

Socio-Economic Impact of Agro-Eco Philippines' Projects for the Period 2012-2017: The Case of Select Municipalities of Northern Mindanao

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Abstract— This study was conducted to determine the impact of Agro-Eco Philippines' projects to the farming practices of the beneficiaries and its corresponding socioeconomic benefits. Data were gathered from 28 farmer informants who participated the World Food Day celebration at the University of Science and Technology of Southern Philippines – Cagayan de Oro Campus (USTP-CDO) employing qualitative design. The participants came from the provinces of Bukidnon and Misamis Oriental and the cities of Cagayan de Oro and El Salvador. The study revealed that almost all farmer participants adopted the organic farming practices which enabled them to at least double their farm yields. Since they do not have to buy chemicals as farm inputs, they were able to save considerable amount of money to finance the education of their children, support other farm businesses and most importantly provide food for their family. Their shift to organic farming helped improved their socioeconomic conditions specifically in providing for their household needs and education.

Keywords— Social Sciences, socio-economic, Agro-Eco Philippines, select municipalities of Northern Mindanao, descriptive design, Philippines, Asia.

I. INTRODUCTION

Agro-Eco Philippines is a Mindanao-based national Non-Government Organization (NGO) of organic farmers, scientists, civil society organization and faith-based groups asserting the right to food of the people, ending hunger in the poor farming communities, and increasing the adaptive capacity of farmers to climate change through agro-ecology, advocacy and lobbying, social enterprise, and international solidarity. It started its development work with the poor farmers in Mindanao as early as 1991. On August 19, 2004, the organization registered with the Securities and Exchange Commission as MASIPAG Mindanao, Inc. or Farmers Scientist Partnership for Development. A year thereafter, a 14-hectare biodiversity center was established in Maluko, Manolo Fortich, Bukidnon through the assistance of faith-based development organizations in Europe. Its existence and sustainability up to this period is attributed to the active involvement of the religious groups, civic organizations, scientists, local government units, and most importantly the volunteer farmers who are very active in carrying out the programs of the organization that led them out of disenfranchisement, exploitations and rural poverty directly

linked with pesticides-dependent conventional agriculture. Over the years, the organization achieved rapid growth and expansions reaching more communities, organized more farmers' organizations, empowered more farmers, conducted more mobilizations and protest actions.

In 2016, with its organizational evolution and growth, the name MASIPAG, Inc. was changed to Agro-Eco Philippines Inc. or Farmers and Advocates Partnership for Agroecological Development. It is inspired by the term 'agroecology' which emphasizes integration and wholeness in sustainable food production system and economic growth vis-à-vis environmental protection. The term Philippines represents the scope and development goal of the organization—that is to serve more poor farmers throughout the country under a nationalist agriculture program which protects the sanctity of God's creation and promote unity and cooperation among the farmers across faith, ethnicity, cultural variations, and geographical setting. To date, Agro-Eco Philippines has 305 farmer organizations and 15 partner NGOs, LGUs, religious groups, and academic institutions.

II. METHODOLOGY

This study employed the qualitative method of research with key informant interview as the main data collection technique used. Data were gathered from 28 key informants who participated the seminar on October 16, 2017 during the World Food Day celebration at the Audio Visual Room of the ICT Building of USTP-CDO. The key informants are farmer beneficiaries of Agro-Eco Philippines community-based trainings such as: Diversified Integrated Farming System, Soil Fertility Management, Sloping Agricultural Land Technology (SALT) System, and Alternative Pest Management.

Data gathered were based on the perceptions of the farmer respondents who are beneficiaries of Agro-Eco Philippines projects. The said qualitative data extracted from the interviews were subjected to content analysis. The purpose of data analysis is to organize, provide structure to, and elicit meaning from the data. Significant statements were culled from the interviews where formulated meanings were abstracted. The search for important themes and concepts actually begins at the start of data collection. From these, emerging themes were formulated and clustered.

This study was conducted following the ethical considerations such as the informed consent, voluntary participation, and confidentiality. It poses no conflict of interest which means that no financial or other personal considerations that may influence the authors' professional judgment in doing the research.

