Displaying native fruit tree products to agricultural extension officer and buyer

Participatory research to elicit gender differentiated knowledge of native fruit trees

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Background and context

The state of Sarawak, Malaysia, is a diverse area with a range of native fruit tree species such as mango (*Mangifera* spp.), rambutan (*Nephelium* spp.), citrus (*Citrus* spp.) and mangosteen (*Garcinia* spp.). These native fruit trees contribute to the livelihoods of rural women and men.

Despite this, agricultural research in the country has often focused on commercial food production of non-native species, rather than looking at the economic potential of home gardens and non-commercial products, such as native fruit trees. Moreover, men are often included as participants in research-for-development activities since they typically control the commercialization of fruit trees and crops grown on household lands. Rural women, who are also experts, managers, users and custodians of native fruit trees, are often excluded from research-for-development opportunities for various reasons, including their lower levels of formal education and literacy rates and the greater role men play in public affairs and in relation to external actors.

Both men and women have specific local ecological knowledge of native fruit tree species, therefore both should be important contributors to research around these species. Excluding women from research-for-development initiatives is problematic not only for this reason, but also because it can limit their access to the benefits derived from improved management and use of fruit diversity.

A study was conducted to better understand the ecological, organizational and marketing aspects of native fruit trees by using four participatory research tools to explore the knowledge of both women and men about forest resources and benefits. The study showed the usefulness of using participatory tools to reveal the different sets of knowledge held by women and men of different age groups about the status of, and markets for, mango and rambutan species. The research was carried out in two sites of Sarawak, Malaysia: Kampung Kakeng, District of Serian, and Kampung Bungai, District of Sibuti. Both districts have a rich biological diversity of native fruit trees, and informative local knowledge around the management and use of native fruit trees that can guide *in situ* conservation of rare and threatened native fruit trees.

Women participants using the participatory value chain mapping tool in Kampung Kakeng

Strategies employed and key activities

The study was carried out between July 2013 and March 2014. Women and men from all households who owned NFT orchards were invited to participate in the participatory research activities. Participants were divided by age and gender (young men 18–40 years old, young women 18–40 years old, elder men 41 years old and over and elder women 41 years old and over). Participation in the project was voluntary. It was a challenge to recruit enough young people especially young men for some of the research activities, as many were working in the city.

Gendered and age-specific knowledge about the uses and management of native fruit trees, local organizations and marketing channels for native fruit tree products were investigated using four participatory research tools: Four cell analysis (FCA), Venn diagrams (VD), participatory value chain mapping (PCVM) and participatory rapid market appraisal (PRMA).

Four cell analysis is a participatory research tool that identifies the key biological assets that play an important role in the livelihoods of local communities. The method helps identify farmers' knowledge of extent and distribution of local crop diversity and identify common, unique and rare plant genetic resources. This allows the local community and professionals in the field to develop different livelihood options and conservation plans for future intervention. In this study, FCA was used to examine local perceptions of mango prevalence and status (common and abundant, unique, potentially threatened, rare and under threat).

Venn diagrams were used to gain insight into local organizations, group them according to their status as internal or external to the community, and assess their relative importance according to local perceptions. Organizations such as village committees and self-help groups were considered internal since they were made up of community members and based in the village. Medical centres, higher order farmers' organizations and police were considered external to the community since they provide a service to residents outside the village. Women and men scored the importance of these organizations from low, to medium and high. Venn diagrams helped identify the reach of each organization among community members and identify which ones could be involved in research and programme interventions focused on native fruit trees.

PVCM and PRMA were used to identify the level of understanding that community members had about market processes related to mango products. Using a PVCM tool, women and men drew and shared their knowledge about mango value chains and stakeholders involved in the process. They interviewed potential buyers of the products. Then, in a PRMA activity, female mango pickle producers visited stores where mango products were sold to better understand the product's market niches.

Results

The data collected from the four participatory research tools was interpreted by the project's field team. FCA, Venn diagrams, PVCM and PRMA offered insights into how knowledge of native fruit trees varies by gender and age.

