MOSCAT Eco-Techno Demo and Organic Agri-Park: Future Tourist Haven of Claveria, Misamis Oriental, Philippines

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Abstract

The Misamis Oriental State College of Agriculture and Technology (MOSCAT) is a state institution of higher learning located in the upland farming community of Claveria, Misamis Oriental. A project was made possible with MOSCAT in partnership with National Economic and Development Authority (NEDA) Region X, located within the campus that started from May 2010 to February 2012. Among the major components of the project is the physical establishment of the bahay kubo; and the sub-components are the training of farmers, mass production of African night crawler worms for Vermimeal and Vermicast, production of Vermicast and Vermitea for organic fertilizer production and inland fishery production. All the components are 100% established based on the duration of the project. All the needed trainings for farmers in 2 pilot barangays of the project were successfully done, while the vermished has been continuously producing vermin worms and vermicompost/vermitea for distribution to farmers of pilot barangays and for commercial purposes being served. Though the project has been extended for a year, it still has accomplished more or less 90% with the remaining to be fixed by the college as counterpart. The phase 2 of the project which is the enhancement has already been approved. It is best recommended for the continuance of the unfinished components so that the project could gain ground to make it fully more established and operational in the coming years. However, despite the highly promising stature of Claveria as a taste of green paradise in Northern Mindanao, it is still an underdeveloped town seeking investors. Thus, the establishment of this project will gradually boost Claveria's potential as a tourist haven in the future.

***Keywords**:* eco-techno, organic, agri-park, vermicast, vermimeal, stature, haven

1. Introduction

The Misamis Oriental State College of Agriculture and Technology (MOSCAT) is a state institution of higher learning, located in the upland farming community of Claveria, Misamis Oriental. MOSCAT is identified as a Provincial Technical Institute of Agriculture (PTIA) in the province. It is committed to mainstream generated technologies to the clienteles through its four-fold functions of instruction, research, extension and production. It likewise advocates the adoption and promotion of sustainable agriculture within the college and in nearby places through extension activities. (Feenstra, Gail *et al*. 2007).

One of its recent projects undertaken in partnership with the National Economic and Development Authority (NEDA), Region X through its Kennedy Round 2 (KR2) Project, is the establishment of a one-hectare MOSCAT Eco-Techno Demo and Organic Agri-Park located within the campus. (Bautista, *et.al*. 2008).

The project is designed to meet primarily the various needs of the people of Claveria especially the farmers particularly on technical assistance along with agricultural development (Research), technical education (Instruction), livelihood options (Production) and technology information dissemination (Extension) or RIPE. This will serve as a show-window on agri-tourism not only of the college, but for the town of Claveria as well, thus catering tourists soon from nearby places of Northern Mindanao.

The techno-demo organic agri-park, located at MOSCAT campus, showcases a one-stop shop facility, resembling a native hut ('bahay kubo') that is made of native construction materials. The facility will be available for walk-in farmers, clients, students, researchers, development implementers, and other stakeholders. It provides the farmers' various needs for technology demonstration through actual experience, techno video guides, sample seeds and products, and farm technology reading materials.

The initial one hectare agri-park will also showcase model vegetable garden, medicinal and culinary herbal plants, agricultural and garbage recycling area, organic fertilizer sample products (vermicast, vermitea, fermented biodegradable materials, etc.), vermiworms production area, vermimeal samples, and inland fishpond (100 sq m). In addition, technologies developed in the college shall be available for information dissemination purposes. Other

information such as volume of production and income generated from each commodity shall also be updated regularly in the bulletins of the center.

Claveria is an ideal location for tourism development as it is endowed with fascinating places such as Canopy Walk, Gumaod Lake, Mat-i Hilltop Lake and Malagana Bugwak Spring. It is strategically located between the cities of Gingoog and Cagayan de Oro, occupying one-third of the total land area of the province and situated at a higher altitude. (Claveria, Misamis Oriental and Census Information, 2008).