III. RESULTS AND DISCUSSION

Profile of Respondents. Table 1 presents the demographic profile of the respondents of the study and data show that 46.4% are male while 53.6% are female. Respondents are distributed along the following age groups: 21-30 (14.3%), 31-40 (25.0%), 41-50 (35.7%), and 51 and above (25.0%). With regard to their highest educational attainment, 14.3% are in the elementary level, 17.8% are elementary graduate, 28.6% are high school level, 14.3% are high school graduate, 10.7% are college level, and 14.3% are college graduate. This means that farmer respondents of this study are mostly female, middle-aged between 41 to 50 years old and majority are high school level.

Table 1: Demographic Profile of the Respondents

Demographic Indicators	Frequency	Percent
Gender		
Male	13	46.4
Female	15	53.6
Total	28	100.0
Age		
21-30	4	14.3
31-40	7	25.0
41-50	10	35.7
51 and above	7	25.0
Total	28	100.0
Highest Educational Attainment		
Elementary Level	4	14.3
Elementary Graduate	5	17.8
High School Level	8	28.6
High School Graduate	4	14.3
College Level	3	10.7
College Graduate	4	14.3
Total	28	100.0

Impact on Farming Practices. The respondents were able to participate in the trainings given to them by the Agro-Eco Philippines and all respondents except one revealed that it created an impact on their farming practices. Frame 1 presents the farmers' perception on the impact of the said trainings to their farming practices. Their responses revealed that the farmer respondent have shifted to organic farming after they participated in the Agro-Eco Community Based Training. One feature of organic farming is the use of organic fertilizers derived from farm waste materials like dried leaves, dead branches of trees, fruits, vegetables, and wastes from animals manure. These materials can be converted to organic fertilizers through composting or vermicomposting where they undergo decomposition. Soil organisms, including micro-organisms, use soil organic matter as food. As they break down the organic matter, any excess nutrients are released into the soil in forms that plants can use. This release process is called mineralization. Nutrient contents in organic matter largely depend on the type of organic matter used (e.g. legume plants are good sources of Nitrogen). In a study conducted by the

Food and Fertilizer Technology Center (2001), these are the following characteristics of compost: swine manure – pH = 7.1, organic Carbon = 25%, total Nitrogen = 2.89% and Carbon-Nitrogen ratio = 9 and for mushroom waste – pH = 7.3, organic Carbon = 37%, total Nitrogen = 1.95% and Carbon-Nitrogen ratio = 19. Human urine which is considered by many as organic fertilizer contains plant micronutrients (such as Boron, Zinc, Manganese and Iron) as detected in higher amounts in shoots of corn plants irrigated with urine compared to control plants which received only water (Factura et al., 2017). Urine is recommended through basal application in crops with high Nitrogen requirement like corn. Application should not be close to edible plant parts and urine should be diluted with water at least 3:1 (water-urine) ratio.

Frame 1. Perceived Impact on Farming Practices

Significant Statements	Formulated Meanings	Theme Clusters
<i>"The program of Agro-Eco Philippines that we participated in has greatly changed our ways in farming. Before I adopted the technique, I used to get very low farm yield. After I applied the technique of properly tilling the land and using organic fertilizer, the farm yield has more than doubled."</i>	The farmer respondents adopted the use of organic fertilizers.	
<i>"The practice of organic farming is very tedious and requires a lot of patience and hard work. From what we have learned from the seminars and trainings, we practiced crop rotation, apply vermicast, and since their farm is a sloping area, they practiced land contouring to slow down soil degradation. Such practice, also optimize land utilization."</i>	The farmer respondents practiced crop rotation, apply vermicast, and land contouring.	The farmer respondents are practicing sustainable agriculture.
<i>We adopted Diversified Integrated Farming System (DIFS), where we grow different crops along with farm animals like chickens, pigs, cows and goats. This is to maximize the use of the land and to derive more income from farming.</i>	The farmers adopted the Diversified Integrate Farming System.	

Moreover, they also practice crop rotation and land contouring as a result of their trainings. Crop rotation is a systematic approach to deciding which crop to plant from one period to the next. It aims to help manage soil fertility and also to help avoid or reduce problems with soil-borne diseases and some soil-dwelling insects. The general rule of thumb for balancing out soil nutrients is to avoid planting the same general category of crop (e.g. root, legume, and leafy/fruiting) successively in the same place.

On the other hand, contour farming is the practice of tilling sloped land along lines of consistent elevation in order to

conserve rainwater and to reduce soil losses from surface erosion. These objectives are achieved by means of furrows, crop rows, and wheel tracts across slopes, all of which act as reservoirs to catch and retain rainwater, thus permitting increased infiltration and more uniform distribution of the water (<https://www.britannica.com/topic/contour-farming>).

