

Upscaling the Philippine uplands: Creating opportunities through rice-based organic farming

JOSEPHINE FELIZMENIO CRUZ
Central Bicol State University of Agriculture (CBSUA), Philippines, www.cbsua.edu.ph,
eMail: jocruz_2000@yahoo.com

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Author's Background

Ms. Cruz is a professor at CBSUA teaching agriculture and agriecotourism subjects. She does research and extension works in agriculture and an advocate of organic/natural farming.

Summary

This project developed agricultural systems that optimized utilization and value of upland areas by using them for organic agriculture to provide food and livelihood opportunities in the community. The project sites were Barangays Antipolo in Bao and Duran in Nabua, Camarines. Participatory Resource Appraisal (PRA) was used to characterize the production systems of the sites. Thirty one farmers participated. Results showed that the upland farms can be utilized to grow a crop mix of rice and vegetables: the Organic Upland Rice Production, utilizing 16.75 hectares, achieved about \$4,627.32 income while the Organic Vegetable Production, where 3.25 hectares were grown with various vegetables, gained \$2,095.54 income in one cropping season. Also, the farmers produced their own organic fertilizers such as liquid fertilizers and vermicompost.

Background

Upland rice is rice cultivated in flat and sloping lands that are not bounded, basically grown in well drained soils, prepared and seeded under dry conditions, and depends on rainfall for moisture (De Datta, 1975). It is considered a subsistence crop in Asia specifically in the Philippines and often planted in small land holdings (average of 0.5 hectare) by resource poor farmers.

Over the past several years, the unpredictable weather condition in the Bicol Region resulted in significant losses in the agricultural sector. Rice was among the most affected commodity. Flooding damaged the ricelands thus decreasing rice production in the river basin municipalities of Camarines Sur (which includes Bao and Nabua) and Albay.

As food security becomes critical, efforts to arrest the impending order becomes urgent and mandatory for survival. The challenge has now shifted to the uplands as the new 'production frontier'. Seemingly, upland rice production is an essential component of the agricultural sector in the region. Although production yields are generally low, yet it has the potential to improve through the use of improved varieties and cultural management practices to suit the soil, climatic, and social conditions. At present, quite a big number of the rural population are farming the upland areas, however, methods used are exploitative and extractive in nature, endangering the ecological balance and its capacity to sustain production on a long term basis; hence, jeopardizing the ability of the future generation to produce their needs like food. There was a need therefore to come up with and introduce more appropriate farming systems and practices to conserve the upland resources while at the same time increasing the production level and income from farming in order to meet the food and other needs of the families living in these areas. Along this line, an analysis of the current situation of the upland areas especially relative to farming mindset and practices had to be undertaken, to provide the basis in coming up with more appropriate and locally adaptable ways in tapping the natural resource base of the area. One important aspect to look into was the possibility of introducing upland rice-based organic farming. Thus, the conduct of this study.

This project was envisioned to maximize the utilization of the uplands adopting the organic agriculture approach to address food security and sustainability. It established a model community on upland rice-based organic agriculture which can be replicated in other areas of the region.

Main chapter

Situational Analysis

The project team conducted a Participatory Rural Appraisal on September 2012 in Antipolo and Caranday in Bao and barangays Duran and San Vicente Gorong-gorong in Nabua, Camarines Sur. The team used PRA

tools such as house to house interviews and focus group discussions to gather relevant data. The team also surveyed the areas concerned and gathered crucial technical data like slope, elevation and temperature. A total of thirty one (31) farmers participated in the project. These farmers allotted a total of 20 hectares as demonstration sites. Eighty percent or 16.75 hectares were planted with upland rice while 3.75 hectares were devoted to organic vegetable. To ensure sustainability of the project and coordinated efforts, the farmers associated themselves and elected its own set of officers.

Capability Development

The farmers were trained on organic fertilizer production and organic upland rice production which enhanced their appreciation and knowledge on upland organic agriculture production technologies.

On-farm Project Components

A. Organic Vegetable Production

The farmer-beneficiaries engaged in vegetable production on December 2012 until May 2013. With a combined area of 3.25 hectares, they planted vegetables like cabbage, tomato, bitter gourd, hot pepper, eggplant, watermelon, cucumber, squash, bottle gourd, string beans and ginger. The seeds were given free to the farmers. The farmers used natural farming technology in cultivating these vegetables. They also used natural farming inputs and vermicompost in fertilizing the crops.

The vegetables produced by Baao farmers totaled to 4,062.5 kgs which amounted to \$1,422.51 in sales. On the other hand, farmers of Nabua produced a total of 1,864.5 kgs of assorted vegetables which generated \$673.02 in sales. The vegetables were easily sold in the local market.

B. Organic Upland Rice Production

About 16.75 hectares (18%) of the project area were planted to upland rice. Rice varieties used were NSIC RC 192, Dinaro, NSIC 11, NSIC 9, Palawan (0.1 ha) and Inipot-ipot (0.1 ha). The farmer-cooperators produced a total of 6,260 kgs of upland rice which amounted to \$ 4,627.32. The low production can be attributed to the shift from conventional rice production to organic upland rice production. Another challenge faced by farmers was the erratic weather condition such as a three week dry spell that was followed by heavy rains. This caused poor crop yield.

The upland rice seeds were provided by the Philippine Rice Research Institute (PhilRice). Since it is difficult to acquire upland rice varieties, PhilRice bought the seeds that were produced by the farmers.

