

## Protocol for the Agricultural Biodiversity (ABD) Assessment in Mali

Mauricio R. Bellon<sup>1</sup>, Sognigbe N'Danikou<sup>1</sup>, Raymond Vodouhe<sup>1</sup> and Amadou Sidibé<sup>2</sup>  
<sup>1</sup>Bioversity International, <sup>2</sup>Institut d'Economie Rural, Mali

### Introduction

The biodiversity of plant and animal species both domesticated and wild used for food by humans (referred to here as agricultural biodiversity—ABD) is one of the most important assets for rural households, particularly for the poor in marginal areas such as the drylands of the developing world. A contribution of Bioversity International to the Dryland Systems CGIAR Research Programme (CRP) [<http://drylandsystems.cgiar.org/>] has been to examine systematically the diversity of these species in CRP target sites in Mali, Ghana, Malawi and India. Bioversity and partners have carried out a set of Agricultural Biodiversity Assessments in these countries. In the case of Mali, the selected sites include two villages in the Sikasso region: Kani and Farakoro. These villages have been already part of an ICRISAT baseline survey. An additional village, N'Goutjina, was selected by Bioversity to complement the work. Here we present the protocols used for collecting the data from Mali.

The objective of the ABD Assessment is to identify and quantify all the useful plant, animal, and aquatic species utilized by rural households and communities in the Dryland Systems CRP sites, as well as information on markets attended and general socioeconomic household characteristics. This information will be used to characterize three dimensions of ABD: (1) diversity in the production system, including on farm and common lands; (2) dietary diversity; and (3) market diversity; in terms of the elements and relationships involved and the exogenous factors that influence their status and dynamics. These data will be the basis for analyzing the roles of ABD in the lives and livelihoods of these rural populations in order to identify entry points for designing and implementing interventions that contribute to improve their well-being.

The ABD Assessment consists of two parts:

- (1) a series of focus group discussions (FGDs) to elicit the local knowledge about the agricultural and wild biodiversity present in the study areas in order to generate: (a) an inventory (list) of all useful plant, animal, and aquatic species used by local communities for human food; (b) an inventory of all foods consumed; (c) an inventory of all species and products bought and sold in markets that people in the village attend<sup>1</sup>. All the FGDs should be held separately for men and women in order

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<sup>1</sup> Markets are understood here in the widest sense, as the places where households purchase and sell items, thus this can happen in their own villages or even house with itinerant traders, etc. It is not restricted to village markets or specific locations.

to collect gender disaggregated data. Effort should also be made to have different social categories of people in the study areas be represented in the FGDs.

- (2) a household survey with a representative random sample of 60 households per village for the three villages that were selected as in the region of Sikasso in Mali for a total sample size of 180 households. Two of the three villages (Kani and Farakoro) have been already sampled as part of an ICRISAT baseline survey. An additional village, N’Goutjina, was selected by Biodiversity to complement the work. In the case of the two villages already studied by ICRISAT, the household survey will take, if possible, with the same households that the ICRISAT baseline (otherwise additional households will be selected randomly to complete the sample size). For the third village a random sample of households will be drawn. The household survey contains two sections:
  - (a) One that elicits information on the ABD use by the household;
  - (b) Another that elicits information on foods consumed by specific members of the household.

The criteria for determined to whom each section should be applied to is presented in the appropriate section.

Focus group discussions will be carried in all the three selected villages.

The data with all species collected during the FGDs from the three villages will be sent by the national partner to the National Herbarium of Mali that will identify the scientific names. The species lists (vernacular names, please indicate the language) identified during the FGDs will be the basis for the household survey. Once the FGDs for all villages have been completed, the teams will proceed to carry out the household survey.

## Protocol for the Focus Group Discussions (FGD)

The FGD will elicit information on (a) biological diversity in the production system – on the farm as well as harvested from forest and community land; (b) diversity of species and products sold and bought in markets (markets understood widely as any place where people buy and sell goods and services, not just village markets, and including their own dwelling if commercial activities take place there); and (c) dietary diversity – consumed in house and also purchased from market. There are a few important principles to keep in mind about the FGD:

- The FGD aims to capture the collective knowledge of the community, not of the specific participants in the group;
- There is a need to capture as much diversity as possible, i.e. to identify as many species as possible, particularly for those species used by few people or even rarely. Therefore, it is important to probe for additional species; every species is important no matter how insignificant it may appear to be;
- Capture gender differences is essential part of the FGD process;
- There is no right or wrong answer, all answers are valid;
- It is important to capture, to the extent possible, the discussions that take place during the FDG.