Gender and age-specific knowledge

The data collected from all four research tools showed that knowledge of native fruit trees varies across gender and generational groups. For instance, young men and women identified fewer mango species and

Men participants listing value chains in Kampung Kakeng

Men participants mapping out value chains in Kampung Kakeng

varieties than older women and men, since young men spend more time in urban areas than in the forest and orchards whereas young women stay closer to the homestead and are less involved in fruit-based income-generating activities. The differentiated knowledge also comes from the various roles each gender plays in the handling and preparation of native fruit tree products. Elder men acquire their knowledge of native fruit trees when collecting fruit from the forest or cultivating native fruit trees in their orchards, while elder women acquire their knowledge from preparing the fruits for selling and consumption.

Analyzing the gender and age-differentiated knowledge of native fruit trees brought new perspectives on what information is available within the two communities. It also revealed inconsistencies around which fruits are considered abundant or under threat, and about local knowledge needs that can be addressed in further research-for-development activities. More importantly, it allowed women and men from different generations to interact and share knowledge, giving them the opportunity to learn from one another. For example, women believed mangoes were a rare species, while men had the opposite view since they were selling them straight from their orchards. After analyzing results from the Four cell analysis, women realized that men were selling many young mangoes straight from their orchards, before they ever reached the village, thereby curtailing women's access to the mangoes they would need in order to grow their mango pickling enterprise. Men, too, recognized that women from their own village could benefit from these young mangoes to increase their income from native fruit trees. Due to the knowledge-sharing activity, men agreed to bring more young mangoes to the village to support women's pickling enterprise.

Assessment of the participatory research tools

In March 2014, participants were asked to evaluate the different tools they had used in terms of their usefulness on a scale of 1 (low) to 5 (high) for their community's development. They also evaluated the ease of using each tool based on a similar 5-point scale.

Project participants noted that the participatory tools were very useful especially with regard to knowledge sharing about native fruit trees. In Kambung Bungai, women increased their knowledge of marketing strategies and potential income opportunities from the PCVM and PRMA activities. When participants were asked to rank the different participatory tools based on how useful they were and whether they were easy to use and understand, both women and men considered them a valuable resource for their community's development. In general, participants found the tools moderately easy to use (most were given a score of 4 or 5 on a 5-point scale), however some young women faced some challenges in drawing value chain maps for mangoes and indicated that they would still need an external facilitator for any future replication.

Sustainability and replication

Participatory knowledge-mapping tools offered valuable insights for interventions aimed at conserving native fruit trees and promoting forest-based livelihoods. A gender-responsive participatory approach such as the one described above can allow different voices to be heard and offer rare opportunities for knowledge sharing among different groups (women and men, young and old) within the community. The use of participatory research tools can be empowering, in this case especially for women who learned about various marketing opportunities and how to negotiate with potential buyers. Many women from Kampung Bungai mentioned an increase in confidence attributed to what they learned but also to the shared community experience.

In order to develop future programmes and actions, in this case in relation to the management of native fruit trees, it is key to incorporate an understanding of the roles and expertise of women and men of different age groups. This can be facilitated by using a combination of participatory research tools that can elicit a range of information and knowledge to guide future actions and strategies.

Indigenous mango species (Mangifera pentandra) used for making pickle

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Key Partners

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Suggested readings

http://www.bioversityinternational.org/news/detail/research-through-theatre-using-participatory-methods-to-spark-discussion-and-empower-local-communities/

http://www.bioversityinternational.org/news/detail/voices-from-the-rainforest/

http://www.bioversityinternational.org/e-library/publications/detail/making-research-gender-responsive-in-malaysia-voices-from-the-rainforest/

http://www.bioversityinternational.org/uploads/tx_newsOn_farm_management_of_agricultural_biodivesity_in_Nepal_Good_Practices_revised_edition_2012_1222_.pdf

Elias M., Brooke P., Hussin MH., Lamers H., Muhammad FA., Omard S. Evaluating the Usefulness and Ease of Use of Participatory Research Tools for Sustainable Forest Management and Livelihoods in Sarawak, Malaysia. Forests, Trees and Livelihoods.

All pictures taken by F. A. Muhammad