead>
<tr>
<th>Species</th>
<th>Variety name</th>
<th>Local or commercial</th>
<th>Source of seed*</th>
<th>Area planted</th>
<th>Unit for area</th>
<th>Total production</th>
<th>Unit for production</th>
<th>Reasons for choosing this variety?**List all that apply</th>
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10. What vegetables do you grow? (add extra rows as necessary)

<table>
<thead>
<tr>
<th>Species</th>
<th>Variety name</th>
<th>Local or commercial</th>
<th>Source of seed*</th>
<th>Area planted</th>
<th>Unit for area</th>
<th>Total production</th>
<th>Unit for production</th>
<th>Reasons for choosing this variety?**List all that apply</th>
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## Assessing Agrobiodiversity: A Compendium of Methods

### 11. What fruit do you grow? *(add extra rows as necessary)*

<table>
<thead>
<tr>
<th>Species</th>
<th>Variety name</th>
<th>Local or commercial</th>
<th>Source of seed*</th>
<th>Area planted</th>
<th>Unit for area</th>
<th>Total production</th>
<th>Unit for production</th>
<th>Reasons for choosing this variety?***</th>
<th>List all that apply</th>
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### 12. What oilseed crops do you grow? *(add extra rows as necessary)*

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<tr>
<th>Species</th>
<th>Variety name</th>
<th>Local or commercial</th>
<th>Source of seed*</th>
<th>Area planted</th>
<th>Unit for area</th>
<th>Total production</th>
<th>Unit for production</th>
<th>Reasons for choosing this variety?***</th>
<th>List all that apply</th>
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### 13. What legumes and pulses do you grow? *(add extra rows as necessary)*

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<tr>
<th>Species</th>
<th>Variety name</th>
<th>Local or commercial</th>
<th>Source of seed*</th>
<th>Area planted</th>
<th>Unit for area</th>
<th>Total production</th>
<th>Unit for production</th>
<th>Reasons for choosing this variety?***</th>
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### 14. What other crops do you grow? *(add extra rows as necessary)*

<table>
<thead>
<tr>
<th>Species</th>
<th>Variety name</th>
<th>Local or commercial</th>
<th>Source of seed*</th>
<th>Area planted</th>
<th>Unit for area</th>
<th>Total production</th>
<th>Unit for production</th>
<th>Reasons for choosing this variety?***</th>
<th>List all that apply</th>
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### E - LIVESTOCK DIVERSITY

15. What type of livestock do you keep? *(add extra rows as necessary)*

<table>
<thead>
<tr>
<th>Species</th>
<th>Breed name</th>
<th>Uses: milk (1), meat (2), manure (3), and other specify</th>
<th>Number of females of reproductive age</th>
<th>Number of males of reproductive age</th>
<th>Is the number of female animals stable, increasing or decreasing?</th>
<th>Is the number of male animals stable, increasing or decreasing?</th>
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### F - USE OF WILD PLANTS

16. What wild plants do you use? *(add extra rows as necessary)*

<table>
<thead>
<tr>
<th>Species (local name)</th>
<th>Habitat (forest, meadow, near water)</th>
<th>Main uses (food, medicine, fodder, firewood, building materials)</th>
<th>Part(s) used (leaves, roots, shoots, bark, flowers, fruits, seeds)</th>
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### ANNEX 5.2 A SAMPLE MARKET SURVEY QUESTIONNAIRE

<table>
<thead>
<tr>
<th>Name of food item (species variety/breed)</th>
<th>Food groups (grains, vegetables, fruits, meat/poultry/seafood, dairy, beans, eggs, nuts, processed foods)</th>
<th>Cost/Unit</th>
<th>Source within or outside of the community</th>
<th>Type of vendor (whole sale, small retailer, permanent vendor)</th>
<th>Gender of the vendor (M or F)</th>
<th>Photo number</th>
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*Source of seed: Maintained by yourself; obtained from a relative or neighbour in same community; obtained from a relative or contact from another community; obtained from market / commercial seed seller; obtained from extension service or government agency; obtained from NGO or from a seed fair

**Reasons: High yield (Y), adapted to local soil (S), medicinal properties (M), cooking properties (C), drought-tolerance (D), etc.