

**MITIGATING COVID-19 CHALLENGES  
THROUGH COMMUNITY-BASED FARM  
ENTERPRISE: A CASE FROM THE PROVINCE OF  
MISAMIS OCCIDENTAL, PHILIPPINES**

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**Abstract**

The COVID-19 pandemic posed a challenge to the food security and income of the farmers, which needed an immediate response from various stakeholders, especially the academe. Central Mindanao University (CMU), Northwestern Mindanao State College of Science and Technology (NMSCST), Northern Mindanao Consortium for Agriculture, Aquatic and Natural Resources Research and Development (NOMCAARRD), and other stakeholders pulled together to address the gap. A response program was conceptualized to be a community-based agricultural enterprise. The implementation of this initiative is seen to be an innovative process in which both the challenge of the pandemic and the challenge for the academe in terms of technology transfer were addressed. This paper presents the activities conducted and the output of the project in terms of the farmer's income. Data from project reports was analyzed using a descriptive research design and a case study method. Information, Education, and Materials (IEC) were developed, and some were copyrighted. A package of Technologies (POT) was transferred, and capability-building activities were conducted. As a result of the activities, a Return on Investment for the established farm is computed at 5.4%. Therefore, with the project, food was provided to the beneficiaries and an additional income was generated. It is recommended that the model be replicated in more Local Government Units (LGUs) in Misamis Occidental, Philippines.

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## INTRODUCTION

Food security and farmers' declining income affected the Filipino people during the onset of the pandemic. Keck (2022) reported that 3.9 million more Filipinos were impoverished in the first six months of the year 2021, which can be attributed to the lockdown measures done by the government that led to consumption cuts of most households and forced business closure. The pandemic led to numerous food supply chain disruptions in demand and consumption (Palo et al., 2022), which heavily affected micro and small enterprises (Shinozaki & Rao, 2021). Gregorio and Ancog (2020) reported that an estimated average of 3.11% or 29.58 million tons of agricultural production was reduced in aggregate volume in the Southeast Asian region, showcasing the pandemic's effect on the agricultural sector's economic performance.

Those who were adversely affected at the lowest level were the small farmers, micro-agribusinesses, and agricultural cooperatives; they were also having difficulty accessing their inputs and markets for their produce (The World Bank, 2020). Despite government intervention efforts to stabilize the agricultural sector, food insufficiency is still occurring due to demand, supply, and consumption disruptions in the food supply chain. This results in an increase in the prices of food products that, in turn, affects the living conditions of low-income households, stimulating the risk of food insecurity (Dili, 2022).

Numerous unfortunate events during the pandemic called for the transformation of the farming and food systems in the Philippines to restore strong food value chains and heighten the availability of affordable yet nutritious food. This can only be done by providing better extension services and more investments in agribusiness start-ups (The World Bank, 2022).

It has been identified that investing in community-based enterprises is a way to contribute to rural communities. Since it is a people-centered business model, it is an approach that boosts collaboration and partnership and is also deemed as a way to relieve poverty and resolve social problems (Habarabas, 2014). Pooling and sharing resources and establishing community-based enterprises can be a resort for individuals who are in need of resources and access to capital markets. Moreover, community-based enterprises can also help achieve economies of scale, lowering production costs and increasing efficiency. Even when individual farmers face challenges independently, community farms will remain productive and feasible due to the capability to share resources, equipment, and labor (Sridhar et al., 2023). These community-based farms empowered individuals to take control of their food sources and security while also gaining additional income (Black & Duran, 2022).

The restrictions posed by the pandemic resulted in a spike in food insufficiency challenges, and fresh produce was secured for the community's consumption through community-based farms (United Nations Philippines, 2021). The initiative also highlighted the importance of community support networks; it created a sense of solidarity and cooperation in the community.

Furthermore, FAO (2014) stated that a sustainable community-based agricultural system provides a tool for managing and protecting natural resources with a focus on technological development. It seeks to address hunger, advance the environment, and promote social sustainability. Through utilizing local resources, boosting transparency and equity in allocating development benefits, and adopting sustainable community-based activities, communities can progressively foster while improving living conditions and general standards.

Northwestern Mindanao State College of Science and Technology's experiences in establishing community-based farm enterprises through technology transfer and innovation is covered in this paper. This project was an initiative and intervention geared towards capacitating

farmers, fisherfolks, women, and school teachers in Misamis Occidental for additional income during the pandemic through technology transfer and science and technology efforts to address low-income levels and food insufficiency challenges.

