

**YANGON UNIVERSITY OF ECONOMICS
DEPARTMENT OF APPLIED ECONOMICS
MASTER OF PUBLIC ADMINISTRATION PROGRAMME
(NAY PYI TAW)**

**A STUDY ON CHALLENGES FACED BY FARMERS
DURING COVID-19 PANDEMIC IN NAY PYI TAW
(CASE STUDY: TATKON, PYINMANA AND
LEWE TOWNSHIPS)**

**MAY THU LIN
EMPA -21 (18th BATCH)**

MARCH, 2023

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COVID-19 PANDEMIC IN NAY PYITAW
(CASE STUDY: TATKON, PYINMANA AND LEWE TOWNSHIPS)**

A thesis submitted as the partial fulfillment of the requirements for the degree of
Master of Public Administration (MPA)

Supervised by:

Dr. Thet Mon Soe
Lecturer
Department of Applied Economics

Submitted by:

May Thu Lin
Roll No. 21
EMPA 18th Batch (NPT)

MARCH, 2023

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This is to certify that this thesis entitled “**A Study on Challenges Faced by Farmers during COVID-19 Pandemic in Nay Pyi Taw (Case Study: Tatkon, Pyinmana and Lewe Townships)**”, submitted in partial fulfillment towards the requirements for the degree of Executive Master of Public Administration (EMPA) has been accepted by the Board of Examiners.

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Yangon University of Economics

(Examiner)
U Than Htun Lay
Associate Professor
Department of Applied Economics
Yangon University of Economics

(Supervisor)
Dr. Thet Mon Soe
Lecturer
Department of Applied Economics
Yangon University of Economics

March, 2023

ABSTRACT

The main objective of the study is to assess the impact of COVID-19 on farmers and the challenges faced by farmers and to study potential interventions as a response. The descriptive method is used in this study. The study finds that during COVID-19 Pandemic, although the respondents got loans from different financial sources, they still had difficulties for the cost of farm operation. Because of limited access to loans and credit, the cost of production did not cover. Increasing the cost of inputs was one of the main challenges for farmers. The farmers also faced difficulties in increasing the cost of hiring labors. However, the farmers had no difficulties in transportation and market access. Increasing the loan amount for the future growing season will be a great help for farmers in continuing their production. Getting agricultural inputs with the normal market price in the future is important for farmers. Mechanization could ease the farmers from the burden for increasing labor charges in the future.

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Roll No. 21

EMPA (18th Batch)

TABLE OF CONTENTS

| | Page |
|--|-------------|
| ABSTRACT | i |
| ACKNOWLEDGEMENTS | ii |
| TABLE OF CONTENTS | iv |
| LIST OF TABLES | vi |
| LIST OF FIGURES | vii |
| LIST OF ABBREVIATIONS | viii |
| | |
| CHAPTER I INTRODUCTION | 1 |
| 1.1 Rationale of the Study | 2 |
| 1.2 Objectives of the Study | 3 |
| 1.3 Method of Study | 3 |
| 1.4 Scope and Limitations of the Study | 4 |
| 1.5 Organization of the Study | 5 |
| | |
| CHAPTER II LITERATURE REVIEW | 6 |
| 2.1 Global Crisis of COVID-19 Pandemic | 6 |
| 2.2 The Effects of COVID-19 on Agriculture Sector | 7 |
| 2.3 Reviews on Previous Studies | 9 |
| | |
| CHAPTER III OVERVIEW ON FARMERS IN NAY PYI TAW | 12 |
| 3.1 Overview of COVID-19 Pandemic and Agricultural Sector in Myanmar | 12 |
| 3.2 General Description of Nay Pyi Taw | 21 |
| 3.3 General Description of the Studied Townships and Villages | 27 |
| | |
| CHAPTER IV ANALYSIS ON CHALLENGES FACED BY FARMERS DURING COVID-19 PANDEMIC | 30 |
| 4.1 Survey Design | 30 |
| 4.2 Survey Profile | 31 |
| 4.3 Demographic Factors of the Respondents | 32 |
| 4.4 Challenges Faced by Farmers | 38 |

| | |
|-----------------------------|-----------|
| CHAPTER V CONCLUSION | 47 |
| 5.1 Findings | 47 |
| 5.2 Recommendations | 48 |

REFERENCES

APPENDIXES

LIST OF TABLES

| Table No. | Title | Page |
|------------------|---|-------------|
| 3.1 | Types of crops cultivated in Myanmar | 14 |
| 3.2 | Agricultural Loans by Crop (absolute values in Kyat Millions) | 17 |
| 3.3 | Districts and Townships in Nay Pyi Taw | 22 |
| 3.4 | Sown Acreage and Number of Farmers (by Areas) | 23 |
| 3.5 | Main Crops and Number of Farmers in Nay Pyi Taw | 24 |
| 3.6 | Sown Acreage, Harvested Acreage and Yield Per Acre of Crops (2018 -2021) | 25 |
| 3.7 | Prices of Fertilizer (2020-2022) in Nay Pyi Taw | 26 |
| 3.8 | General Description of Tatkon, Pyinmana and Lewe Township | 28 |
| 3.9 | General Description of Selected Villages in Tatkon Township | 28 |
| 3.10 | General Description of Selected Villages in Pyinmana Township | 29 |
| 3.11 | General Description of Selected Villages in Lewe Township | 29 |
| 4.1 | Number of Townships, Villages and Farmers Conducted Survey | 32 |
| 4.2 | Demographic Profile of Respondents | 33 |
| 4.3 | Farm Related Information of the Respondents | 36 |
| 4.4 | Financial Sources of Farmers for Farm Operation | 39 |
| 4.5 | Challenges on Farm Operation | 41 |
| 4.6 | Availability of Labors for Farm Operation | 42 |
| 4.7 | Transportation | 43 |
| 4.8 | Market Access | 44 |
| 4.9 | Other Difficulties | 45 |
| 4.10 | Relief Plans | 46 |