Organic Fertilizer Production

The farmers produced their own organic fertilizers. Molasses was used as basic ingredient in producing natural farming inputs like indigenous microorganisms, fermented plant juice, fermented fruit juice, fish amino acid and oriental herbal nutrient. They also made a compost pit to recycle household and crop residues which was also used as organic fertilizer in their farms.

Moreover, two (2) vermicompost facilities were each established in Baao and Nabua which were used by the farmers to produce about 2,750 kg of vermicompost. The vermicompost and liquid organic fertilizers produced were all utilized by the farmers to fertilize their farms. These resulted in considerable reduction of farm costs and certainly improved the soil condition of their farms.

Institutional linkages

Collaborations with government agencies such as the Department of Agriculture, Philippine Rice Research Institute, Agricultural Training Institute and the Local Government Units provided the farmers with support such as the provision of agricultural inputs and trainings.

Core messages and conclusions

Upland Organic Farming: Striking a balance in the people-planet-profit challenge

To develop a sustainable farming system in the upland areas is a gargantuan challenge because of the need to strike a balance between economic development, environmental protection and changing existing mindset among local farmers. Nonetheless, we are able to show that rice-based organic farming ventures in the upland areas can be feasible and profitable.

Towards the development of a sustainable farming system using improved organic-based technologies

Upland farmers from the project sites were engaged in the production of crops and animals using technologies handed down from their parents, who are themselves farmers, have been learnt from other farmers or which

they learned from their own experience. Hence, it was observed that the farmers lack certain technical knowhow on agriculture such as skills on pest management, appropriate use of fertilizer, soil conservation practice, soil fertility analysis and sustainable management of resources. It was further observed that farmers had poor access to new and emerging technologies which may be indicative of the poor linkage between research and extension activities. Such poor linkage is manifested in the low adoption of improved technologies due to the farmers' risk-aversion (Esquejo, 2004).

However, despite this situation, there exist a wide range of opportunities in the upland. For instance, one can find available upland farms for rice and vegetable production coupled with the manifest willingness of farmers to engage in activities that they perceive will lead to increased farm income. Further, there is an abundance of indigenous materials that can be used for organic fertilizer production in the locality. To realize the project's objective of introducing and /or enhancing organic based farming systems in the two upland communities of Baaو and Nabua, Camarines Sur, the project engaged 31 farmers who were willing to convert to organic farming. The project acknowledged the importance of community and farmer involvement in the entire decision-making process from deciding what to plant, how to do it and how to market their produce. Result of the study revealed that the production of upland rice and vegetables is feasible. Results revealed that the farmer-cooperators of Baaو and Nabua, Camarines Sur produced a total of 6,260 kgs of upland rice leading to a total sales of \$4,627.32. On the other hand, organic vegetables produced about 5,927 kg generating \$2,095.53 in sales. On a per hectare basis, the farmers spawned a gross income of \$276.56 from organic rice and \$635.05 from vegetable production or a total gross income of \$914.61 per hectare. Expenses were minimal since labor was provided by the family members.

It would even be more profitable, especially on the long term, if farmers will utilize organic fertilizer especially since there is a substantial amount of organic materials in the area which can be used in the production of organic fertilizer; multiple cropping and/or intercropping system can be adopted for upland production in the area to optimize the production of the land and reduce weeds; since most of the farms in the barangay Antipolo and Caranday of Baaو are sloping areas, it has been suggested that strip cropping and/or contour and/or alley cropping be adopted. These farming practices and approaches are necessary in controlling soil erosion and help stabilize soil fertility in steep slopes; the integration of animals in upland farming systems is recommended. Raising of goats and native chicken aside from draft animals are an important components of the whole farming system in the uplands; and, varietal/cultivar purity enhancement may be explored in partnership with appropriate stakeholders.

Enhancing human capabilities and strengthening institutional capacities and linkages

Capability development activities were conducted to enhance appreciation and improve knowledge of farmers relative to organic agriculture technology particularly on upland agriculture. Two batches of trainings on Organic Fertilizer Production and on Organic Upland Rice Production were conducted in Baaو and Nabua, Camarines Sur. These trainings equipped the farmer-beneficiaries with the knowledge and skills on upland rice-based farming systems and organic fertilizer production. The Training on Organic Fertilizer Production expounded on the concept of sustainable agriculture and focused on providing the participants with skills in the production of composts; natural farming inputs like indigenous microorganisms (IMO), fermented plant juice (FPJ), fermented fruit juice (FFJ), fish amino acid (FAA) and oriental herbal nutrient (OHN); and vermicompost as well. The Training on Organic Upland Rice Production, on the other hand, featured lectures and discussions on Value Reorientation, Sloping Agricultural Land Technology (SALT), Upland Rice-Based Farming System and Organic Upland Rice Production and Farm Planning and Budgeting. All these trainings were conducted through the Department of Agriculture and the Central Bicol State University of Agriculture

Benchmarking good practices for possible replication in other upland areas

- a. Soil conservation was done by planting along contour lines;
- b. Enhanced multiple cropping practices can increase farm income by planting vegetable and other crops with rice;
- c. Organic agriculture can be practiced at the farm level through the production of organic fertilizers (FPJ, OHN, FFJ, IMO, NAMO juice, kakawate extracts, vermin tea and composts) together with the use of indigenous practices for pest and disease management such as the use of vermi tea as control for rice bug, use of oriental herbal nutrient (OHN) or use of hot pepper mixed with water;
- d. Promote utilization of household produced organic fertilizers in the application/fertilization in vegetable and rice production such as IMO for basal application, FPJ during the vegetative stage, FFJ during the flowering stage and the recycling of agricultural residues and household wastes in the production of organic fertilizers.

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