

# Rehabilitation Program for Typhoon Pablo Victims: A Case of the Province of Davao del Norte

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**Abstract**— This case study aimed to determine the rehabilitation program for typhoon Pablo victims in the province of Davao del Norte. Using the purposive sampling technique, twelve (12) informants were interviewed in three (3) municipalities, namely the municipality of Kapalong, San Isidro, and Talaingod, Davao del Norte covering three (3) commodities such as; banana, cacao, and coffee rehabilitation program. A qualitative research instrument was used to capture all data relevant to their experiences, challenges, and overcoming strategies. Thematic analysis by Creswell (2009) was employed to analyze the data. Under the experiences, the result revealed the following themes; living comfortably after the typhoon, damaged farmlands and crops, income loss in agriculture, generation of alternative income and employment, the existence of disaster resiliency and management, provision of inputs, and cash assistance and implementation of the rehabilitation program.

Furthermore, the challenges experienced by the victims are climate change, market instability, financial incapacity, lack of information and education, low-quality seedlings and high cost of production, lack of crop insurance, and delayed distribution of seedlings. The overcoming strategies they identified were as follows; develop a positive attitude toward family welfare, develop ways for sustainable farming, availing of the loan program, and intensify coordination for assistance. Finally, the success stories revealed the following cluster; development of self-reliance and perseverance, recovery as a result of hard work and assistance, development of a positive outlook for the future, and government response helped to expedite rehabilitation. The implementation of the typhoon Pablo rehabilitation program must couple with appropriate policy frameworks and political and financial support for the farmers to bridge the gap. Thus, creating a sustainable agricultural program and planning a disaster response will benefit the farmers in the long term. Farmers, scientists, and institutions continually aim to uncover techniques that boost crop yields, improve agricultural productivity, minimize loss due to disease, insects, and disasters, create more efficient equipment, and improve food quality overall. Lastly, the Department of Agriculture, Local Government Units, National Disaster Risk Reduction and Management Council, Non-government Organizations, and other concerned agencies can help the farmers live a decent life by providing appropriate intervention and assistance that promote the interests and needs of the agricultural sector.

**Keywords**— Typhoon Pablo Rehabilitation Program, Banana, Cacao and Coffee, Farmers/Beneficiaries, Philippines

## I. INTRODUCTION

### 1.1 Rationale

Agriculture is the main source of livelihood among over 2.5 billion people worldwide, and up to 60 percent of those are in Less Developing Countries [1]. Nowadays, this sector is facing an array of both familiar and unfamiliar risks, interacting in a hyperconnected world and a precipitously changing landscape where disaster risk is increasingly compound, interconnected, and interacting, causing shifts in the frequency and intensity of hazards. Climate change is the root cause of this societal malady occurring into decade-old predictions much sooner than envisaged [2].

As the world population grows from 7.2 billion today to 9.6 billion in 2050, the agriculture sector poses unprecedented challenges necessary to support global food and non-food production due to population growth, growing incomes, and urbanization [3], coupled with natural resource destruction caused by human activities, wherein people burn fossil fuels and convert land from forests to agriculture beginning the Industrial Revolution [4].

The researchers of the University of Wisconsin in Madison and the National Oceanic and Atmospheric Administration (NOAA) stated that nearly 40 years of satellite data of global storms concluded the probability of storms reaching major hurricane status (category three or above on the Saffir-Simpson scale with winds over 110 mph or higher), increased decade after decade. It is increasingly evident that hurricanes, typhoons, and tropical cyclones worldwide are becoming stronger and potentially more deadly as the globe warms due to climate catastrophe [5].

Meanwhile, the World Disaster Report stated that the Philippines is one of the most prepared countries, with the highest rate of adaptation measures, as reflected in the study collaboratively conducted by the United Nations University's Institute for Environment and Human Security, the German Alliance for Development Works, and The Nature Conservancy. The government rolled out preparedness measures a week before the typhoon hit eastern Mindanao by launching public awareness campaigns and stockpiling essential items through the National Disaster Risk Reduction and Management Council (NDRRMC) and DSWD, leading the coordination of clusters, with the support of the United Nations and International Non-Government Organization partners [6].

On December 04, 2012, Typhoon Pablo struck the east coast of Mindanao at Baganga, Davao Oriental, devastating houses, public infrastructure, and agricultural land in its wake. It was the 16th storm to hit the Philippines in 2012 that affected 34 provinces, 40 cities, and 318 municipalities, with over six (6) million people affected. Of these provinces, cities, and municipalities, the provinces of Davao Oriental and Compostela Valley in Region XI and Agusan del Sur and Surigao del Sur in Region XIII suffered the most destruction [7].

The extent of the damages as accounted for covering both infrastructures, agricultural and private properties have reached around Php 36,949,230,987.07, which are categorized as follows: (a) infrastructure – 7,565,044,810.00; (b) agricultural – 26,526,663,474.07; (c) private properties – 2,857,522,703.00 resulted to the declaration of National Calamity under Presidential Proclamation No. 522, dated December 7, 2012, signed by His Excellency Benigno C. Aquino III, President of the Republic of the Philippines [8].

Unfortunately, the typhoon, as mentioned above, carries a maximum sustained wind of 185 kph near the center and gustiness of 220 kph, where the majority of the houses were damaged, trees were uprooted, and rockslide and landslides occurred, devastating several municipalities in Region XI, particularly in the provinces of Davao Oriental and Compostela Valley [9]. As per recorded, Compostela Valley (ComVal) suffered the most damage with around P11.590 billion, while Davao Oriental (DavOr) P6.069 billion and Davao del Norte (DavNor) incurred an estimated around P2.780 billion in agriculture [8]. In the case of Davao del Norte, the province is situated in the southeastern part of Region XI, bounded by Agusan del Sur on the North, Bukidnon on the Northeast, Davao City on the West, Davao Gulf on the South, and the Province of Compostela Valley on the East was also affected by the said Typhoon Pablo.