LIST OF FIGURES

| Figure No. | Title | Page |
|-------------------|--|-------------|
| 1.1 | Map of Nay Pyi Taw Showing Townships | 4 |
| 3.1 | Numbers of COVID-19 Cases in Myanmar by Region, October 21 st 2020 | 12 |
| 3.2 | Share of the Agriculture Sector as Percent of GDP | 19 |
| 3.3 | Location Map of Nay Pyi Taw | 21 |
| 4.1 | Map of Survey Townships in Nay Pyi Taw | 31 |

LIST OF ABBREVIATIONS

| | |
|----------|---|
| AMD | Agricultural Mechanization Department |
| ASEAN | The Association of Southeast Asian Nations |
| CCSA | Committee for the Coordination of Statistical Activities |
| COVID-19 | Coronavirus Disease 2019 |
| DOA | Department of Agriculture |
| FAO | Food and Agriculture Organization |
| FFPI | FAO Food Price Index |
| FY | Fiscal Year |
| GAD | General Administration Department |
| GDP | Gross Domestic Product |
| IFPRI | International Food Policy Research Institute |
| IHLCS | Integrated Household Living Conditions Survey |
| ILO | International Labour Organization |
| IRRI | International Rice Research Institute |
| IWUMD | Irrigation and Water Utilization Management Department |
| JICA | Japan International Cooperation Agency |
| MADB | Myanmar Agriculture Development Bank |
| MAN | Myanmar Agriculture Network |
| MLFTB | Myanmar Livestock and Fisheries Development Bank |
| MFI | Microfinance Institutions |
| MMT | Million Metric Tons |
| MOALI | Ministry of Agriculture, Livestock and Irrigation |
| NGO | Non-Government Organization |
| NPK | Nitrogen(N), Phosphorus (P), and Potassium (K) |
| OECD | The Organization for Economic Cooperation and Development |
| SCPL | Seasonal Crop Production Loans |
| SPSS | Statistical Package for the Social Sciences |
| TL | Term Loans |
| UNIDO | United Nations Industrial Development Organization |
| WHO | World Health Organization |

CHAPTER I

INTRODUCTION

Agriculture is an important sector in Myanmar's economy as it is a major contributor to economic growth, livelihoods, and social stability. This sector employs nearly half of the entire working population in the country and was the main source of employment for around 70 percent of the rural population (World Bank,2021a).

From early 2020, Myanmar has experienced different crises: the COVID-19 pandemic, political and economic unrest in February 2021, and disruptions to global commodity markets with significant adverse impacts on farmers. These shocks have been taking a heavy toll on farmers by reducing their access to agricultural inputs and creating disruptions in market infrastructure and logistics. Increasing costs of transportation and inputs, especially for fertilizer and fuel, have reduced farmers' margin.

In addition to the higher costs of inputs and agriculture-related services, the combined effect of the pandemic and political upheaval had an impact on decisions related to agricultural production. According to World Bank Farmer Survey (2021), there were also constraints the crisis in the banking system has constrained credit availability and limited the functions of institutions that normally provide credit to farmers including microfinance institutions (MFIs), commercial banks and the Myanmar Development Bank. Limited access to credit remains a main problem among farm households who face liquidity challenges driven by cash and credit constraints (World Bank, 2021b).

Myanmar is one of several late-transforming low-income countries in Southeast Asia where agriculture still plays a large role in rural livelihoods, and where food prices are a key factor affecting nutrition security for poor urban and rural households. Whereas the economic impacts of COVID-19 disruptions on tourism and manufacturing were obvious to policymakers, the impacts on the agri-food system were less evident and often more indirect. This resulted in the rural sector being allocated

only a very small share of the government's initial fiscal response to mitigate the economic impacts of COVID-19 (Duncan Boughton et al, 2021).

1.1 Rationale of the Study

The coronavirus disease (COVID-19) has created an unusual situation globally (Alam and Khatun, 2021). The consequences of COVID-19 on the economy and agriculture have raised many concerns about global food security, especially in developing countries. The virus rapidly spread and affected economies thus bringing out inefficiencies in both the agriculture and industrial sector resulting in food insecurity (Jámbor et al. 2020).

COVID-19 Pandemic also changed all the predictions about the future of the global and regional economy. Although the global lockdowns assisted to control the disease outbreak, this pandemic damaged many economic sectors such as industries, tourism, trade and business activities, and agriculture. It appears that the economic consequences of the COVID-19 on food security are more significant in developing countries.

Agriculture sector is a source of income for more than 1 billion people across the globe. Agricultural production, including different stages from planting, growing, nurturing, harvesting to shipping of goods, needs labor requirements (Workie et al. 2020). The dependence of market value chains, food, and agricultural sectors are considered to be less resilient due to the occurrence of the pandemic.

Farmers, in particular, faced many challenges during the pandemic, and farms of all sizes faced difficulty accessing stable marketing channels, significant decreases in regular income, and increased input costs (Jackson-Smith & Veisi, 2021).

A vast majority of the people in rural communities works and depends on land for their livelihood yet productivity is low. Earning low-level income, the farmers have to struggle to make ends meet. Therefore, the growth of agricultural productivity can improve to raise rural income and also has a direct bearing on all other socio-economic aspects of the country.

Lockdowns and other social distancing measures imposed of the COVID-19 pandemic disrupted agricultural operations around the world, with particular force on smallholders and the poor. The lack of labor due to the pandemic crisis has led to significant disturbances in certain industries, such as livestock production, horticulture, planting, harvesting and crop processing, which are relatively labor intensive. Farm

worker shortages, however, were already a significant concern long before the COVID-19 epidemic (ILO-OECD 2020). However, owing to the lack of labor due to sickness and the physical distance to be sustained during production, the crisis is weakening the opportunity to work for farms and agricultural undertakings. These conditions delayed the delivery of grain and agricultural inputs and produced difficulties with the continued supply of food to markets (Author Anonymous, 2020b).