As a farming community of the province, Claveria farmers have been heavily dependent on chemical farming systems without compromising the banes and ill-effects to the environment and the human and animal populace.
However, despite the highly promising stature of Claveria as a taste of green paradise in Northern Mindanao, it is still an underdeveloped town seeking investors. Thus, the establishment of this project gradually boosts Claveria as a potential tourist haven in the future.

This project generally aimed to demonstrate, promote and disseminate generated technologies on sustainable agriculture approaches to the clienteles, serving as a show-window for tourism development in Claveria and nearby places. Specifically, it aimed to:

1. establish the different components and sub-components of the project;

2. demonstrate organic farming practices through research, instruction, production and extension to students, trainers and farmers; and

3. develop promotional materials and other strategies for information dissemination

2. Methodology

2.1 Place and Duration of the Project

The project started from May 2010 to February 2012. It is a one-hectare

soon-to- be an operational park located within MOSCAT campus. Figure 1 shows the project design of the project.

2.2 Project Design

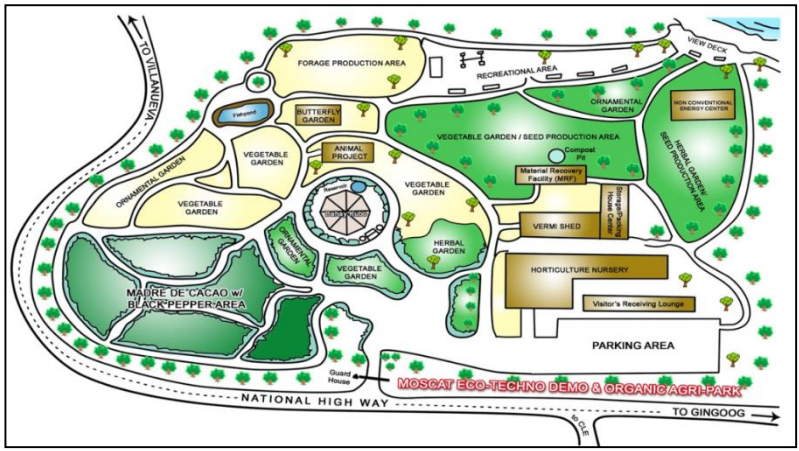

Figure 1. Project Design

2.3 Major Activities and Establishment of Different Components and Sub-components

Designing was done through actual survey of the area. Lay-outing of boundaries and borders between components and sub-components was made using wooden pegs or sticks. Hedge plants were planted to serve as pathways. Cutting of trees and slashing of grasses were done in the area with concerted efforts of the college constituents to clear the area.

2.3.1. Construction of Bahay Kubo and sub-components (Component 1)

An Information-Education Center (EIC) or *bahay kubo* has been constructed, serving as a one-stop shop facility, techno demo organic park (vegetable, ornamental and medicinal plants), inland fishpond and water impounding facilities. Other sub-components such as animal project, butterfly garden, recreational park and view decks have yet started to be established. Field researches on strawberry varietal trials and crop production systems was also conducted. (Hilario, 1995).

2.3.2 Training of Trainers and Farmers (Component 2)

Training of at least 100 farmers (1 participant per household) of Brgy. Ane-i and Brgy. Aposkahoy, Claveria were taught about vermicomposting, waste utilization and management, organic gardening (herbal/medicinal and culinary plants), organic fertilizer production, financial literacy and inland aquaculture. (Perlas, 1993).

2.3.3 Mass Production of African Night Crawler Worms for Vermimeal and Vermicast - Household Level (Component 3)

Vermished was constructed along with vermibins, beddings and feeding materials. Containers and worms were readily available.

2.3.4 Production of Vermicast and Vermitea for Organic Fertilizer Production (Component 4)

Substrates were collected and processed for vermicast, vermitea and vermin worms production. The research is still going on.

2.3.5 Inland Fishery Production (Component 5)

A 100 sq.m. inland fishpond was constructed in the separate and ideal site other than in the area. Once finished, tilapia fingerlings will be cultured. Other fishponds will be constructed in two barangays for tilapia culture.