This province is first class in income classification and is the smallest among the provinces in Region XI, covering a land area of 3,463 sq. kilometers, or 18.4% of the entire region. Its population is 945,764 based on the 2010 census, with an annual average growth rate of 2.23% from CY2000. Its population density was 273 persons/sq. Km in 2010 compared to 245 persons/sq. km in 2007 [10].

As manifested in the records of the National Economic Development Authority, Region XI that as of 2012, Davao del Norte's poverty incidence of families was estimated at 26.7%, or about 61,000 families. The annual per capita family threshold for the province was P20,841. Furthermore, the family income statistics are consolidated with Davao Region's data. The average family income in 2009 reached P166,000, while average family expenditures amounted to P142,000. By the main source of income, half or 50.1% of family incomes came from wages and salaries, 27.9% from entrepreneurial activities, and 24.7% from other sources [11].

In terms of expenditures, the highest items were for food, 45.6%; rental, 10%; transportation and communication,

7.9%; fuel, light, and water; 6.6%; and education, 4.3%, while the major industries existed in Davao del Norte were presented as follows: a) Banana industry (local and export banana and banana chips); b) wood industry; c) manufacturing and packaging; d) trading and services; e) tourism; f) quarrying industry (sand and gravel) [12].

In line with this, the National Government, through the Department of Agriculture Regional Field Units (DA-RFU, XI), provided interventions such as seedlings and fertilizers, including technical capacitation through training and seminars, as well as a cash work program to the farmers engaged in cacao, banana, and coffee production in coordination with the provincial, municipal and city local government units of Davao del Norte along with the Kennemer Food International Inc. (KFI) who had been in full support to the farmers.

It is in this premise to conduct a study on the Typhoon Rehabilitation Program, a case of Davao del Norte, to determine; the experiences, challenges, overcoming strategies, and success stories relative to the program implementation. The findings of this investigation shall be the basis for further studies and the development of effective mechanisms that serve as a springboard in improving or enhancing the plan and intervention scheme for cacao, banana, and coffee farmer-beneficiaries in Davao del Norte.

### *1.2 Research Question*

The main purpose of the study is to determine the experiences, difficulties, overcoming strategies, and success stories of the beneficiaries relative to the Typhoon Pablo Rehabilitation Program, a case in the Province of Davao del Norte. This qualitative case study will focus on the three (3) commodities, namely, Banana, Cacao, and coffee, packaged under the rehabilitation program given by the Department of Agriculture-Regional Field Unit XI. thus, the study sought to answer the following research question:

1. What are the experiences of the farmer-beneficiaries of the Typhoon Pablo Rehabilitation program?
2. What are the challenges encountered by the farmer-beneficiaries during the implementation of the typhoon Pablo Rehabilitation Program?
3. What are the overcoming strategies they have adapted to overcome the difficulties?
4. What success stories can the farmer-beneficiaries share relevant to implementing the Typhoon Pablo Rehabilitation program?

### *1.3 Theoretical Lens*

This study is anchored on Resilience in Climate-based Agriculture Development by Rebecca Ann Chillrud [13]. She argued that agricultural systems would need to function under more extreme and varied conditions for smallholders to continue producing adequate food despite the consequences of climate change. It is believed that resilient agricultural systems are crucial to attaining this objective and preserving global food security. Although there are several definitions of resilience, it is generally accepted to include the capacity to recover from external shocks

or stresses, such as those brought on by climate change. This implies that an agroecosystem will continue to be able to support the farmer's livelihood while preserving the health of the soil. According to Cabell and Oelofse [14], finding a system's vulnerabilities with a resilience assessment might inspire the development of "a more sustainable future for people and the land."

## II. REVIEW OF RELATED STUDIES AND LITERATURE

Disaster and emergency preparedness efforts focus on human behaviors derived from diverse factors ranging from people's risk perception to lessons from direct and indirect past experiences of disaster events and emergencies [15]. According to the literature, theories could be used to explain the structural and psychological determinants of behavior as well as guide the development and refinement of health promotion and education [16].

In the context of Disaster Risk Reduction, as discussed by Inal, E., Altintas, K. H., & Dogan, N. [17], that disaster preparedness is seen as one of the basic components. Moreover, effective preparedness reduces vulnerability, increases mitigation level, enables timely and effective response to a disaster event, shortens the recovery period from a disaster, and increases community resilience [18]. According to previous studies, the determinant of disaster preparedness behaviors includes risk perception [19], preparedness perception [20], self-efficacy [21], community participation [22], available resources, and demographics [23].

Protection and National Preparedness (PNP) is the nation's efforts to enhance preparedness and coordinate related activities, including grants, planning, training, exercises, individual and community preparedness, assessments, lessons learned continuity and national capital region coordination. Because preparedness is a continuous cycle of planning, organizing, training, equipping, exercising, evaluating, and taking corrective action in an effort to ensure effective coordination during incident response.

The Disaster Risk Reduction (DRR) was an integral part of social and economic development and is essential if development is sustainable for the future. This has been recognized by several global documents on DRR and sustainable development. The Yokohama Strategy and Plan of Action for a Safer World (1994), as the first major international framework for disaster risk reduction, recognized the interrelation between sustainable development and Disaster Risk Reduction [24].