As a major effect of COVID-19, the global food price has linearly increased from February 2020. According to the FAO Food Price Index (FFPI), the international price of food commodities reached the highest level of 97.19 points in September 2020. The value increased by 5% since last year and was the highest between September and February. Similarly, a significant rise was seen in the price index of cereals and vegetable oils for four consecutive months. This was mainly due to the greater shelf life in food commodities (FAO, 2020).

Agriculture production has also indirectly disrupted the fertilizer and pesticide industry with the imbalance in the supply of fertilizers like urea, potash, ammonia, and phosphate which are necessary for the growth and nutrient management of plants. The sudden factory shutdown and limited transportation facilities delayed the flow of increasing fuel charges, the cost of hiring machinery for farm operation dramatically increased.

Because of the shocks of COVID-19 Pandemic, there might be challenges and constraints of farmers in Myanmar. Hence, the present study aims to investigate the challenges of farmers in Nay Pyi Taw with a specific approach.

1.2 Objectives of the Study

The objective of the study is to study the challenges faced by farmers during COVID-19 Pandemic.

1.3 Method of Study

In this study, the challenges of farmers are analyzed by Likert Scale which is designated with five scale design - 1 for strongly disagree, 2 for disagree, 3 for neutral, 4 for agree and 5 for strongly agree. The descriptive method is used based on primary data in this study. The primary data are collected from the structured questionnaires. There are over 20 farmers from each village with a total of **305** farmers are selected for

the survey. The required secondary data for crop production are collected from Department of Agriculture in Nay Pyi Taw and other reliable sources.

1.4 Scope and Limitations of the Study

The result of this study will demonstrate the challenges and other problems faced by farmers during COVID-19 Pandemic which influences the adoption of COVID-19 practices. The focus area of study is three townships: Lewe, Pyinmana and Tatkon Townships in Nay Pyi Taw. Survey design covers the side view of the study area, respondents and their household, overall condition of agriculture systems. The reliable information was gathered by farmers (primary data) and available in records (secondary data, both qualitative and quantitative) of Ministry of Agriculture, Livestock and Irrigation (MOALI), related government offices in Nay Pyi Taw.

Figure (1.1) Map of Nay Pyi Taw Showing Townships



Source: Nay Pyi Taw Development Committee

However, this study identified some lapses and gaps in the literatures reviewed so far, which put in place, develop the interest to carry out research in this topic to fill the gaps. One of the major limitations encounters while reviewing literatures is inadequate research on challenges faced by farmers due to COVID-19 Pandemic in Nay

Pyi Taw Region of Myanmar and as a result of this, the current research will fill this gap by examining challenges faced by farmers during COVID-19 Pandemic in Nay Pyi Taw Region.

1.5 Organization of the Study

This study comprises of five chapters. Chapter one is introduction that includes rationale, objectives, scope and limitations and organization of the study. Chapter two portrays literature review of the study related with impact of COVID-19 on farmers. The third chapter describes overview on farmers in Nay Pyi Taw. The fourth chapter comprises analysis on challenges faced by farmers during COVID-19 Pandemic. The last chapter finally pertains findings and recommendations based on the results of the study.

CHAPTER II

LITERATURE REVIEW

2.1 Global Crisis of COVID-19 Pandemic

Crisis can be national or global in nature. Global Crisis related to financial collapse, world war, natural disaster like tsunami and the pandemic healthcare crisis. Recent examples are Global Financial Crisis (GFC), and Coronavirus Global Pandemic (COVID-19) is a global healthcare emergency, both can have a disastrous social, economic, and financial impact on individuals, society, and the economies. (Norhayati Zakaria, Asmat Nizam Abdul-Talib, 2016)

António Guterres, Secretary-General of the United Nations, said that the COVID-19 pandemic is a public health emergency but it is far more and it is not only an economic crisis but also social crisis. Moreover, this is also a human crisis that is fast becoming a human rights crisis. (UNIDO, 2020)

According to the report of (CCSA), low-income countries prone to rises in the triple burden of malnutrition due to pandemic-induced income shocks, while disruptions to global supply chains and labor shortages pose uncertainties for agricultural production. FOA's analysis showed two key findings: demand-sided risks are mostly related with low-income countries, whilst supply-sided risks are more prevalent in high-income countries.

Epidemics and pandemics are threats deeply affecting human life and bringing deathly consequences. COVID-19 pandemic has lately been at the top of the global agenda due to its effects. Emerging in Wuhan, China in December 2019, COVID-19 has spread like wildfire and affected 217 countries as of now. (WHO, 2021).

SARS-nCoV-2 is a novel virus known to cause COVID-19 disease which is responsible to 1.6 million deaths in six continents of the globe as World Health Organization (WHO) declared state of health emergency on March 11, 2020 due to this pandemic disease and so far, global total of cases 71.6 million are confirmed till date (WHO, 2020a; Hamid et al., 2020). COVID-19 pandemic still continues to cause major disruptions to health systems around the world. According to the data of 17 January

2021, total number of confirmed cases is 92.506.811 and death toll is 2.001.773. WHO (2020a) issued Strategic preparedness and response plan to implement the measures regarding community participation, temporary travel restrictions, social gatherings, closure of educational institutes and work places.

COVID-19 has turned the world upside down. Everything has been impacted. Some startling economic numbers include a 9% year-on-year fall in global production and manufacturing output, nowcasts that the value of global merchandise trade will fall by almost 27% in Q2 2020, the largest fall in global commodity prices on record (-20.4% between February and March 2020). The impact is being felt in every region. For example, for the Gulf region, forecasts predict a decline in GDP growth of between 0.6% (best) and -1.9% (worst scenario) in 2020, but a recovery of between 0.5% and 2.5% in 2021. Whereas in Europe, statistics are already reporting that GDP fell by 3.5% in Q1 2020 – the sharpest fall since their time series began in 1995. (UNIDO, 2020)

2.2 The Effects of COVID-19 on Agriculture Sector

The effects of the COVID-19 pandemic are crippling agriculture and food systems, inverting development trajectories and stunting economic growth. The COVID-19 creates many threats to sustainability of agriculture sector which is very sensitive because of food supply security needs. COVID-19 has affected all the processes which connect farm production to final consumer. Moreover, it seems to strike the food production system and food value chain.