The FDG will be organized in the following manner in each village:

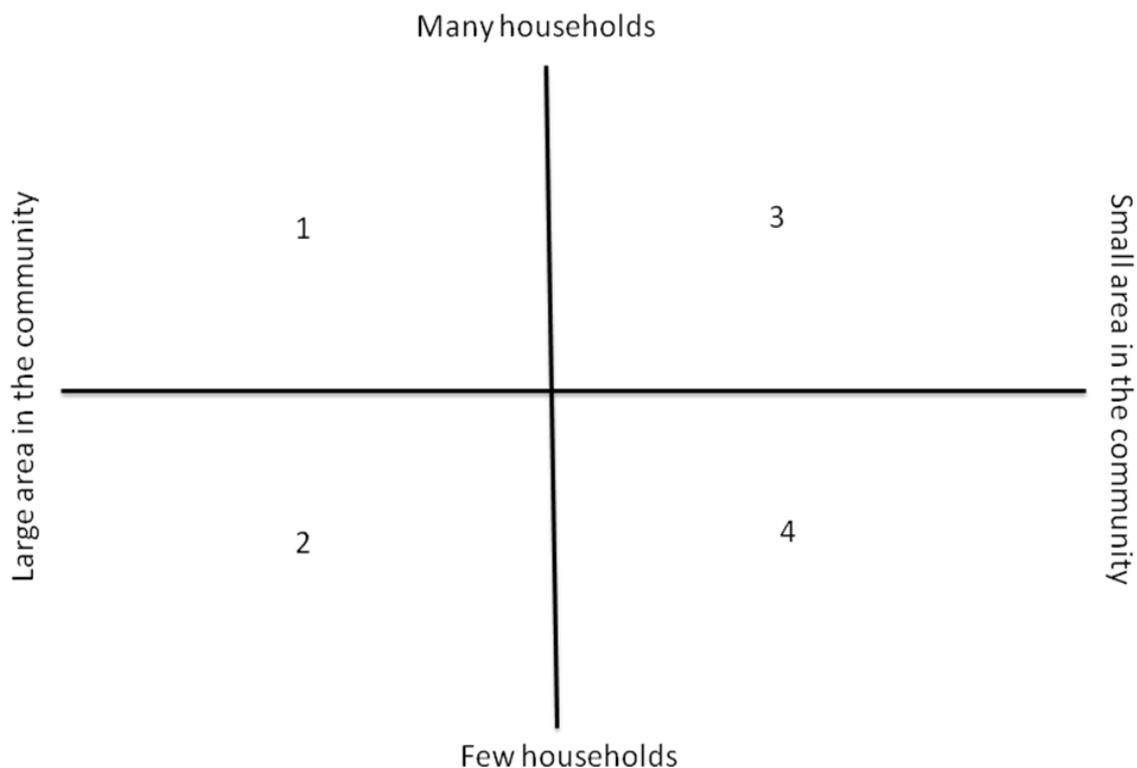
- There will be two groups: one of males and one of females
- Each group will deal with the three aspects for discussion:
  - Useful biological diversity in the production system;
  - Market diversity;
  - Dietary diversity.
- There will be of approximately 10 participants per group (but no more than 15)
- Each group should include a cross-section of individuals involved in agricultural production representing different levels of access to land (land owners, local land renters and migrant land renters), different ethnic groups present in the village and different age groups (special emphasis should be place to include younger farmers).
- For each group there will be at least two facilitators, one to guide the exercise and the other to document the process (take notes, photographs, etc.)
- Ideally in the case of male groups, the facilitators should be male and for female groups they should be female; however based on the availability of male and female enumerators and the situation in the field this could be adjusted.

At the beginning of the exercise, the facilitator will explain to the group that as they well know, there are many species of plants and animals that are used by people there. However, some are grown by many farmers in the community, while others are by just a few, and at the

same time some of these same species are grown in a large area within the community, while other are usually grown in a small area within the community. The facilitator then draws the four squares in a large piece of paper on the floor (Figure 1). The four squares are:

- (1) many households and large area in the community;
- (2) few households and a large area in the community;
- (3) many households and a small area in the community;
- (4) few households and a small area in the community.