Ever since, the close interrelation was continuously strengthened within the key global agreements, from MDGs to the Johannesburg Plan of Implementation (Johannesburg, September 2002), to the "Hyogo Framework for Action (2005-2015)" and to the "Future We Want" (Rio, June 2012), to the Sendai Framework for DRR (Sendai, March 2016) and the 2030 Agenda for Sustainable Development (New York,

September 2015). The United Nations Commission on Sustainable Development (UNCSD) addressed risk management and vulnerability in its thematic issues of water, sanitation, and human settlements in its 2004-2005 cycle and then in the context of drought and desertification in its 2006-2007 cycle [25].

In the case of the Philippines, the National DRRM Framework (NDRRMF) emphasizes that in time, resources invested in disaster prevention, mitigation, preparedness, and climate change adaptation will be more effective in attaining the goal of adaptive, disaster-resilient communities and sustainable development. The framework shows that mitigating the potential impacts of existing disaster and climate risks, preventing hazards and small emergencies from becoming disasters, and being prepared for disasters, will substantially reduce loss of life and damage to social, economic, and environmental assets [26]. It also highlights the need for effective and coordinated humanitarian assistance and disaster response to save lives and protect the more vulnerable groups during and immediately after a disaster.

Meanwhile, determining the potential impact of hazards on society is the primary goal of disaster assessment. This assessment will provide information that focuses on the needs and priorities of the population related to immediate emergency measures and helps to optimize those measures to ensure that the resources are designed well and deployed in a manner consistent with saving and sustaining the lives of survivors. Furthermore, assessing the procedures and plans is the foundation for decision-making, contributing directly to effective planning and control of the organized response [27].

Findings of the Food and Agriculture Organization [28] show a need to harmonize coordination between implementation agencies to avoid overlap of service provision, enhance the impact of activities and improve the effectiveness of the rehabilitation process. Improved systems and mechanisms of coordination must be developed at the sub-district or village level to avoid overlapping programs or duplication of the same inputs.

A participatory needs assessment should be undertaken with the full involvement of farming communities before making decisions associated with the rehabilitation process. Parameters for assessment of the damage that has been incurred and the proposed rehabilitation programs need to be based on a transparent and scientific basis [29].

The conclusion of the Food and Agriculture Organization [30] reiterated that the slow pace of the recovery process is attributed to the complexity of the problem that not only addresses the physical agricultural issue associated with the impact of the disaster but also the socio-economic parameters. In general, there was a lack of a strategic vision for agriculture, this being exacerbated by the lack of technological interventions or mixed and confusing approaches to address the prevailing complex situation.

## III. METHODOLOGY

This research employed a case study design using primary sources. Qualitative Phenomenological Design was used in this study in the form of an "In-depth Interview" (IDI) to gather

relevant information necessary to illustrate and describe the experiences, challenges, and overcoming strategies as well as success stories of the farmer-beneficiaries of Typhoon Pablo Rehabilitation Program. They were engaged in cacao, banana, and coffee farming. Using purposive sampling, twelve (12) participants were selected and interviewed, consisting of four (4) farmers; Two (2) highest and Two (2) lowest from each commodity as; banana, cacao, and coffee, respectively. The gathered data were analyzed utilizing Creswell's (2009) procedures to identify the themes, cluster themes, and emerging themes in this study.

The study will be conducted in the Province of Davao del Norte specifically in the Municipality of Kapalong, San Isidro and Talaingod. The aforementioned Municipalities were known for their One Town, One Product (OTOP), of which the champion commodities for LGU-Kapalong are bananas. At the same time, for LGU- San Isidro is Cacao and LGU-Talaingod is Coffee. The study participants are the farmer-beneficiaries under Typhoon Pablo Rehabilitation Program for the year 2013 with three (3) commodities, namely: Banana, Cacao, and Coffee.

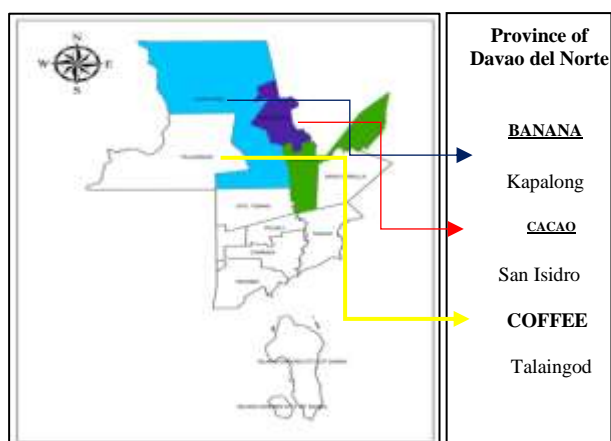


Figure 1 shows the map of Davao del Norte, where the program recipients are located.

#### IV. PRESENTATION, ANALYSIS, AND INTERPRETATION OF THE DATA

The farmer-beneficiaries were asked the following questions during the In-depth Interview (IDI): How was your daily living with your family being a farmer?; What is to you a typical farmer?; Can you tell us about your experience during Typhoon Pablo on December 4, 2012?; Describe your demographic farm profile before and after calamity. ; What agencies are involved in the conduct of validation?; What intervention have they provided to you as a victim of calamity?; How long did the intervention provided reach your end?; and What is your experience in receiving the intervention?