Another farming practice they adopted is the Diversified Integrated Farming System (DIFS). It is a farming system wherein the entire farmland is maximized by planting varied crops and raising different kinds of farm animals. According to MASIPAG (2014), DIFS has three levels namely: Varietal Diversity, Species Diversity, and Habitat Diversity. For Varietal Diversity, MASIPAG recommends 5-10 varieties of rice per hectare as a way of integrating pest and disease management. Meanwhile, species diversity is growing plants of different species. Habitat Diversity is just the combination of lowland and upland farming system.

The current practice they are implementing is actually an example of Sustainable Agriculture farming. According to the Sustainable Agriculture Institute, the goal of sustainable agriculture is to meet society’s food and textile needs in the present without compromising the ability of future generations to meet their own needs (Sustainable Agriculture Institute). Practitioners of sustainable agriculture seek to integrate three main objectives into their work: a healthy environment, economic profitability, and social and economic equity. One of the keys to food security is sustainable agriculture (UNESCAP). Food security, as defined by the United Nations Committee on World Food Security, means that all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their food preferences and dietary needs for an active and healthy life (IFPRI). Some of the best outcomes of sustainable agriculture showed that organic manure significantly increased the soil pH and the concentrations of Nitrogen, available Phosphorus, exchangeable Potassium, Calcium, and Magnesium (Han et al., 2015). Research shows that organic agriculture is a good option for food security in Africa – equal or better than most conventional systems and more likely to be sustainable in the longer term (UNCTAD, 2009). The study’s analysis of 114 cases in Africa revealed that a conversion of farms to organic or near-organic production methods increased agricultural productivity of 116 per cent.

Socioeconomic Impact of Farming Practices. After applying what they had learned from the trainings Agro-Eco Philippines gave them, the farmers felt the impact of their farming practices on their socioeconomic conditions and Frame 1 presents how they articulated the said impact. One key informant (with the concurrence of five others) revealed that if he did not adopt organic farming, he would not be able to send his children to college. It is because using organic fertilizers is less costly and he could increase his savings with higher yields. Studies would show that shifting to organic farming is cheaper than traditional farming that uses chemical pesticides and fertilizers. It is even believed that around 30% savings can be derived in using organic farming.

However according to Seufert et al. (2012) critics argue that organic agriculture may have lower yields and would

therefore need more land to produce the same amount of food as conventional farms, resulting in more widespread deforestation and biodiversity loss, and thus undermining the environmental benefits of organic practices. Comprehensive meta-analysis to examine the relative yield performance of organic and conventional farming systems globally revealed that yield differences are highly contextual, depending on system and site characteristics, and range from 5% lower organic yields (rain-fed legumes and perennials on weak-acidic to weak-alkaline soils), 13% lower yields (when best organic practices are used), to 34% lower yields (when the conventional and organic systems are most comparable). Under certain conditions— that is, with good management practices, particular crop types and growing conditions— organic systems can thus nearly match conventional yields, whereas under others it at present cannot.

Frame 2. Perceived Socioeconomic Impact of the Farmers’ Farming Practices

Significant Statements	Formulated Meanings	Theme Clusters
<p><i>“If I did not adopt organic farming, I would not be able to send my children through college. It is because farm inputs like fertilizers and pesticides are very expensive. If I borrow money to buy fertilizers and there were times when harvest was not sure due to typhoon or drought, then I would go broke and get drowned in debt. This was my experience in the past. Now I have no regrets shifting to organic farming because although it requires so much time and effort, the yield is sure. Besides, more and more people now are educated and patronize organic farm products. There is really future in organic farming.”</i></p>	<p>The farmer respondents don’t have to borrow money for chemical fertilizers and so spend less in the farm.</p>	<p>Shifting to organic farming enable the farmers to save money for the family.</p>
<p><i>The demand for organic farm products is increasing and they sell for a higher price.</i></p>	<p>Organic farm products are in high demand with less supply, thus, they command a higher price.</p>	
<p><i>We plant tobacco and other vegetables (i.e., camote tops, kalabasa, etc.) in our farm. We sell the tobacco while the other vegetables were used for family consumption. Because we spend less in organic farming, we were able to save money for the family.</i></p>	<p>The farmer respondents spend less in organic farming.</p>	
<p><i>“Because we practice diversified farming we have more food for the family. I mean healthy food without chemicals.”</i></p> <p><i>Since we also grow herbs in the farm, most of the time we don’t buy medicines for common illnesses like cough, fever, diarrhea, to name a few.</i></p>	<p>The farmer respondents save substantial amount of money from food and medicines.</p>	

To establish organic agriculture as an important tool in sustainable food production, the factors limiting organic yields need to be more fully understood, alongside assessments of the many social, environmental and economic benefits of organic farming systems. Organic farming is considered more sustainable, however, less productive than conventional farming (Schrama et al., 2018). Current organic agriculture performs well in several sustainability domains, like animal welfare, farm profitability and low pesticide use, but yields are commonly lower than in conventional farming (Roos et al., 2018).