## **ABOUT THE PROJECT**

The project was titled “ Responding to COVID-19 Challenges for the AANR Sector: A NOMCAARRD Initiative” The project was implemented from February 1, 2022, to August 30, 2024, and was funded by the Department of Science and Technology – Philippine Council for Agriculture, Aquatic, and Natural Resources Research and Development (DOST – PCAARRD). The project had five beneficiaries – one (1) women's association, one (1) cooperative, and three (3) farmer's association. These comprise the Caniangan Agrarian Reform Multi-Purpose Cooperative, Caniangan Farmer’s Association, Mr. Dega Farm, Owayan Farmer’s Association, and Hoyohoy Farmer’s Association, with Northwestern Mindanao State College of Science and Technology (NMSCST) in Tanguib, City Philippines as a co-implementing agency and Central Mindanao University in Maramag, Bukidnon, Philippines as implementing agency. The lead for this project is the Northern Mindanao Consortium for Agriculture, Aquatic, and Natural Resources Research and Development (NOMCAARRD).

The pre-implementation phase of the project included a Memorandum of Agreement (MOA) signing with project beneficiaries. Site validation was also done to ensure the feasibility and suitability of proposed technologies for transfer and to build relationships. Courtesy calls to the Local government Units (LGU) were also made. The project's implementation phase involved conducting a series of capacity-building activities, which included workshops, training, mentoring, and field visits to beneficiaries. The efforts of these activities are meant for beneficiaries to attain understanding and proficiency about the specific technology, maximizing its usefulness (COHRED, 2012).

## **METHODOLOGY**

This paper uses a descriptive research design utilizing the case study method. A descriptive design was used because this paper will only present the documentation and outcomes of the implemented project. The case study focused on implementing the project's community-based farms in Camiguin, Philippines. Data was gathered and analyzed from the progress reports, pre-terminal reports, and field interviews during the project implementation (Priya, 2021; Steenkamp, 2023).

## **RESULTS AND DISCUSSION**

### **Information, Education, and Communication (IEC) Materials Development**

Information, Education, and Communication (IEC) materials are foundational to the success of any technology transfer project (Paz-Alberto et al., 2017). These materials facilitate the effective dissemination of information important for successful project implementation. Through the well-crafted IEC materials, beneficiaries were provided with a structured and easily accessible means of enhancing their project management.

Table 1 presents the list of IEC materials developed.

<b>Table 1. IEC materials developed by the project</b>		
<b>NO.</b>	<b>Title</b>	<b>DESCRIPTION</b>
<b>1.</b>	“Talong” Giya sa Pag tanom	Guide on planting Eggplant
<b>2.</b>	“Okra” Giya sa Pag tanom	Guide on planting Okra
<b>3.</b>	“Kalabasa” Giya sa Pag tanom	Guide on planting Squash
<b>4.</b>	“Sitaw” Giya sa Pag tanom	Guide on planting String Beans
<b>5.</b>	“Ampalaya” Giya sa Pag tanom	Guide on planting Ampalaya
<b>6.</b>	Produksyon sa Paddy Straw Mushroom	Guide on Paddy Straw Mushroom Production

### Intellectual Property (IP) Protection

In order to safeguard the rights of the IEC materials creator and to ensure that the work is appropriately rewarded, it is submitted for IP protection to the Intellectual Property Office of the Philippines (IPOPHL). Ten (10) IEC materials were filed and granted copyright. These materials entail various agricultural and educational topics, from guidance to crop cultivation to business management and sustainability practices (Kumar & Sinha, 2015). This diversity represents the complex approach to agricultural knowledge dissemination, enriching individuals and organizations to excel in the field. Table 2 presents the list of IEC materials granted with copyright.

**Table 2. IEC materials granted with copyright**

<b>NO</b>	<b>Titl e</b>	<b>Certification Number.</b>
<b>1.</b>	Okra Giya sa Pagtanom	2023-03873-A-TCCR
<b>2.</b>	Kalabasa Giya sa Pagtanom	2023-03871-A-TCCR
<b>3.</b>	Produksyon sa Paddy Straw Mushroom	2023-03875-A-TCCR
<b>4.</b>	Talong Giya sa Pagtanom	2023-03879-A-TCCR
<b>5.</b>	Sitaw Giya sa Pagtanom	2023-03877-A-TCCR

### Package of Technology (POT)

The practical implementation of technology transfer initiatives requires Packages of Technology (POT) (Manegdeg & Lastimososa, 2024). The POT included a production guide for vegetables and mushrooms, vermicomposting, and natural farming technologies. It also involved the distribution of farm inputs, tools, materials, and supplies. The development and dissemination of this POT helped the project implementers ensure that the beneficiaries had access to concrete support in establishing their farm enterprises (Manegdeg & Lastimososa, 2024).