#### *Experiences of the Farmer Beneficiaries of the Typhoon Pablo Rehabilitation Program*

As to the results of the study, there are seven (7) themes identified in the experiences of the farmer-beneficiaries of the Typhoon Pablo Rehabilitation Program:

Table 1 Major Themes and Core Ideas on the Experiences of the Farmer Beneficiaries of the Typhoon Pablo Rehabilitation Program

Major Themes	Core Ideas
Living comfortably after the typhoon	Still trying to live comfortably, though, there are times that water is dripping on our roof.
	We can eat a complete meal at the right time every day with snacks when we have the banana harvest from our farm.
	We can still eat three times a day without snacks. We cannot afford to have it.
	We buy food from the income of our farm. I've been receiving a monthly pension, so in a little way, it is also helpful.
	We can still pay our electric bill, cellphone, and TV load. Even our motorcycles were paid on a monthly basis.
	Fortunately, I can pay a small amount of loan and electrical bills every two months, as well as pawn my motorcycle.
Damaged farmlands and crops	It was big because there was a landslide in my area with many cacao and coconut trees.
	After Pablo, everything seemed to be drowned. When I looked at our area, it seemed that a bulldozer had gone through it. Our coffee was all muddy because there was a landslide. I almost got discouraged.
	When Pablo struck us stream overflowed, and then because there was a lot of water, the plants that fell were carried away, and the bananas fell and were covered with mud.
Income loss in agriculture	There's a really big difference because the storm destroyed our bananas. It was flooded and then got infected by a fusarium. Around 300-400 boxes That's my harvest every week. After the calamities of zero production, I have nothing.
	Before typhoon Pablo, my production in one year was 1 kilo of dried seed every plant hill. My expectation is 600 kilos, but sometimes it reaches up to 1000 kilos plus. Earning around 60k-100k), but now it was gone.
	Sometimes our income is small, around 700 to 1000 pesos for fifteen days. After Typhoon Pablo, nothing was left.
Generation of alternative income and employment	They also hired a worker to work on our farm with pay, and they paid those workers through the billing system.
	There was a time that I was included in the cash for work program involving 300 pesos per day for ten days. We let them survey it after planting.
	I hired farm laborers. I paid for them and provided them free lunch since they're my friends.
Existence of disaster resiliency and management	Because we have a cellphone, through NDRRMC, who informed us of the incoming storm as well as broadcasted it on TV.
	I heard about it because it was broadcasted on the radio.
	We don't care if our crops and house were damaged. What is important is that we are saved.
Provision of inputs and cash assistance	I just made a barrier so as to hinder more water from entering since it's near the river.
	I am a grower under DOLE; the company is the one that rehabilitates my plantation.
	We received intervention from the government involving seedlings, fertilizer, and other financials amounting to 3,000 pesos.
Implementation of the rehabilitation program	I received a small amount of intervention, around 25 pieces of seedlings, and another assistance was given to us with fertilizer and 300 pesos cash.
	We were informed by the cousin of our church pastor of UCCP that there is a rehabilitation program for DA and that we were included.
	The barangay officers informed us about the seedlings and asked if we were interested in avail, so I availed it.
	DA called for a meeting and offered us banana seedlings. Barangay personnel and the Tribal conducted the validation, including those from Municipal Agriculturist's Office and Provincial Agriculturist Office, asking how many hectares were affected and what crops we had cultivated.

	There are protocols. If you maintain it well and become productive, the agencies giving you such intervention will not ask for any share.
	We just underwent a seminar by the DA and PAGRO on how to plant and manage properly.

#### A. *Living comfortably after the typhoon*

The farmer-beneficiaries have emphasized that they could still live comfortably amidst the occurrence of Typhoon Pablo. They have shared that they have access to necessities like food and shelter. They were also able to repair their houses and pay their bills. The farmers have lived a decent life even after experiencing the damage brought by Typhoon Pablo. This is because of the efforts undertaken by different organizations and farmers to cope with loss and damage.

#### B. *Damaged farmlands and crops*

Typhoon Pablo caused more than Php30 billion in damage, based on the Philippines Department of Agriculture (DA) statistics. Also, the DA confirmed that the banana sector had the greatest damage, estimated at over Php20 billion. Coconut crops sustained damage of Php7.22 billion, while rice and maize farms sustained losses of Php197 million and Php362 million, respectively. A total of Php2 million in damage was sustained by farms farming high-value commodities like coffee, cocoa, vegetables, rubber, and fruit trees.

In Davao del Norte, Typhoon Pablo's damages wreaked havoc on the province's irrigated lands, leading the government to provide irrigation services that helped mitigate the damage. During the storm, diversion infrastructure, irrigation facilities, and rice fields are wrecked and silted. Cocoa trees uprooted, lumber logs, bits, remnants, and other detritus litter the silted rice fields, impeding agricultural operations for the next planting season.

#### C. *Income loss in agriculture*

Typhoon Pablo caused crop disease, reducing the amount of production. The farmers emphasized that their output had been considerably reduced in the storm's aftermath. Additionally, farmers saw a significant loss and decline in revenue produced by their farmlands and crops as they shared that some of them got no earnings from the farmlands after the typhoon.

As many farmers have seen a reduction in their income as a result of the damage done to agricultural properties, people were forced to search for other sources of income to survive. Nevertheless, these coping mechanisms were often insufficient to meet their basic human needs [31].

#### D. *Generation of alternative income and employment*

Farmers have experienced a loss of revenue due to the aftermath of Typhoon Pablo. On the other hand, farmers were provided employment prospects due to the Typhoon Pablo Rehabilitation Program. This is accomplished via the use of a paid-for labor scheme, which they participate in while working on their various farms. Farmers with

sufficient financial resources have also extended their assistance to their co-farmers by creating new employment possibilities.