Farmers, in particular, faced many challenges during the pandemic, and farms of all sizes faced difficulty accessing stable marketing channels, significant decreases in regular income, and increased input costs (Jackson-Smith & Veisi, 2021).

Agricultural production in many European countries and in North America, rely on global supply chains to access agricultural inputs and to market their outputs, which in turn many countries rely on. Logistic disruptions can curtail the supply of intermediate inputs, including fertilizers, and compromise crop production in the short term. Capital-intensive systems are also more exposed to disruptions in credit markets. Increases in borrowing rates observed in many middle-income countries are likely to raise production costs amid a fall in food commodity (FAO, 2021a).

COVID-19 is also destroying the agricultural production sector, which is the root of food system. Although the direct impacts will overwhelmingly be felt post-farm (Reardon et al., 2020), an increasing number of on-farm problems have been witnessed

in various countries. For example, in northwest India, wheat and pulse harvesting was disrupted because of non-availability of migrant labor (Dev, 2020). In Ethiopia, vegetable farmers suffered not only from income loss due to overstocked products but also from a shortage of important inputs. This served to lower farmer income and reduces production intentions (Tamru et al., 2020).

The COVID-19 pandemic poses a potential threat to agricultural production via multiple channels, e.g., reduced/altered demand, reduced access to inputs and credit, logistical issues, etc. Disruptions in the factors of production ultimately result in a decline in agricultural output and potential food deficits particularly of high-value, perishable commodities, within affected areas, if not compensated by an increase in food imports (FAO 2021b).

As a major effect of COVID-19, the global food price has linearly increased from February 2020. According to the FAO Food Price Index (FFPI), the international price of food commodities reached the highest level of 97.19 points in September 2020 (FAO, 2020). Millions of African smallholder farmers who export their crops have lost access to global markets as air freight operations are cancelled and borders restricted. The main cocoa harvest in West Africa – providing 60 percent of the world’s cocoa – was completed by the time local lockdowns were applied. However, export restrictions, demand and price reductions could lead up to a lost value of up to USD 2 billion and affect 2 million farmers in Ghana and Côte d’Ivoire (Langyintuo, A.,2020).

The disruption of supply chains is also affecting the flow of agricultural inputs such as seeds, fertilizers and insecticides. For instance, in the Chinese province of Hubei, fertilizer and pesticide shortages due to the closure of manufacturing facilities resulted in lower yields of vegetable production (Zhou, J.-H.; Han, F.; Li, K.; Wang, Y., 2020). Due to global trade disturbance, farmers are facing the shortage of agricultural inputs like seed, fertilizer and pesticides. In many countries, movement restrictions are being imposed during critical times in the agricultural season, reducing access to inputs, labor and farmlands when most needed.

Regarding the high rate of transmission of COVID-19, workers health and labor shortage have been major issue in agricultural industry. Workers in low- and middle-income countries lack proper health services and social protection and due to little saving or no saving, many informal workers in agriculture are obligate to work despite the self-isolation protocol during COVID-19 pandemic. Hence, these workers are at high risk of corona virus. Most of the farm producers are facing the manpower shortage.

Travel ban have made the shortage of seasonal and informal farm workers. There is rapid increase in employment losses around the world. International Labour Organization (ILO) estimated that COVID-19 has affected the 81% (2.7 billion workers) global work force due to full or partial closure of the work place.

As a result, the land area cultivated, the harvesting capacity, and the transport of goods to processing facilities and markets have been severely impacted in many countries. Globally, farmers are experiencing reduced access to inputs, labor and farmlands resulting in production loss, lower household income and nutrition declines.

The long-term effects of COVID-19 on agriculture are dependent on factors such as the duration of COVID-19, economic development, changes in consumer behavior, political measures, and the short-term resilience of farms. (Meixner, O.; Quehl, H.E.; Pöchtrager, S.; Haas, R. 2022)

Despite the immediate challenges posed by the pandemic to maintaining a well-functioning food system, post-crisis recovery will require accelerated transformations in the agriculture sector to build its resilience to all sorts of systemic shocks, including climate change, food crises and health emergencies such as COVID-19.

2.3 Reviews on Previous Studies

Many studies of applied and theoretical research concerning challenges of farmers on crop production and practices during COVID-19 Pandemic. There are many research papers about impact of COVID-19 Pandemic on Agriculture Sector.

Emma C. Stephensa, Guillaume Martinb , Mark van Wijkc , Jagadish Timsinad, and Val Snow (2020) examined the immediate impact of the first waves of the global COVID-19 pandemic on agricultural systems worldwide. This study showed rapidly collect information, analysis and perspectives from as many regions as possible on the initial impacts of the pandemic on global agricultural systems. As a special issue, there were teams in eight global regions to write papers summarizing the impacts of the first waves of the pandemic in their area. The results showed that COVID-19 and global pandemic mitigation measures have had significant and sometimes unexpected impacts on agricultural systems via shocks to agricultural labor markets, trade and value chains. And then, due to the high degree of overlap between low income populations and subsistence agricultural production in many regions, significant shocks to food security for these populations were documented, and also the high potential for long term lost

in terms of human, natural, institutional and economic capital. Evidence of agricultural system resilience capacities provided some hopeful perspectives, but also highlights the need to boost these capacities across a wider cross section of agricultural systems and encourage agri-food systems transformation to prepare for more challenges ahead. Furthermore, this study improved the collective understanding of the many short- and long-term challenges posed by COVID-19 by broad contributions from the agricultural systems research community.