2.4 Marketing Strategies for Agri-tourism

Promotional strategies/forms such as tarpaulins, leaflets, publication papers, website posting, information caravan among other promotional activities were undertaken by the college to fast-track and to showcase the park to the public.

2.5 Data Evaluated

Among the data being evaluated were the following: (a) demonstration of major activities on organic farming approaches; (b) percentage accomplishment of each component and; (c) monthly influx of visitors to the project.

3. Results and Discussion

3.1 Major Activities by Four-fold Functions

The major activities undertaken in the project are categorized into the four-fold functions shown in Figure 2.

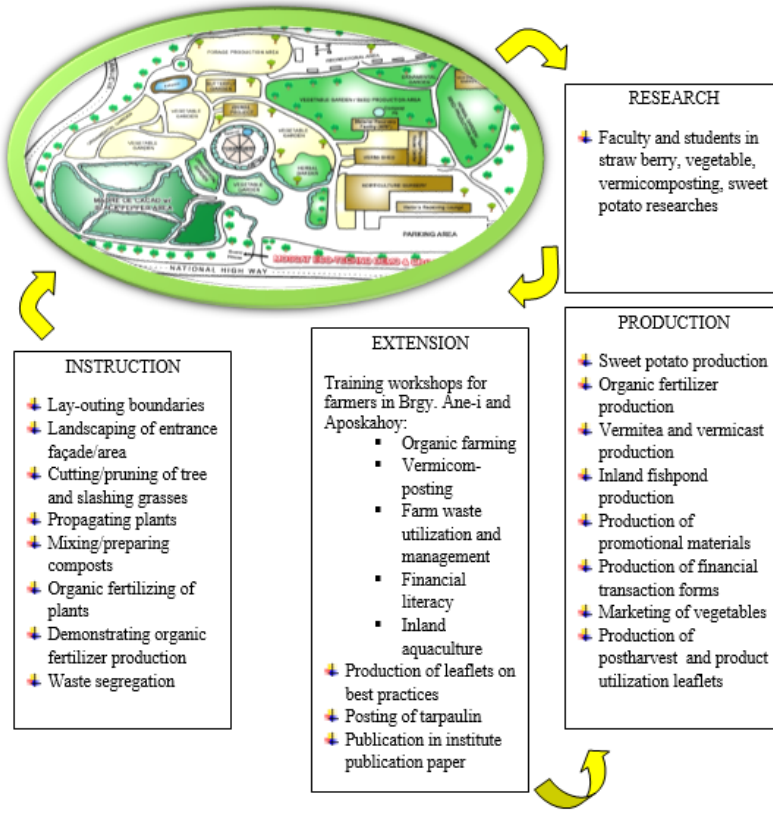

Figure 2. Major activities by four-fold functions

3.2 Major Activities by Components

The major activities were accomplished by respective components of the project as indicated in Table 1 and 2.

Table 1. Major activities by components 1 and 2 in the MOSCAT Eco-Techno Demo and Organic Agri-Park.

Components	Activities	% Accomplishment
1	✓ Lay-outing of boundaries ✓ Landscaping of entrance façade/area with students ✓ Cutting/pruning of tree and slashing grasses ✓ Construction of modern bahay kubo or the Education Information Center (85% completed) ✓ Propagating plants with students ✓ Mixing/preparing composts ✓ Propagation and growing of herbal, ornamentals and vegetables conducted ✓ Organic fertilizing of plants ✓ Demonstrating organic fertilizer production ✓ Back hoeing of water impounding facilities and septic tank ✓ Waste segregation ✓ Production of leaflets on best practices ✓ Posting of tarpaulin ✓ Publication in institute publication paper ✓ Sweet potato production ✓ Production of promotional materials ✓ Faculty & students in straw berry, vegetable, vermin-composting, sweet potato researches	100%
2	✓ Training workshops for farmers in Brgy. Ane-i and Aposkahoy were already conducted from July to December 2010 on: ▪ Organic farming *(75 participants)* ▪ Vermi-composting *(73)* ▪ Farm waste utilization and management *(80)* ▪ Financial literacy *(68)* ▪ Inland aquaculture *(65)* ✓ Monitoring was done	100%

Table 2. Major activities by components 3, 4 and 5 in the MOSCAT Eco-Techno Demo and Organic Agri-Park.