After the occurrence of Typhoon Pablo and the income loss experienced by farmers, the Local Government Unit of Davao del Norte implemented cash for work program. Since the interventions and services like relief operations provided to the people in case of a disaster are not enough, the cash for work existed to provide affected people with an alternative source of income. This was done because the assistance for victims must be carried out in a developing way to maintain human worth and dignity and to avoid a cycle of reliance and handouts.

#### E. *Existence of disaster resiliency and management*

Based on the farmers' perception, an early warning system is already in place in their community. They said they were alerted about the typhoon through their cell phones, news, and other government and non-governmental organizations. The farmers also demonstrated some fundamental life-saving skills by prioritizing lives above their homes instead of focusing on their crops. They also devised strategies to limit the damage caused by the storm by building a number of obstacles to minimize the water surplus entering their area.

#### F. *Provision of inputs and cash assistance*

The findings of this study revealed that following the devastation caused by Typhoon Pablo, the private sector provided lending assistance to farmers. This assisted the farmers in rehabilitating their lands so that they could continue to generate money. Interventions included the provision of fertilizer, seeds, and financial help to the farmers as well.

The government extended its assistance by providing different forms of help to Davao del Norte, totaling P625,000 [32]. The support has been offered to seven municipalities as well as the city of Tagum and Island Garden City of Samal, where a total of 30,746 households have been impacted.

In addition, Proceso J. Alcala, Agriculture Secretary, oversaw the transfer of farm supplies, machinery, and infrastructure to the province's local government units (LGUs), as well as to numerous farmer cooperatives and irrigator groups. The province of Davao del Norte has received millions worth of projects. At the same time, the province's great agricultural resources were being developed to aid in the complete rehabilitation of the regions devastated by Typhoon Pablo.

The provision of assistance helped the farmers in many ways. The farmers were able to live a decent life. They could eat at least three times daily while meeting their other needs. In times of disaster, the government should place a safety net for the farmers. This will give them a chance to replant and rehabilitate their farmlands.

#### G. *Implementation of the rehabilitation program*

The farmers who were chosen to participate in the rehabilitation program shared that they were the ones who informed them about the program. The Department of Agriculture has arranged for a meeting with the assistance recipients. As the farmers suggested,

assessing before implementing the rehabilitation program is necessary. They shared that the evaluation carried out by the tribal and barangay officials, as well as representatives from the Municipal Agriculturist's Office and the Provincial Agriculturist's Office, was conducted. This was done to ensure that only qualifying beneficiaries were enrolled in the program. It was also decided to hold a seminar to instruct the participants on the right methods of planting and caring for the seedlings.

*Challenges of the Farmer Beneficiaries of the Typhoon Pablo Rehabilitation Program*

Seven (7) identified challenges faced by the farmer-beneficiaries after Typhoon Pablo. The following are the challenges encountered by the participants:

Table 2 Major Themes and Core Ideas on the Challenges of the Farmer Beneficiaries of the Typhoon Pablo Rehabilitation Program

Major Themes	Core Ideas
Climate change	I am cultivating a small banana farm. It will be enough if there are no problems like pests and calamities.
	Our life now is more difficult compared to the previous years because of the heat of the sun when working on the farm.
	Our farm is far from here, and the road is slippery on rainy days. It isn't easy to go there.
Market instability	It is very hard for farmers because the price of your commodity would usually go down during harvest time.
	We can't demand a price. We are forced to sell our products regardless of the buying price. If it is 6 pesos, then we sell it at 6 pesos.
Financial incapacity	My life now as a farmer is difficult because I still need much to finance my farm.
	The problem is I was reluctant to borrow money from our supplier because all the bananas fell.
	Sometimes, we need to get our food from the sari-sari stores, and we will pay them whenever we have money.
	It's hard for us to pay our electricity and school bills.
Lack of information and education	I do not have knowledge about the intervention of the government due to a lack of information dissemination.
	One of the challenges is how to take care of the intervention given by the government, especially the seedlings, because it is not enough that we planted them.
	Technology for controlling fusarium wilt disease should be extended to the farmer's level. They should teach us the formula.
Low-quality seedlings and high cost of production	Those seedlings became useless to us. We're given 218 variety seedlings that are not in demand. They can't be sold in the market because of their low quality.
	We found it hard to transport the said intervention because we don't have our motorcycle, so we need to use our own money to transport it to our farm.
	One of the problems is the cacao seedlings. They were not of good quality.
Lack of crop insurance	We didn't have crop insurance at that time because it was not yet introduced here in our place.

	I didn't have any idea about insurance. It was only when I became a barangay technician that I learned about it.
Delayed distribution of seedlings	It took a year before the intervention reached our end. It was the seedlings that came first before the fertilizer.
	It took two years for the ten seedlings to be given to us.
	It took a while before we received help. That was already in 2015 when we got the seedlings from Davao City.

*A. Climate change*

Climate change has emerged as a significant issue in agricultural production. The farmers from Davao del Norte have not been spared the consequences of the typhoon. Their lives have become more challenging due to unexpected weather fluctuations, the development of insect issues, and natural disasters. According to the participant of this study, climate change has a profound influence on their life as farmers. They remarked that it would be simpler for them to work if there were no difficulties with pests or natural disasters. They also mentioned how difficult it was for them to go to their farms on wet days since the roads were slick.

*B. Market instability*

As shared by the study participants, a rise in the cost of agricultural inputs was caused by a decrease in crop yield and a decrease in agricultural production. Farmers continue to face difficulties due to the instability of the market price. Furthermore, rather than the farmers, the purchasers set the price of agricultural products. This resulted in a drop in revenue but a rise in the cost of production, as shared by the participants of the study.