Pavan Kumar, S.S. Singh, A.K. Pandey, Ram Kumar Singh, Prashant Kumar Srivastava, Manoj Kumar, Shantanu Kumar Dubey, Uma Sah, Rajiv Nandan, Susheel Kumar Singh, Priyanshi Agrawal, Akanksha Kushwaha, Meenu Rani, Jayanta Kumar Biswas, Martin Drews (2020) identified and described the various multi-level implications of the COVID-19 lockdown and related effects on agricultural systems in the state of Uttar Pradesh, India, taking into account the associated emergency responses of the national and state governments in India. Comparing India's experience with similar emergency responses in developed countries in, for example, Europe, it was evident that many of the consequences reported here are characteristic of developing countries with an agro-based economy and an agricultural sector that was less industrialized. There was a brief overview of the concept used for data collection, including a telephone survey carried out among farmers in Uttar Pradesh. This paper highlighted: the lockdown in response to COVID-19 has seriously disrupted Indian farms. Farms have been less profitable amid rising food prices, putting pressure on food security. A lack of migrant labor has led to a loss of produce and affected the spring harvest. Experience and relief packages may help to develop Indian agriculture sustainably. This paper argued that the lessons learned from the COVID-19 crisis could fuel the development of new sustainable agro-policies and decision-making in response not only to future pandemics but also to the sustainable development of agricultural systems in India and in developing countries in general.

Duncan Boughton, Joseph Goeb, Isabel Lambrecht, Derek Headey, Hiroyuki Takeshima, Kristi Mahrt, Ian Masias, Sophie Goudet, Catherine Ragasa, Mywish K. Maredia, Bart Minten, and Xinshen Diao (2021) studied impacts of COVID-19 on agricultural production and food systems in late transforming Southeast Asia: The case of Myanmar. The finding showed considerable resilience in the agri-food system in response to the initial disruptions, persistent financial stress for a high proportion of households and agri-food system businesses which indicate that the road to a full

recovery will take time. The study also highlighted important lessons for strengthening the resilience of the agri-food system, and the livelihoods of households that depend on it. Furthermore, these lessons strengthened the resilience of Myanmar's agri-food system in the face of any similar future event.

Currently, there are no other studies that have integrated on the challenges and practices of farmers during Covid-19 pandemic especially in Nay Pyi Taw. This pilot study aims to assess the impact of COVID-19 on farmers in terms of disruptions in their agriculture income and costs in Nay Pyi Taw and to analyze the challenges of farmers through a survey and interview about their experiences during COVID-19 Pandemic. There may be changes in farming procedures and challenges in working on their farms due to ongoing climate-related environmental issues or issues specific to the pandemic, such as distributing products, utilizing financial and other resources of support. etc. Therefore, this study will examine the effect of COVID-19 on farmers in Nay Pyi Taw and their challenges on farm operation including labors, transport and distribution of goods, markets and other influencing factors. This study will help for policy makers and researchers as a reference for their respective works concerning with the challenges faced by farmers due to COVID-19 Pandemic in Nay Pyi Taw.

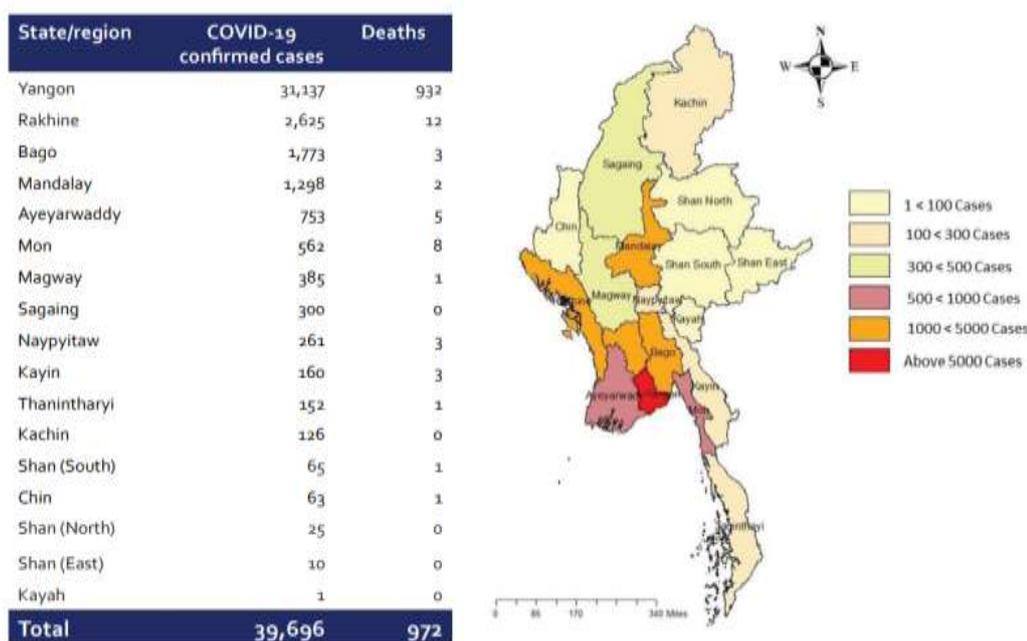
CHAPTER III

OVERVIEW ON FARMERS IN NAY PYI TAW

3.1 Overview of COVID-19 Pandemic and Agricultural Sector in Myanmar

Myanmar has experienced multiple crises including the multiple waves of Pandemic. On 23rd March 2020, Myanmar registered its first two cases of COVID-19, in two citizens of Myanmar returning from the United States and the United Kingdom. By early August, Myanmar had a total of only 360 confirmed cases and six deaths due to COVID-19. However, the number of new daily reported cases rose significantly from mid-August. This rise was due to an increase in locally transmitted cases from five per day in mid-August to 1,137 per day in mid-October. As of October 21, there were 39,696 confirmed cases and 972 deaths (Figure 3.1). Almost all confirmed cases (99%) have been due to local transmission; 1% of cases were in returnees to Myanmar after travel abroad (WHO, 2020).