Figure 1.



### *ABD in production systems*

The work will be carried in the following sequence:

1. Participants are asked to make a list of all relevant species (e.g. free listing of species).
2. Once the list has been completed, proceed to place each species in the appropriate quadrant according to the indication of the participants. It is important to emphasize that the decision to place a species in a particular quadrant should be a group decision, not just made by one member. If there is controversy discuss until consensus is reached, if no consensus then indicate so in the notes.

3. For each species once it has been placed in a quadrant, ask participants the following questions about the species (the answer should be yes or no). One of the facilitators should mark the answers in the appropriate column, as well as any relevant information or observations in the last column:
  - (a) Is the species (parts of it or products derived from it) used as food for own consumption?
  - (b) Is the species (parts of it or products derived from it) sold by community members?
  - (c) Is the species (parts of it or products derived from it) bought by community members?
  - (d) Is the species available during the season of food scarcity?
4. Continue with the next species and repeat the process until all species in the list have been classified.

The table below is a tool to record the results of the Focus Group Discussion using the four-square method. One table will be filled for each category of species (e.g. annual species, perennial species, animals, etc., see also Appendix 1).

Note: Two additional columns at the end of the form have been added to capture the information of the four quadrant exercise for sold and purchased species. These columns will be filled when the Markets section is implemented.



In addition, information will be gathered on the following issues:

- a) Are the other species that may not have been included yet, particularly in quadrants 3 and 4? If so include and repeat the process with the additional ones.
- b) Ask what are the general reasons species were placed in a particular quadrant, for each of the four quadrants; the point is not to elicit particular reasons for specific species, but general ones for the set of species place in each of the cells.
- c) Species that were grown ten years ago and are not grown now.
- d) Species that farmers would like to grow in future if seed are provided to them.

The reason for obtaining information on item (c) is to gain an understanding of the dynamics of species diversity in the village over time. The rationale for obtaining information on item (d) is to explore potential species that could be of interest to farmers in the area that later could be introduced for testing as part of interventions.

For certain key species (identified previously) where within-species diversity is large or they are of particular interest (e.g. sweet potato for CIP), the facilitator will carry out a similar four-square exercise but by variety. This can only be done for one or two species due to time constraints.

The exercise will start with annual plant species and will be repeated for each of the remaining categories:

1. Useful tree and shrub species in individual and common lands (perennial). These include both cultivated (e.g. mango) and agro-forestry species. Many of these species are multi-purpose, e.g. providing fruits, leaves, wood, fodder, etc.
2. Useful wild or semi-wild species used for food harvested from farms, forest areas or communal lands (annual or perennial).
3. Domesticated animals
4. Wild animals.
5. Fish and other aquatic resources

In the case of Useful tree and shrub species in individual and common lands (perennial) including both cultivated and agro-forestry species, the four cells will be modified as follows:

- (1) many households with many trees/shrubs within their individual farms;
- (2) many households with a few trees/shrubs within their individual farms;
- (3) few households with many trees/shrubs within their individual farms;
- (4) few households with few trees/shrubs within their individual farms.

In the case of harvested useful wild or semi-wild species used for food (annual or perennial) the four cells will be modified as follows:

- (1) many households utilize the species and there is high availability of the species within the community and surrounding areas;
- (2) few households utilize the species and there is high availability of the species within the community and surrounding areas;
- (3) many households utilize the species and there is little availability of the species within the community and surrounding areas;
- (4) few households utilize the species and there is little availability of the species within the community and surrounding areas.

In the case of domesticated animals the four cells will be modified as follows:

- (1) many households own many animals ;
- (2) few households own many animals;
- (3) many households own few animals;
- (4) few households own few animals .

In the case of wild animals the four cells will be modified as follows:

- (1) many households utilize the species and there is high availability of the species within the community and surrounding areas;
- (2) few households utilize the species and there is high availability of the species within the community and surrounding areas;
- (3) many households utilize the species and there is little availability of the species within the community and surrounding areas;
- (4) few households utilize the species and there is little availability of the species within the community and surrounding areas.