*C. Financial incapacity*

As shared by the farmers, they were having difficulty obtaining the funds they needed to continue farming after Typhoon Pablo. Their financial resources proved inadequate to support their crops. Despite the fact that loans are accessible to them, some are afraid to take them since their crops were not in the greatest of shape after the typhoon. In addition, as one of the participants said, they were forced to borrow food from the shops and stores just to survive. Occasionally, they are unable to pay even their basic expenses, such as their energy bills and school tuition.

The study's findings indicated that agriculture as a key source of livelihood reduced by 23% as a consequence of Typhoon Pablo's effect. Additionally, approximately 12% of respondents reported being fully unemployed as a consequence of the typhoon, the bulk of whom worked in agriculture. The research revealed that Typhoon Pablo's shock to food security and livelihoods was extensive and thorough, affecting all sectors. The high poverty rates among these farmers may be ascribed to underemployment. Almost 70% of Filipinos who are unemployed work in agriculture, forestry, or fisheries. While many farmers and agricultural laborers seek jobs, the Philippine government seems to be shifting away from local farmers and toward imports [33].

#### D. Lack of information and education

The farmers elaborated that they were interested in participating in the government's intervention program but that there was a dearth of information distribution on the subject. They were not given enough information about the initiative. The lack of knowledge and ability to properly care for the seedlings provided by the government is another obstacle farmer needs to overcome. The farmers only know how to plant, but they do not know how to care for and nurture the seedlings until they have grown into mature plants. In addition, there are certain crop diseases, such as fusarium, that farmers are unaware of and have no way of preventing. They suggested that they need to be educated on how to combat and avoid agricultural diseases in order to be effective.

#### E. Low-quality seedlings and high cost of production

The Typhoon Pablo Rehabilitation Program had delivered seedlings to the farmers who had been impacted by the storm. However, as some of the farmers have pointed out, the seedlings have been ineffective since the varieties that have been provided to them are of poor quality and are neither marketable nor in demand in the current market. The farmers also had difficulties in delivering their profits and harvests to the market since they did not have their own means of transportation to bring their products to the market and consumers.

#### F. Lack of crop insurance

As pointed out by the participants, they are not aware that there is crop insurance available to individuals who are actively farming. Obtaining this is possible through their individual local government entities. Because of their lack of understanding of crop insurance, they had difficulties in restoring their farmlands after the typhoon owing to a lack of help and financial resources to do so.

#### G. Delayed distribution of seedlings

A lot of help was offered to the farmers, particularly when it came to replanting the crops that had been destroyed in their fields. The help from the Typhoon Pablo Rehabilitation Program, on the other hand, arrived a little later than planned. According to some of the participants, the seeds and fertilizers were sent two years after Typhoon Pablo made landfall in their area.

#### Overcoming Strategies of the Farmer Beneficiaries of the Typhoon Pablo Rehabilitation Program

The participants were asked to elaborate on the overcoming strategies they used in the encountered challenges. There are four (4) identified overcoming strategies employed by the farmer-beneficiaries after Typhoon Pablo. The following are the overcoming strategies by the participants:

Table 3 Major Themes and Core Ideas on the Overcoming Strategies of the Farmer Beneficiaries of the Typhoon Pablo Rehabilitation Program

Major Themes	Core Ideas
Develop a positive attitude toward family welfare	What we did was we agreed to go with the loggers and worked with them just to provide for the needs of our family.
	To buy farm products like bananas and sell them in Tagum.
	I felt so discouraged, but I had to go on. I continue working on the farm.
Develop ways for sustainable farming	I just have to persevere and never surrender. I will focus on my children and be happy to see them one day finish their education.
	Upon the arrival of the inputs, we equally divided and got planted in our respective areas. And nurture it so that it will become productive.
	What I did with the bananas was chopped them since nobody would buy them anymore because of the quality. I planted corn instead, and until now, I have stuck with the corn.
Availment of the loan program	We decided to work again on the farm. And we planned to do it together. We schedule one farm at a time, and we'll work there and then transfer to another farm.
	We borrowed money from our association to pay the other loan obligation. This is where the life of farmers is.
	As a farmer and a government employee, I have access to loans to rehabilitate my farm because I cannot do it by myself.
Intensify coordination for assistance	We borrowed from DOLE, and we renewed our loan. We negotiated with the DOLE manager on the help that they could extend to us.
	I was the purok leader at that time, so I invited my co-farmers to talk about what could be done with what happened to us. So we planned to negotiate with the barangay council.
	I was a barangay official at that time, so we had a meeting to plan the kind of assistance that we could give to the victims.
	In this trying time, we are challenged to participate in any program of the government so that we will be included in any intervention.
	I'm just follow-up to the Brgy. About the status of intervention to be provided to farmers affected by Typhoon Pablo.

#### A. Develop a positive attitude toward family welfare

After suffering so much harm, farmers are continuing to cultivate a positive attitude about their situation. As shared by the farmers, they experimented with a variety of methods to meet the fundamental necessities of their families. According to the participants, they attempted to work for others. Some farmers purchase crops with the intent of reselling them. Some farmers have chosen to continue working on their fields, while others have found other means of subsisting in the meanwhile. Farmers, on the other hand, continue to persevere and concentrate on the well-being of their families.