Components	Activities	% Accomplishment
3	✓ Continue mass production of the African Night Crawler worms for vermimeal and vermicast. ✓ Preparation of substrates ✓ Hauled manures (carabao manure) mixed for substrates ✓ Slashed, gathered/collected and chopped grasses/leaves for substrates ✓ Filled bins with substrates for fermentation ✓ Harvested thirteen (13) kilos of vermin for the farmers in Aposkahoy ✓ Harvested 9 kg of vermi worms out from 3 kgs per bed (1m x 5 m x 1 ft) per cycle (1 month) x 5 beds. ✓ In general, harvested a total of 765 kg of vermin worms for 17 months (Jan 2011 to May 2012) x P300/kg = P229,500.00	100%
4	✓ Prepared substrates ✓ Hauled manures (carabao manure) mixed for substrates ✓ Slashed, gathered/collected and chopped grasses/leaves for substrates ✓ Filled bins with substrates for fermentation ✓ Harvested 350-400 kg vermicompost per vermibed (1m x 5 m x 1 ft) per cycle (1 month) x 5 beds ✓ In general, harvested a total of 29, 750 kg (744 sacks at 40kg/sack) for 17 months from January 2011 to May 2012 which were bought and distributed to the farmers of Aposkahoy, Banban, MOSCAT production projects and other outside agencies. ✓ Yielded amounting to P223, 200.00 for 17 months	100%
5	✓ Transferred the site to an ideal one, still within the campus ✓ Excavated 12m x 8 m x 1.5 m pond ✓ Coordinated with BFAR for fingerlings supply	100%

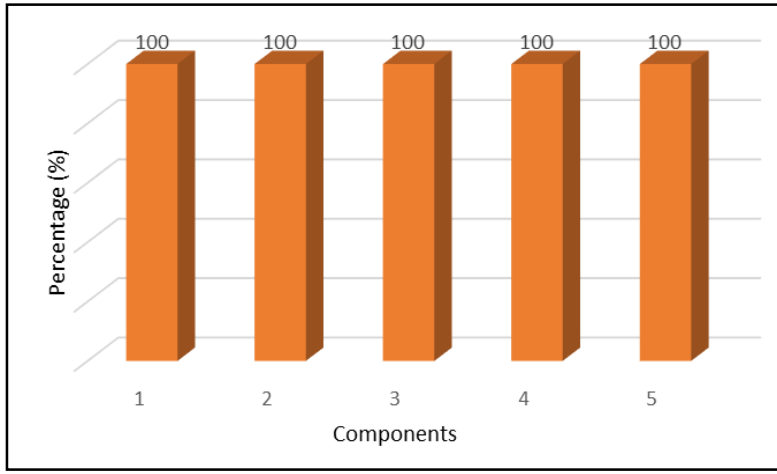

Figure 3. Percentage accomplishment

3.3. Other Accomplishments (Monitoring)

A total of 13 kilos of vermin in good condition were equally distributed among the farmer beneficiaries at Sitio Man-ibay, Barangay Aposkahoy after some previous ocular visits conducted to find-out if they have vermibeds to house their starter vermi.

A total of 3 representative samples were taken at 3 different sites (MOSCAT, Ban-ban, Aposkahoy) using random sampling method and immediately air dried upon arrival at the RDEO.

Distributed 3 kilos of live vermin in good condition to Mr. Ramoncito Abregana and 2 kilos of live vermi in good condition to Mr. Datibo Ocero respectively.

A total of 15 kilos of live vermi in good condition were handed to Barangay Captain Dalman and is housed in his newly constructed vermihouse, Substrates in form of decomposed grasses, banana bracts,and wild sunflower were used.Drainage from the inside of vermibeds was nowhere to be found and poses to be a potential problem in the future. However after some discussion, Barangay Captain Dalman agreed to bore holes to drain water so as to mitigate the problem.