In the case of fish and other aquatic resources the four cells will be modified as follows:

- (1) many households utilize the species and there is high availability of the species within the community and surrounding areas;
- (2) few households utilize the species and there is high availability of the species within the community and surrounding areas;
- (3) many households utilize the species and there is little availability of the species within the community and surrounding areas;
- (4) few households utilize the species and there is little availability of the species within the community and surrounding areas.

*ABD in markets*

The facilitator will explain that now we want to understand which and how important are the species that were identified in the previous exercise in terms of their marketing, both for sale and for purchase. The facilitators already have the list of species that are both sold and purchased. First the facilitator will explain that the group will examine those species that are sold. As in the previous exercise, the facilitator will explain that species can be sold by many farmers or by just a few, and some may be sold frequently and others rarely, thus the facilitator draws a four square diagram (Figure 2). Once the diagram is drawn, the facilitator will read aloud from the list of species that are sold, one species at a time, asking participants to place the species in one of the four cells. Once all species in the list have been classified, the facilitator should probe for additional species that may have been omitted, particularly for those that are sold by few farmers rarely. Finally, the facilitator will ask participants about the general reasons for placing species in a particular quadrant, for each of the four quadrants; the point is not to elicit particular reasons for specific species, but general ones for the set of species placed in each of the cells.

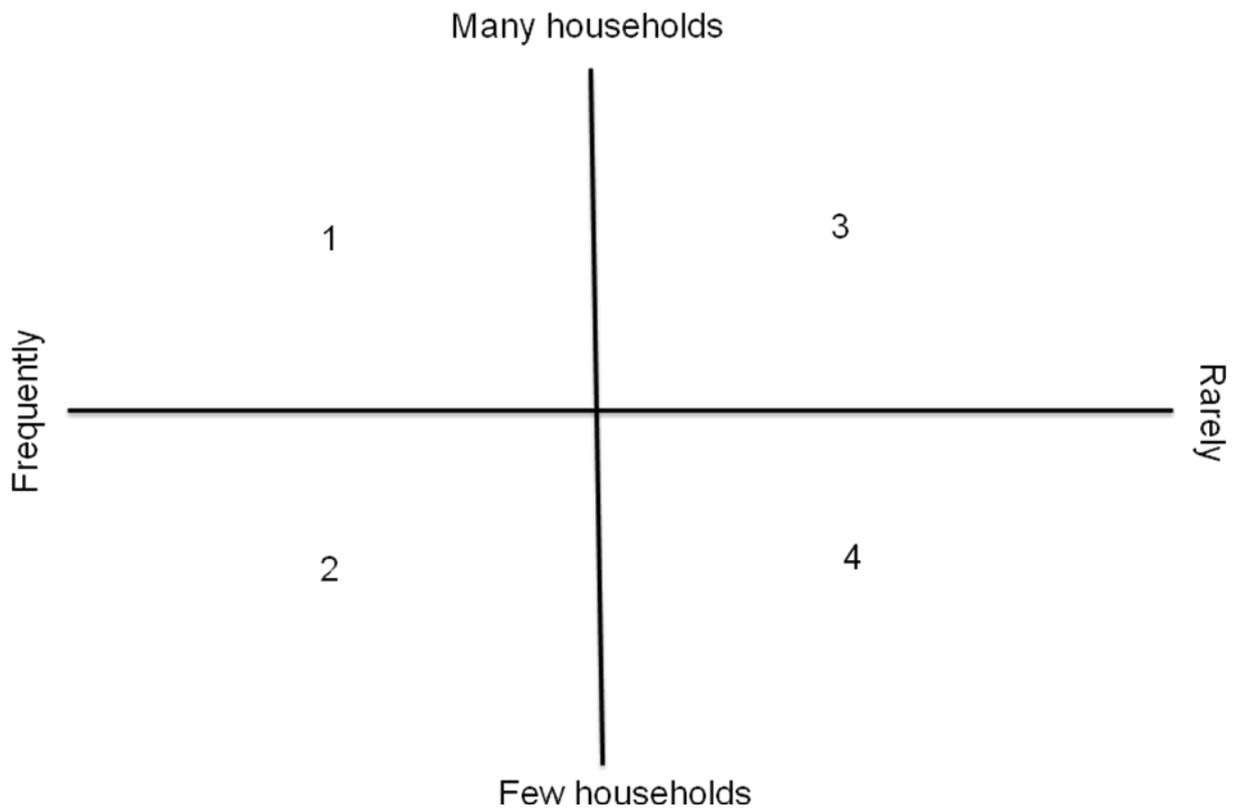
In the case of species sold the four cells will be modified as follows:

- (1) many households sell frequently;
- (2) few households sell frequently;
- (3) many households sell rarely;
- (4) few households sell rarely.