The distribution of farm supplies and inputs is the key to establishing a farm enterprise. This will serve as the beneficiaries' starting capital (Republic Act No. 7607—Magna Carta of Small Farmers, 1992).

### Capability Building Activities

Capability building is multifaceted and considered the keystone of the project's success. It empowers stakeholders of varied backgrounds, including farmers, fisherfolks, educators, and women, by equipping them with essential skills and knowledge.

Training workshops on pinakbet vegetable and mushroom production are essential in the technical aspect of the beneficiary's farming activities. Training on natural farming and PhilGAP helped beneficiaries understand the importance and benefits of growing chemical-free food. To increase income is to decrease cost; thus, beneficiaries were trained how to make their own organic fertilizer, specifically vermicomposting, and make their own plant concoctions and extracts.

Training on enhancing beneficiaries' management skills is equally important. Bookkeeping, marketing, organization and management, and values formation were also conducted. Bookkeeping training helped them be more sensitive to financial reporting and accountability (Ryan et al., 2012).

The project conducted a total of 27 training activities to the beneficiaries.

### Cost and Return Analysis

The bottom line for measuring success is through the beneficiary's return on investment (ROI) (Birken, 2022). The cost and return analysis for their five farm and school enterprises is summarized in Table 2. It highlighted total sales of PhP 120,250.00 for “Pinakbet” vegetables and a production cost of PhP 36,180.00, resulting in an actual income of PhP 84,070.00. For mushrooms and vermicompost, the total income is PhP 80,885.65 and PhP 71,100.00 in sales, respectively. The total income is PHP 189,755.65, giving an ROI of 5.4%.

<b>Table 2. Cost and Return Analysis</b>							
<b>Commodity</b>	<b>Qty</b>	<b>Unit</b>	<b>Price (Php)</b>	<b>Total Sales (Php)</b>	<b>Production Cost (Php)</b>	<b>Net Income (Php)</b>	<b>Return on Expenses</b>
<b>Eggplant</b>	721	kls	40.00	28,840.00			
<b>Okra</b>	487	kls	40.00	19,480.00			
<b>Ampalaya</b>	456	kls	30.00	13,680.00			
<b>String Beans</b>	360	kls	40.00	14,400.00			
<b>Kangkong</b>	367	kls	30.00	11,010.00			
<b>Squash</b>	821	kls	40.00	32,840.00			
<b>Sub-total:</b>				<b>120,250.00</b>	<b>36,180.00</b>	<b>84,070.00</b>	
<b>Mushroom</b>	269.62	kls	300.00	<b>80,885.65</b>	<b>31,300.00</b>	<b>49,585.65</b>	
<b>Vermicompost</b>	237	sacks	300.00	<b>71,100.00</b>	<b>15,000.00</b>	<b>56,100.00</b>	
<b>Overall Total:</b>				<b>272,235.65</b>	<b>82,480.00</b>	<b>189,755.65</b>	<b>5.4%</b>

## Challenges Encountered

The project encountered several challenges that affected both the farmers and their beneficiaries. First and foremost, weather conditions proved to be a significant obstacle. Unpredictable weather patterns and extreme conditions damaged crops and disrupted farming schedules, making it challenging for the farmers to maintain a steady production. In addition, some areas in Misamis Occidental faced difficulties with their water facilities, and the ongoing construction of commercial water pipes caused delays in irrigation, affecting agricultural production.

Beneficiaries also faced difficulties during the implementation of vermicomposting due to incorrect substrate ratios and procurement delays. Furthermore, bureaucratic procurement processes delayed the project's land preparation and production start date, deviating from stipulated harvest dates. Finally, mushroom infestation challenges also fell upon NMSCST as the technology transfer from the primary source to homes was hindered, primarily due to inadequate monitoring of their beneficiaries at their household.

## CONCLUSIONS

This project has allowed these people's organizations to provide food for their families by combining and sharing resources and working together even during the pandemic's onslaught. It has also allowed them to have additional income sources amidst the numerous restrictions and supply chain disruptions. Thus, through this technology transfer, the establishment of community—and school-based farm enterprises during the pandemic is feasible.

## RECOMMENDATION

It is recommended that the local government units (LGUs) partner with and implement more projects replicating this model, such as academic, private, and public partnerships. Further, the monitoring and evaluation framework needs to be strengthened to track progress in a timely manner, provide accountability, and make better-informed decisions.

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### **Conflicts of Interest**

The author has disclosed no conflicts of interest.

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