3.4 Promotional Strategies for Tourism Development

Strategies made was the production of promotional materials such as printing

Figure 4. Various pictures showing vermicomposting activities at Brgy. Aposkahoy

of the perspective of design in the tarpaulin which was posted at the entrance facade of the project. Information caravan on different schools within Region X was also facilitated with the agri-park being included in the promotion. Publication of related write-ups in the school paper and institute paper was done. Circulation of related write-up in the institute publication to the Office the Mayor, Municipal Tourism coordinator and posting school website for the alumni and friends worldwide was also made. Finalization of the concept paper for possible tie-up with local, provincial and regional Tourism Councils has been undertaken. Submission of the proposal for enhancement of the project to other agencies like the Department of Agriculture Region (DAR) – X, PCARRD was also made, among others for possible tie-ups for the continuation of the project for Phase 2. And presentation of the posters of the project to local, regional and national conferences the project being among the finalists for the best posters during the 21 Federation of Crop Science Society of the Philippines held in Legaspi City last May 9-14, 2011; and presented the

paper during the last year's Agency In-House Review in MOSCAT under the on-going project under the development category.

3.5 Monthly Influx of Visitors

Starting March 2012 up to April 2013, the project has catered a total of 9,690 visitors coming from different sectors, with the month of February 2013 being the most number of visitors with 1,057 (10.91%) , while March 2012 having the least, 309 (3.19%) as shown in Table 3 and Figure 5.

Table 3. Monthly influx of visitors to the MOSCAT EcoTechno Demo and Organic Agri-Park from March 2012 to April 2013

Months	Gov't Officials	Outside Student Field-Trippers	Teachers	Private Agencies	Farmers	Others	Total	%
Mar 2012	12	112	25	26	78	56	309	3.19
Apr 2012	15	56	23	43	129	105	371	3.83
May 2012	9	67	32	34	125	187	454	4.68
June 2012	35	76	34	45	67	134	391	4.04
July 2012	38	178	56	54	235	144	705	7.28
Aug 2012	45	345	65	55	254	219	983	10.44
Sept 2012	36	234	78	67	216	138	769	7.94
Oct. 2012	55	121	67	87	186	158	674	6.96
Nov 2012	67	246	56	67	145	253	834	8.61
Dec. 2012	45	212	76	79	123	145	680	7.02
Jan. 2013	51	234	56	70	230	199	840	8.67
Feb.2013	78	453	87	88	165	186	1057	10.91
Mar 2013	67	287	79	76	157	245	911	9.40
Apr 2013	86	98	70	66	155	237	712	7.35
Total	639	2719	804	857	2265	2406		
%	6.60	28.06	8.30	8.84	23.38	24.83		
						Grand Total	9,690	

