

# Agrobiodiversity 4-Cell Method: A Rapid System diagnosis tool

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RESEARCH PROGRAM ON  
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## Agrobiodiversity – production, diet, sale, purchase

Small holder rural communities use, sell and buy many plant and animal species for diverse functions in their livelihoods: dietary diversity and nutrition, income generation, medicine, rural construction and cultural purposes. Few rapid assessment methods exist to assess agrobiodiversity and local food system flows.

## A quick assessment of Agrobiodiversity & Food System

The Four-Cell Approach (Sthapit B., 2006) is a participatory rapid rural appraisal technique that was originally created to assess the abundance (richness) and distribution (evenness) of the production of crops, animal and collected species within farming communities. The method has been adapted to include market (sale and purchase), diet and production assessment in local livelihoods.

The method has been refined, and data collected in over 6 countries, leading the development of the following products:

1. **Method and Analysis Guide:** The Agrobiodiversity 4-Cell
2. **Calibration** of the Agrobiodiversity 4-Cell Method Article
3. **Cross-site analysis** – the current state of Agrobiodiversity Article
4. **Online database:** Free to use, share and interpret Agrobiodiversity 4-Cell data

Presenting the results disaggregated per food groups helps to interpret the data and identify specific innovations targeted at improving availability, access and consumption of food groups with little local diversity.

## Utility of the legacy product

- There is an inherent necessity to involve local people and local knowledge in food security and nutrition interventions. Participatory research methods have many benefits for local communities - as well as for researchers in facilitating **rapid, relatively low-cost assessment** of agricultural biodiversity when compared with exhaustive surveys (Gardner, 2010).
- This tool allows the opportunity to **identify quick gains** in food security and diet diversity by the utilization of local crop diversity. The tool also captures **gender differentiated perceptions** on the value of the different types and utilisation of local agrobiodiversity.

## How does it work?

- The adapted agrobiodiversity 4-cell method **captures the diversity of species** that are 1) available, 2) sold, 3) purchased and 4) consumed in local food systems.
- For availability, focus groups rank species produced or collected from the wild on how many households grow them, and on what land size.
- For markets and diets, it does so by asking focus groups to rank species on how many and how frequently households utilise a species (Figure 2).
- Men and women in separate groups/villages chosen by age, distance to market, ethnic background, degrees of wealth.

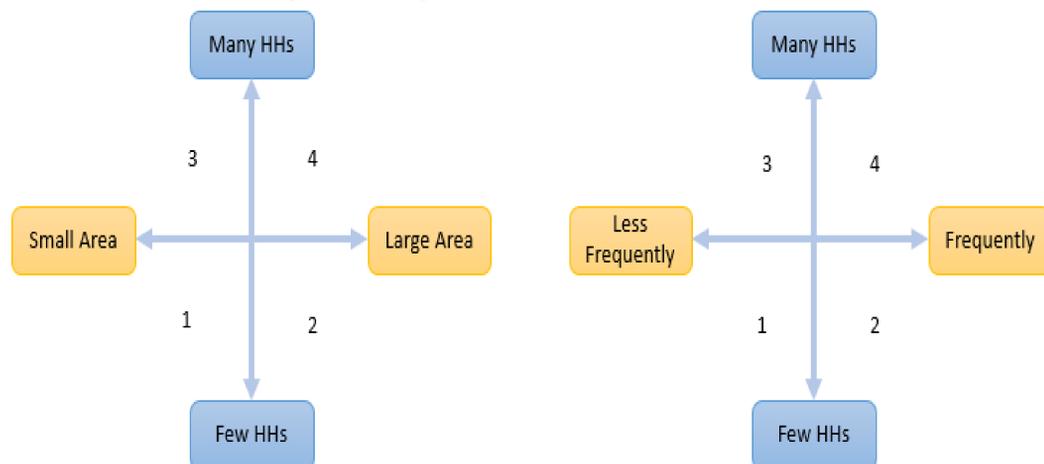


Figure 1 - Example of Locally Available (left) and Market and Diet (right) Agrobiodiversity four-Cell tool to facilitate focus group discussion and species ranking

## Key contacts

The analysis guideline and online database are due to be released by December 2016. The articles are expected to be published in the first quarter of 2017. For any further information contact Jessica Raneri [j.raneri@cgiar.org](mailto:j.raneri@cgiar.org)



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## Results and outputs

### Cross Site Analysis from 8 countries:

- Overall, **1020** different species were documented as produced or collected from the wild.
- **819** species were reported for local consumption.
- Nicaragua presented the greatest species richness but with high variation between focus groups.

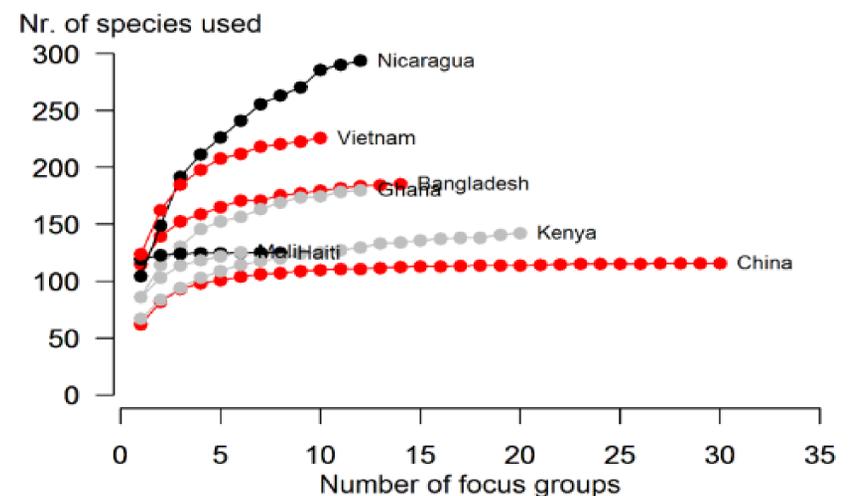


Figure 2 - Total Species Richness (species available, markets or consumed) per focus groups per country

### Calibration of 4-Cell Rapid method compared to household data:

- For three sites, we had 4-cell and household data sets: Haiti, Vietnam, Kenya.
- We compared the total number of species collected using the Four-Cell Method to Household survey data.
- The number of species tended to be higher for various species groups using the Four-Cell Method: wild animal and plant foods, fruit trees and vegetables.
- Approximately between a quarter and one fifth of the species were captured by both methods. The remaining species were unique to the household survey or the Four-cell method.



Figure 3 – Thai Minority Women in North West Vietnam participating in the agrobiodiversity 4-cell data collection

## Who is the legacy product useful for?

- The agrobiodiversity 4-Cell method is a rapid and efficient tool to measure and capture local agrobiodiversity.
- It can be used by researchers to conduct a rapid assessment of local agrobiodiversity availability and usage in the local food system, particularly when used together with an in depth household questionnaire.
- The tool also allows for the identification of entry points to improve dietary quality and this can be useful for project and intervention design.
- The method and analysis guide is easy to use.
- The online database allows the data to be readily available under open access, and easy to analyze with pre-defined modules and outputs.

## Key partners

Biodiversity International  
Humidtropics CRP  
Drylands CRP  
Aquatic Agriculture Systems CRP