Moreover, respondents revealed that organic farm products are in high demand and with less supply they command a higher price. This trend increases their income and savings. According to them, organic products are healthy and more and more people prefer these products than the ones with chemical pesticides and fertilizers.

Furthermore, the farmers benefitted much from diversified farming wherein they grow tobacco, root crops, and vegetables among others. They sell the tobacco while the root crops and vegetables are for their household consumption. They even planted herbal plants for medicinal purposes. In such a way, they do not have to always go to the drugstores to buy medicine because they can just pick them at their farmyard. The farmers believed that by adopting diversified farming they were able to maximize the use of their land, labor and capital.

Farmer's Recommendations. The farmers were also asked how Agro-Eco Philippines can further help them and Frame 3 presents what the respondents revealed. Data show that the farmers wanted training on food processing so they can sell their farm products at a higher price. This respondent said that they are cultivating *camote* (yam) and they want to be taught how to process *camote* into a candy or jam or something else. From the interview with the staff of Agro-Eco Philippines, they said that they also conduct product development and processing using the Agro-Eco framework. The topics include: product packaging/labelling; promotion and marketing; actual processing, packaging and marketing; and planning and evaluation. They said that those respondents interviewed have not yet availed the said trainings since it is conducted by batch and location.

Frame 3. Farmer Respondents' Recommendations

"It would help a lot if Agro-Eco Philippines can give us assistance on how we can process our farm products so we can sell them at a better price."

"Another recommendation aside from food processing is on how we can have better and wider market for our farm products."

"We will be grateful if the government can provide transportation facilities to transport our products from the farm to the market. One sack of vegetables costs P50 and it is already a lot especially if we have to transport 5 to 10 sacks. We hope the government can help us with this predicament. It is even better if the government will buy our farm products at a reasonable price so we don't have to transport them."

Moreover, the farmers recommended that the government help them save from the high transportation cost of their products by buying the products at a reasonable price. The

Department of Agriculture has already some initiatives relative to this recommendation. However, it seems that its implementation is not as extensive as to reach more farmers in this part of Region 10.

IV. CONCLUSION

From the findings, this study concludes that Agro-Eco Philippines' projects on organic farming definitely created a positive impact on the farming practices of the farmers that eventually redound to improved socioeconomic conditions of the beneficiary respondents. Their widened knowledge on organic farming resulted to various benefits. Healthy diet is the main advantage that the farmers are enjoying due to organic farming as they are certain that their food intake is chemical free. Farmers eat what they have planted. Farm produce has also been sufficient not only for their own consumption but also for commercial purposes. Through organic farming, they were able to spend less from farm expenses and to maximize their farm yield leading to family savings. This study then proves that organic agriculture promotes farming management system that benefits both the environment and the socio-economic condition of the farmers involved. In other words, it is safer, cheaper, and can yield more profits.

V. RECOMMENDATIONS

The Agro-Eco Philippines shall extend its scope of beneficiaries to farming towns of Misamis Oriental especially those who are not yet into organic farming to empower more farmers with the benefits of such farming technique.

Further, there is a need for Agro-Eco Philippines to sustain their organic agricultural production-related projects especially the giving of financial assistance as start ups to the farmers considering the favorable impact it created to them.

Concerned government agencies like the Department of Trade and Industry should also reach out to small farmers through their respective local government units to give them trainings on food processing.

Likewise, the Extension Office of the University of Science and Technology of Southern Philippines in collaboration with the appropriate units of the institution could also help facilitate the conduct of food processing and marketing seminars to the farmer beneficiaries.

A steady market shall be available for all the organic farm products of the farmer beneficiaries. Farmers will be more encouraged to increase their production for there is a certain market where they can display their organic products to the general public. This will foster entrepreneurship and eventually the assurance and sustainability of this venture.

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