Figure (3.1) Numbers of COVID-19 Cases in Myanmar by Region, October 21st 2020



Source: Ministry of Health and Sports, Myanmar

According to WHO report, Myanmar has the third highest number of cases across ASEAN countries after Indonesia and the Philippines. Moreover, from 3 January 2020 to 11 November 2022, there have been 632,522 confirmed cases of COVID-19 with 19,486 deaths, reported to WHO. (WHO COVID-19 dashboard)

Myanmar is the second largest country in Southeast Asia in terms of land area at 676,578 square kilometers, and the fifth largest country in the region in terms of ethnically diverse population with a size of 53 million as of 2019, estimated to grow to 54.7 million by 2024. The country is divided into 14 states and regions and Nay Pyi Taw, with 135 different ethnic groups. (Agriculture Guide, 2020).

There are three main agro-ecological zones: Delta Zone, Central Dry Zone (CDZ) and the Hilly Zone. In the Delta zone, with a population of about 22 million, farmers are primarily engaged in rice production, particularly during the monsoon. The CDZ, with a population of about 19 million, lies in a monsoonal shadow receiving 600 mm rainfall annually. Farmers are primarily located along the main river valleys, dependent on both rain fed and irrigated agriculture producing rice, oilseeds, beans and pulses, the latter fed by both surface storage and artisanal water supply. Agriculture can serve as effective backbone for Myanmar's development. The country has four key competitive advantages for agriculture such as abundant land, water, and labor resources; and proximity to major future food markets. Myanmar's water resources are considerable and are centered on four major rivers and their related systems. (World Bank, 2021)

Under the different topography, climate and soil types, more than 61 types of crops are usually cultivated in Myanmar as categorized in table (3.1).

Table (3.1) Types of Crops Cultivated in Myanmar

| No. | Crop Categories | Name of Crops |
|-----|---------------------|--|
| 1. | Cereals | paddy, wheat, maize, sorghum |
| 2. | Oilseeds | groundnut, sesame, sunflower, niger, mustard |
| 3. | Pulses | 17 kinds of pulses including black gram, green gram, pigeon pea, soy bean, pelun, kidney bean, butter bean, chick pea, chick pea, garden pea, sultapya |
| 4. | Industrial Crops | cotton, sugarcane, jute, rubber, coffee, mulberry, oil-palm |
| 5. | Kitchen Crops | chilly, onion, garlic, ginger, turmeric, potato |
| 6. | Fruits & Vegetables | mango, banana, citrus, pears, durin, mangosteen, pineapple, rambutan and others tropical and temprate vegetables |

Source: Myanmar Agriculture Sector in Brief (2019)

Approximately 72% of the population lives in rural areas where 85% of poverty is concentrated, and 24% of rural households are considered vulnerable. According to the Integrated Household Living Conditions Survey (IHLCS), 56% of employment is generated by the agriculture sector, and 54.2% of those engaged in agriculture, hunting and forestry fall below the general poverty line. With a per capita income of United States Dollars (USD 6) 1,205, Myanmar is ranked 165th out of 180 numbers of listed countries in the world. The agriculture sector is a high priority for the Government of Myanmar. Agriculture contributes 30 percent of national GDP and about 68 percent of rural population relies on crop husbandry and livestock for their livelihoods and incomes. (World Bank, 2020)

Myanmar has a long tradition of rice production. In the years immediately prior to World War II it was the largest rice-producing nation in the world, and it continues to be one of the ten largest rice-producing countries in terms of total yield (IRRI, 2002). Other key crops include beans and pulses, oilseeds and rubber. Given its diverse agro-climatic zones, the country also produces, sugar, maize, a wide range of fruit and vegetables (some of which are exported particularly to China), palm oil, coffee and tea. With rice being the staple food for Myanmar people, the country only exports the

surplus amount after local consumption has been met. Meanwhile, beans and pulses are consumed relatively less in the domestic market, leaving a large volume for exports. Myanmar is the largest beans and pulses exporter in Asia and ranks second after Canada in the world.

According to the World Bank report, in Myanmar, forty-eight (48.3%) presents of laborers are working in Agricultural Sector. labor is a principal input into agricultural production, this helps the country maintain low production costs. Agricultural wages increased by 12 percent in nominal terms between the monsoon of 2021 and 2022. However, prices of goods and services increased more rapidly over this period (IFPRI, Nov 2022).

The Ministry of Agriculture, Livestock and Irrigation (MOALI) is leading role in Agriculture sector that duties are plantation of crops, production of crops, and consumption of crops and exporting of crops. Government sector laid down policy and strategic crops mainly rice and others (Chit Su Win, 2018).

Most of the developing countries have been attempting to provide agricultural credit to farmers for increasing productivity of farm's performance that will be affected to economy growth of the country. Across Southeast Asia, agricultural growth has historically been a major driver of overall economic growth and poverty reduction (Christiansen, Demery, and Kuhl 2011).

In agricultural sector, providing loans to farmers for crop production as monsoon and winter loans primarily by the Myanmar Agricultural Development Bank (MADB), other financial institution and NGOs.

The MADB provides financing for a limited of crops and does not finance the production of fruits and vegetables. MADB offers two types of loans: Seasonal crop production loans (SCPL), typically for working capital, and Term loans (TL), typically for agricultural machinery and special projects. Approximately 98 percent of MADB loans contracted were SCPLs and 85 percent were taken out for monsoon season farming. MADB's lending operations are conducted locally and most are based on collective guarantees instead of being backed by collateral. Approximately 99.9 percent of loans are dispersed using the group lending method. Farmers form groups of 5-10 people and collectively commit to pay back the loan (Nang Sam Hom, 2019).