In the case of species purchased the four cells will be modified as follows:

- (1) many households purchase frequently;
- (2) few households purchase frequently;
- (3) many households purchase rarely;
- (4) few households purchase rarely.

Figure 2



Once this exercise is completed, the facilitator will repeat the same procedure with the list of species that are purchased, drawing also a four square diagram with species and foods that are purchased by many household, by few, and being purchase frequently or rarely (same as Figure 2). After the diagram is drawn, the facilitator will read aloud from the list of species that are sold, one species at a time, asking participants to place the species in one of the four cells. Once all species in the list have been classified, the facilitator will ask the participants to list other foods and food products (e.g. sugar, salt, bread, macaroni, canned foods, etc.) that are purchased but are not be produced locally. After this new list has been compiled, the facilitator will ask participants to place the foods and food products in one of the four cells. Once all species in the list have been classified, the facilitator should probe for additional species that may have been omitted, particularly for those that are sold by few farmers rarely. Finally, the facilitator will ask participants about the general reasons for placing species in a particular quadrant, for each of the four quadrants; the point is not to elicit particular reasons for specific species, but general ones for the set of species place in each of the cells.

#### *ABD and dietary diversity*

The facilitator will explain that now we want to understand more about the diversity of foods consumed by the community, particularly about those species that are consumed as foods

directly or as food products. Now there is a list with all the locally-available species that are used as foods (derived from the exercise on ABD in production systems), as well as another list with the foods and food products that are not locally available but are purchased (derived from the exercise on purchased foods and food products)<sup>2</sup>. The facilitator reads one by one, each of the species from the list and asks the group to provide information on:

- What parts of the species are consumed?
- What are the cooking methods or of transformation used to prepare foods derived from that species?
- What products are derived from the species (through processing)?

This information is noted by the second facilitator in a table. The information will be the basis for developing the dietary diversity questionnaire.

Species	Parts of the species consumed	Forms of preparation/transformation	Products

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<sup>2</sup> In the case of purchased foods and food products there may not be necessary to fill some of the columns since the purchased item is the final product (e.g. products, parts of the species consumed).

## Protocol for the Household Survey

The household questionnaires will be carried with the same communities where the ICRISAT baseline survey took place, however it may include additional communities if the budget allows it. Within each community, if possible the same households interviewed for the ICRISAT baseline will be interviewed for this survey. Even if a new sample is drawn, it is important to establish whether the household participated in the ICRISAT baseline or not. In case, it did, it is important to use an identification system that allows linking the households in the ABD survey with those in the ICRISAT baseline survey.

The survey consists of four components:

- (a) useful biological diversity in the production system (on farm, and those species harvested from forest and community land including water resources);
- (b) markets;
- (c) dietary diversity;
- (d) general socioeconomic information

The survey is divided into two questionnaires. One elicits information on biological diversity, markets and general socioeconomic information. The second one elicits information on dietary diversity for a mother and a child in the household. The questionnaires are provided in two additional files. Specific instructions to elicit the dietary diversity are provided in the specific questionnaire.

For the components on biological diversity, markets and general information, the questionnaire will be applied together to the male head of household, and to the female that will be interviewed for the Dietary Diversity section. The selection criterion for that woman is as follows: (1) a mother in the household between 15-49 years old with a child aged between 6-59 months. If more than one member of the household has these characteristics then choose one randomly (see additional instructions for the dietary diversity section below). (2) If no mother in the household has a child of that age, choose the woman who customarily prepares the food in the household irrespective of age. Most of the questions about species refer to a specific season of reference (either the dry season 2012/13 or the wet season 2013).

## ANNEX 1

### **Table to Capture the Results for the Focus Group Discussion for ABD in Production Systems**

Village: \_\_\_\_\_

Date: \_\_\_/\_\_\_/\_\_\_

Type of group: Men ( ) Women ( )

Animateurs:

Number de participants: \_\_\_\_

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