#### B. Develop ways for sustainable farming

The results of the study revealed that the farmer-beneficiaries were able to establish a self-sufficient and cost-effective crop production system. This had not only resulted in adequate output

but had also resulted in a reasonable level of revenue for the farmers. The seedlings were distributed evenly among the farmers and then planted on their various farmlands. Some farmers have also switched to growing crops other than the ones that were previously devastated by the typhoon as a result of the disaster. Farmers took the initiative to unite their efforts to repair and rehabilitate the harm to their fields, and they were successful. They scheduled one farm at a time and collaborated with other farmers on their projects.

*C. Availment of loan program*

The results of the study revealed that farmers borrowed money from their organizations and other agencies as part of their strategy for surviving and rehabilitating the damage to their farmlands. Several of them even took out additional loans to cover their prior debt commitments. Other farmers also took advantage of loan opportunities and renegotiated the conditions of their previous loans since their revenue was insufficient. According to assessments of the storm's effect, a series of calamities has pushed farmers into a cycle of debt, with the majority of farmers borrowing money from informal sources such as dealers and millers to get by.

According to the report of the GMA news [34], small banana producers in the Philippines are pleading with the government for assistance in convincing financial institutions to provide two-year interest-free loans to small farmers whose crops were destroyed by Typhoon Pablo. Getting some loan to rehabilitate and start again can be helpful but with optimum caution. In the case of Davao del Norte farmers, they were able to effectively use the loans they obtained from banks and other agencies. The loan helped them survive and rebuild their lives.

*D. Intensify coordination for assistance*

farmers made an attempt to get further support. As they stated, they conducted discussions and discussed the possibility of negotiating with the government. Farmers were active participants in various intervention initiatives. Additionally, there is a follow-up on the progress of the intervention program. All of this was done in the hope of obtaining further aid for rehabilitating the damage caused by Typhoon Pablo.

The farmers engaged in disaster recovery planning as they conducted meetings and discussions on how to rehabilitate the damage caused by the typhoon. In the study of Hamideh (2020), disaster recovery planning aims to provide a framework for defining recovery objectives and representing a large picture of the community in relation to wider disaster rebuilding plans. There is widespread agreement that more public participation in recovery planning is beneficial. In line with this, it is also important to put in place a Community-based Disaster Risk Reduction (CBDRR). This is a type of disaster risk reduction that places a strong emphasis on community participation. This is because communities themselves are directly affected by disasters, and the CBDRR process necessitates the collaboration of institutions and organizations from a variety of sectors, including health,

agriculture, education, and infrastructure development, among others [35].

*Success Stories of the Farmer Beneficiaries of the Typhoon Pablo Rehabilitation Program*

The participants of this study shared their success stories after experiencing the damage of Typhoon Pablo. There were four (4) identified themes under the success stories of the farmers. The following are the major themes:

Table 4. Major Themes and Core Ideas on the Success Stories of the Farmer Beneficiaries of the Typhoon Pablo Rehabilitation Program

Major Themes	Core Ideas
Develop self-reliance and perseverance	I did not have sources. We just continued with whatever was left. Slowly, I persevere on my own. We just took care of what's left.
	I cut down all the damaged plants, and then I cultivated the remaining live suckers again.
	My siblings and I don't complain about whatever food is being served to us, so we were trained not to complain.
Recovery as a result of hard work and assistance	I managed to recover on my own. So, I did not expect any help from others.
	Eventually, we were able to recover, and so today, we are seeing the fruits of our labor.
	I am really grateful for this program because I was able to plant 500 cacao trees, and I fully recovered as of this time.
	Since the time of the rehabilitation, my life has been better now. All the plants that I lost were all replaced.
Develop a positive outlook for the future	I do not have a lot of dreams anymore because I'm already old. All I wish is good health so that I can still roam around my farm.
	I have a simple dream in life. It's enough for me if we can eat three times a day and have two snacks, and we can sleep in a comfortable home with peace of mind.
	Our dream is to have a productive farm so we can have a better life.
	My ambition in life, if God will allow it, is to have our own car as a fruit of our farm.
	Maybe, everybody dreams of having an abundant life so we can also help our siblings and relatives whenever they are in need.
	My only dream is there is always food for my family; I can send my children to school out of my hard work.
Government response helped to expedite rehabilitation	All I can say is to keep up the rehabilitation program so we farmers can still benefit from it.
	They should look after our welfare and provide us with the support that we need.
	Suppose there are calamities like that, they should give us their all-out support in quick time as possible. It's hard to recover when they just provide us with inadequate aid.

*A. Develop self-reliance and perseverance*

Following the experience of the farmers with Typhoon Pablo, they have gained confidence and tenacity. Some of the farmers are without a source of income, yet they continue to work and make the most of what they have left. Additionally, some of the farmers harvested and cultivated the plants that had been damaged. They were able to preserve what they could in order to continue to live. Others do not have enough food to eat, yet they do not express their dissatisfaction.



The UNHCR [36] emphasized that self-reliance is when people can meet their basic needs and enjoy their human rights in a way that is both long-term and dignified. Those who are self-reliant are more likely to live independently and be productive. They are also more likely to enjoy their rights and make a positive contribution to the communities where they live.

Relative to this, the participants in this study successfully developed self-reliance and perseverance after they had experienced the devastating effect of Typhoon Pablo. They were also able to continue living a decent life amidst the casualties. With this, it can be said that they are resilient enough as they learned to develop self-reliance and perseverance in the face of natural disasters.

#### *B. Recovery as a result of hard work and assistance*

The damage to participants' farmlands was so big that they had a hard time getting back into their normal lives. However, they worked hard to get back what they had lost through their hard work. They did everything they could to stay alive and improve their farms. Along with their hard work is the rehabilitation program they got. They could plant new crops and replace the ones that had been damaged. Their lives got better after they became beneficiaries of the Typhoon Pablo Rehabilitation Program.