The MADB provides agricultural loans to farmers on a maximum amount per acres basis, up to a maximum of 10 acres, and farmers supervise to take the maximum loan amount. This maximum amount per acre has improved significantly over the last few years from as low as MMK 8,000 per acre in 2009, to a current level of MMK 150,000 per acre for paddy, MMK 100,000 per acre for sugar cane and MMK 50,000 per acre for other crops. Three quarters (75%) of farmers which had taken out at least one loan from MADB during the last two growing seasons (dry season and monsoon). (MADB's agriculture loan procedure Dec 2017).

Recognizing the economic challenge posed by COVID-19, the Myanmar government developed a Comprehensive Economic Recovery Plan (CERP). Due to the government's very limited fiscal resources, the plan was modest in financial terms, at approximately \$2 billion, with a focus on supporting shuttered industries such as garment manufacturing.

Moreover, under CERP, loans/stimulus packages provided to farmers through the MADB which is currently the largest financial institution serving the rural areas and financing agriculture activities. The size of the land that a farmer has the right to use for agricultural activities determines the loan amount granted by MADB to each farmer. Each farmer can get a loan for a maximum of 10 acres. Normally, a farmer receives one hundred and fifty thousand kyats per acre. In 2019-2020, MADB provided extra amount fifty thousand kyats for farmers. So, a farmer totally received two hundred thousand kyats per care. The current loan amounts used by MADB do not cover the total cost of farming.

According to the Ministry of Planning, Finance and Industry, an agricultural loan of Ks 1,747 billion was provided for farmers in 2019-2020 fiscal years; an increase of Ks 63 billion more compared to last year, MADB loaned Ks, 1684 billion in 2018-2019 FY. Normally, the interest rate of MADB is eight percent. But, on 1st April, 2020, as COVID relief plan, the interest rate was decreased into five percent and the amount of loan was the same with the previous years. In the same way, on 4th May 2020, the interest rate for other loans such as JICA Two Step loan (from 6.5% to 5%) and MEB Two Step loans (from 8% to 6.5) were decreased.

According to table (3.2), agricultural loans issued from MADB has been increased year after year since the financial year 2017– 2018. Most of the portion of agricultural loans has gone to paddy cultivation. In the financial year 2019- 2020, MADB provided not only the seasonal loan but also COVID-19 Special Relief Loan

for paddy cultivation. In this financial year, for paddy cultivation, the amount for the seasonal loan was 1,262,965.50 Kyat Millions and the amount for COVID-19 Special Relief Loan was 479,204.60 Kyat Millions. In the financial year 2019-2020, except for the loan amount for cultivation of fibres, MADB increased the amount of loans for others kinds of crops. Moreover, in this financial year, MADB planned to lend 1,888.90 Kyat Millions for the condiments which were not provided loans in the previous years.

Table (3.2) Agricultural Loans by Crop (Absolute Values in Kyat Millions)

| Crop | 2017-2018 | 2018-2019 | 2019-2020 |
|--------------------------------------|---------------------|---------------------|---------------------|
| Grand Total | 1,707,708.95 | 1,747,472.90 | 2,235,345.70 |
| (1) Cereals | 1,461,371.60 | 1,289,901.70 | 1,755,351.80 |
| Paddy (Seasonal Loan) | 1,457,545.65 | 1,278,750.90 | 1,262,965.50 |
| Paddy (COVID-19 Special Relief Loan) | - | - | 479,204.60 |
| Maize | 3,825.95 | 11,150.80 | 13,181.70 |
| (2) Oilseeds | 95,042.15 | 191,310.20 | 201,076.30 |
| (3) Condiments | - | - | 1,888.90 |
| (4) Fibres | 3,196.15 | 5,736.70 | 5,475.50 |
| (5) Others | 148,099.05 | 260,524.30 | 271,553.20 |

Source: Myanmar Statistical Year Book (2021)

Agricultural Credit is the amount of investment funds made available for agricultural production from resources outside the farm sector. Myanmar has one of the least developed financial systems in the world and poor access to credit is widely believed to be a major constraint to investment and productivity improvements in agriculture. Myanmar has made much progress through the recent expansion of agricultural credit under the Myanmar Agricultural Development Bank (MADB) and the Myanmar Livestock and Fisheries Development Bank (MLFDB) which offer subsidized credit rates to farmers. Lacking documentation of land use rights, access to capital has remained limited and is a commonly identified constraint to improved production by farmers. As a result of limited capital, input use remains constrained as farmers cannot afford the up-front costs of fertilizer and other inputs. (Khet Khet Myat Nway, 2018).

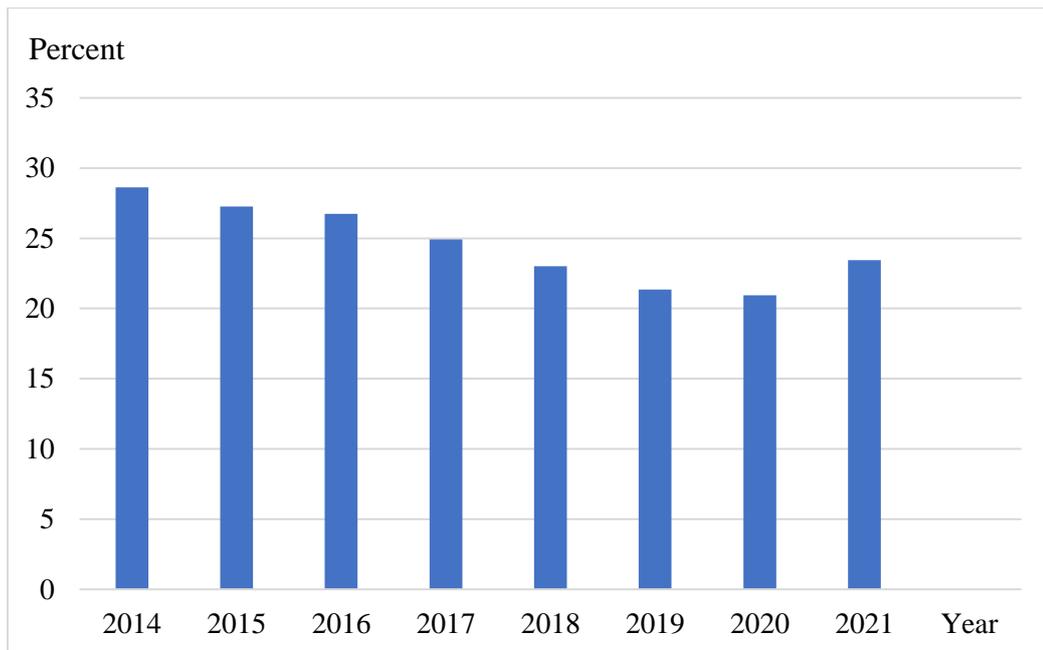
Nowadays, the rice farming system of farmers in some parts of Upper Myanmar, particularly where irrigation was available and farmers in lower Myanmar traditionally practiced some double cropping. As a crop rotation, rice is well suited to flooded fields, as long as the plants are not submerged for more than a few days. In some areas during the 1990s, the Government promoted double cropping of rice during the monsoon season as a way of boosting production.