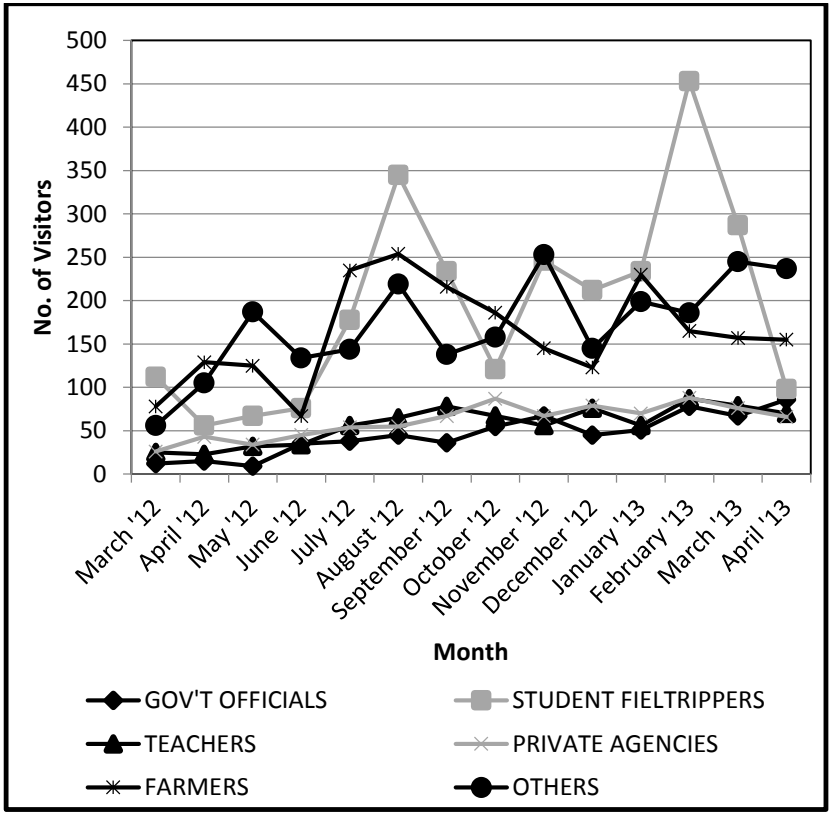

Figure 5. Month influx of visitors

Among the Sectors, student field trippers showed the most with 2,719 (28.06%) followed by others (out of school youth, students from MOSCAT, and others not categorized accordingly) with 2,406 (24.83%); and the least by the government officials with only 639 (6.60%).

This goes to show also that the strong influx of visitors regardless of sectors were during the months of August and February where student field trippers were great contributors to the influx and schedules for student field trips of any school. This also shows that the trend of the influx of visitors to the Park has been increasing.

4. Conclusion and Recommendation

With the establishment of the five 5 components along with the sub-components and the major activities relative to the four-fold functions of the college through instruction, research, extension and production coupled with massive promotions to the stakeholders, the project has gradually gaining ground towards achieving its thrust of mainstreaming generated technologies through sustainable agriculture approaches to the clienteles as a show-window for tourism development in Claveria and in nearby places.

The project with the fund support from NEDA through its KR2 has been extended for another year instead of one year due to transition from the previous administration with the present one. With this extension, the project has accomplished 100% with the counterpart support of the college.

As it is in the establishment stage particularly for Component 1 and the rest of the components, it still has demonstrated technological, ecological and environment-friendly approaches and practices not only among MOSCAT constituents, but also to the farmers, visitors and the public as show-window for tourist haven in the future. Such technologies and innovations have likewise been trickled-down to the grassroots through massive promotional strategies and campaigns.

With its neophyte operations since its establishment, the project has already catered a total of 9,690 visitors starting March 2012 to April 2013 coming from different sectors of the society. As it is trending, the project soars to greater heights with increasing influx compared to the first few months the operation started.

Though the project has already terminated in its Phase 1, it is highly recommended to continue the establishment of the EIC or the Modern *Bahay Kubo* and other sub-components since these will serve among the attractions especially the EIC to house the best practices of all the components. Also, to expand the vermished for mass production purposes especially that the production of vermicompost/vemicast, vermin/vermi worms and as well as vermitea has been very potential and generating. Then to continue demonstrating organic/ecological practices in agriculture which the project has been advocating through the four-fold functions of the college such as research, instruction, production and extension (RIPE) to the clienteles (students, visitors, farmers, environmentalists, public and private officials).

Conduction of follow-ups and monitoring on farmers already trained in organic farming, vermin-composting, waste management and utilization, inland aquaculture and financial literacy is also important and to continue the establishment of the inland fishpond for culturing of tilapia.

The Phase 2 of the project which is the enhancement approved through the fund support of the DA-Region X, is expected to gain ground to make it fully more established and operational in the coming years. The agri-tourism context of 5A's such as accommodations, attractions, accessibility, amenities and activities still should have to be fully operational in the succeeding months and years of operations. Though it has initially linked with the Department of Tourism (DOT) in Region X, the packaging of its agri-tourism activities still has to be properly planned-out with the DOT officials. Finally, massive promotional strategies should be continuously sustained through the years so the project could gain ground to what it is expected.

5. Acknowledgement

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