Disasters like Typhoon Pablo can take a long time to fully recover from. Even though some of the affected communities have started their own recovery efforts with the few resources they have and hard work, a lot of work and assistance is being done by UNDP and the government of the Philippines together. This includes work at the national level, as well as in the provinces and cities. The Department of Social Welfare and Development of the Philippines also helped the victims by giving them money for doing work. CFW is a short-term program that helps people who have been affected by disasters get jobs. They can help with disaster preparation, mitigation, relief, rehabilitation, or risk-reduction projects in their communities or in evacuation centers.

#### *C. Develop a positive outlook for the future*

In recent years, farmers have developed a positive outlook for the future. Some of the farmers are only interested in remaining on the farm because they are becoming older. Some of them have straightforward ambitions in life. They would want to be able to eat three meals a day and sleep in a nice environment. In addition, the farmers want to have a fertile area to work with. They wanted to see the fruits of their labor, as well as the earnings from their fields. They also want to live a prosperous life in order to provide for their families.

#### *D. Government response helped to expedite rehabilitation.*

Farmers who have benefited from the rehabilitation program have said that it has been beneficial to them. Others proposed that the relevant authorities look after the farmers' well-being

and provide the required assistance. Finally, farmers want a prompt reaction when a disaster strikes since it is difficult to recover if aid is delayed.

Disaster recovery is a complicated process including many interconnected parts, and the manner by which it is accomplished differs between people and organizations as well as institutions and communities, depending on a sequence of activities taken before and after the incident.

In the case of Davao del Norte, the farmers have confirmed that the Typhoon Pablo Rehabilitation Program has helped them recover from the loss they experienced as they were provided with farm inputs and seedlings. Also, a Cash-for-Work Program was implemented in the community to offer temporary employment to unemployed farmers who are trying to rehabilitate their farmlands. The recovery would not be possible without the help of the government, non-government organizations, and other concerned agencies.

## V. CONCLUSION AND IMPLICATION

### *Concluding Paragraphs*

The lack of information and education, high cost of production, lack of crop insurance, climate change, market instability, and financial incapacity are key struggles encountered by the farmers. As the agricultural sector is one of the most vulnerable in an ever-changing environment, this research served as a medium to raise awareness among local government units, departments, and non-government organizations.

This study presented how farmers are affected by natural disasters. The Department of Agriculture, Local Government Units, National Disaster Risk Reduction and Management Council, Non-government Organizations, and other concerned agencies can help the farmers live a decent life by providing appropriate intervention and assistance and creating policies that promote the interests and needs of the agricultural sector. It is with a hope that the data presented in this study will serve as a basis for creating evidence-based programs and policies that will enhance the lives of the farmers.

### *Implication for Practice*

The qualitative data in this study highlighted the experiences, challenges, overcoming strategies, and success stories of the farmers in Davao del Norte who experienced the wrath of Typhoon Pablo. It is crucial to know that the agricultural sector has extensive linkage with the environment. It is highly dependent on natural resources and climate for production. With this linkage and dependency, agriculture must be at the center of the efforts in terms of disaster management, intervention programs, and policy development. Strategies to minimize the impact, provide a safety net, and create resilient agricultural communities are crucial so that government and people are not trapped in a cycle of poverty by more frequent natural disasters.

As Typhoon Pablo destabilized the agricultural sector, a need for sustainable development strategy should be implemented. The data presented in the results of this study will serve as the basis

for local government units in Davao del Norte, the Department of Agriculture, the National Disaster Risk Reduction and Management Council, and other concerned agencies to create a comprehensive plan to help the farmers in times of disaster. These agencies must continuously evaluate and improve the efficiency and quality of their services to ensure a system that can protect and provide for the vulnerable agricultural sector.

Moreover, appropriate policy frameworks and political and financial support for the farmers must be organized. The data of this study suggest that during a disaster, the farmers are one of the most vulnerable sectors. Farmers should not only receive farm inputs and equipment, but they must be equipped with the necessary knowledge and skills for them to thrive in an environment that is ever-changing. Lastly, this study presents the challenges of farmers. Such analysis may bridge the gap in practice and assist the concerned agencies in creating a sustainable agricultural program and planning a disaster response that will benefit the farmers in the long term.

#### *Implications for Future Research*

The researcher would like to recommend a detailed review of farmers' experiences in other natural disasters like floods. To provide farmers with a comprehensive intervention program, a wide range of data should be collected and presented as evidence.

The participants of this study highlighted the decreased agricultural output in times of disasters. Future research should consider delving into the trends in agricultural output and associated distortions in production quantities and patterns caused by natural disasters as a starting point in providing a proper intervention. Such analysis may bridge the knowledge gap and assist the government and other concerned agencies in creating sustainable development and disaster response planning decisions.

In addition, climate change was emphasized by the farmers, which impacted farm productivity and profitability. Future research can investigate how climate change affects the life of farmers and the agricultural sector in general. There are various studies conducted on this topic, but more focused and localized data are limited. The experiences of farmers vary from one place to another. With this, it is necessary to create an agricultural approach to climate change that is suitable to the needs and current state of the farmers and their farmlands.

In agriculture, farmers, scientists, and institutions continually aim to uncover techniques that would boost crop yields, improve agricultural productivity, minimize loss due to disease, insects, and disasters, create more efficient equipment, and improve food quality overall. Through research, the agricultural sector will be provided with adequate evidence to ensure sustainability, boost profitability, and preserve the environment.

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