For more than 20 years, farmers have been strongly encouraged by the Government to intensify rice cropping through a summer rice crop. Recent policy changes have signaled opportunities to diversify production after harvesting the monsoon crop. Pulses, oilseeds and vegetables are now widely grown in rain-fed areas and where summer irrigation is insufficient for a second paddy crop. In irrigated areas, early maturing pulses were sometimes grown between the monsoon and the summer seasons. (Chit Su Win, 2018)

Farmers were requested to grow rice in the summer season wherever irrigation facilities are provided. But the record showed that despite higher yields the area under summer rice have not increased notably in the past 10–15 years. Between FY2000 and FY2010, the total rice-cropped area increased by 1.71 million hectares, of which 91% was accounted for by monsoon rice. In this period, the summer rice area only increased from 1.1 million hectares to 1.25 million hectares, while the monsoon rice area grew from 5.2 million hectares to 6.76 million hectares. On the other hand, the yield rate of summer rice grew faster because almost 100% of this rice was planted with high-yielding varieties, while the coverage of these varieties was only 60% for monsoon rice over this period (Wong and Wai 2013).

The agriculture sector in Myanmar has been affected by export reductions, reduced trading volumes due to closure of restaurants and food services, transport and market access restrictions, workers' and consumers' movement limitations, suspended development projects, reduced extension activities and more difficult access to microfinance, all caused by COVID-19 (UN Myanmar, October 2020).

Figure (3.2) Share of the Agriculture Sector as Percent of GDP



Source: https://www.theglobaleconomy.com/BurmaMyanmar/share_of_agriculture/

Gross Domestic Product (GDP) is the sum of the market values, or prices, of all final goods and services produced in an economy during a period of time. The agricultural sector in Myanmar contributes a major share to the GDP of the country. Agriculture sector includes forestry, livestock and fishery. Figure (3.2) shows GDP share of agricultural sector in Myanmar from 2014 to 2021. The value from 2019 was 21.35 percent which was larger than the value 20.93 percent in 2020. The share of the GDP contribution from the total agriculture sector was 23.44 percent in 2021 (https://www.theglobaleconomy.com/Burma-Myanmar/share_of_agriculture).

As agriculture (including livestock rearing and fisheries) in Myanmar is dominated by smallholders, this raises concerns about the welfare of rural populations and the ability of the agricultural sector to absorb lost non-farm jobs. Different farmers' surveys conducted union-wide or in a specific region, are showing a definite impact on farming income, at least for Q2 2020, as shown below. Crop production seems to be more affected than animal production (fisheries, livestock). The largest survey (Proximity Finance) also showed growing confidence of interviewed farmers towards the end of Q2, as the epidemiological situation in Myanmar remained under control, of a rapid return to normal (43% of interviewees thought so). Yet, this result, as well as all the other surveys presented above, spoke to a context where the pandemic seemed really under control – while it is clear not the case anymore. Different reasons are

brought up by actors of the agricultural sector to explain the negative impact on production aside from lower demand, principally in agricultural export sectors (Proximity Finance, “FY20 Q4 Quarterly Report”, Yangon, July 2020).

Moreover, lack of working capital goes through the planting and harvesting season. In the Proximity Finance survey, 66% of farmers reported struggling to get by and 20% stated needing additional/emergency to sustain their working capital to go through the wet season. Even more farmers in the Delta area (76%) anticipated difficulties ensuring sufficient cash flow to meet their working capital needs and 44% expected their debt level to increase. Animal productions needing large amounts of working capital, such as poultry farming, are also cash strapped. Reduced access to farm inputs: seeds and agro-chemicals are becoming harder to get because of breakdowns in their supply chains and, for seeds, lower yields. A survey of input retailers across the country showed that nearly all of them have experienced disruption due to the crisis, and 40% reported an increase in wholesale price for their merchandises, especially seeds and fertilizers, which led also to lower sales volumes for these items. Other smaller-scale surveys confirmed similar trends (Proximity Finance, “FY20 Q4 Quarterly Report”, Yangon, July 2020).

Agricultural marketing is the main driving force for economic development and has a guiding and stimulating impact on production and distribution of agricultural produce. Marketing is the process of bringing sellers and buyers together for the purpose of exchanging title to goods and services (Kilingo and Kariuki 2001)

Access to markets has been very difficult during lockdown, as reported by 77% of agricultural commodity traders surveyed in four States and Regions. Those dealing with international trade (import/export) are also 68% to report a decline of goods movement and sales during and in the aftermath of the lock down period (Mercy Corps, 2020). This is compounded by uncertainty on the demand for agricultural products linked to the income impact of the crisis on households, especially in urban areas. As a result, agricultural market actors are shifting their stocking practice and reduce their trading volume. (Proximity Finance, “FY20 Q4 Quarterly Report”, Yangon, July 2020)

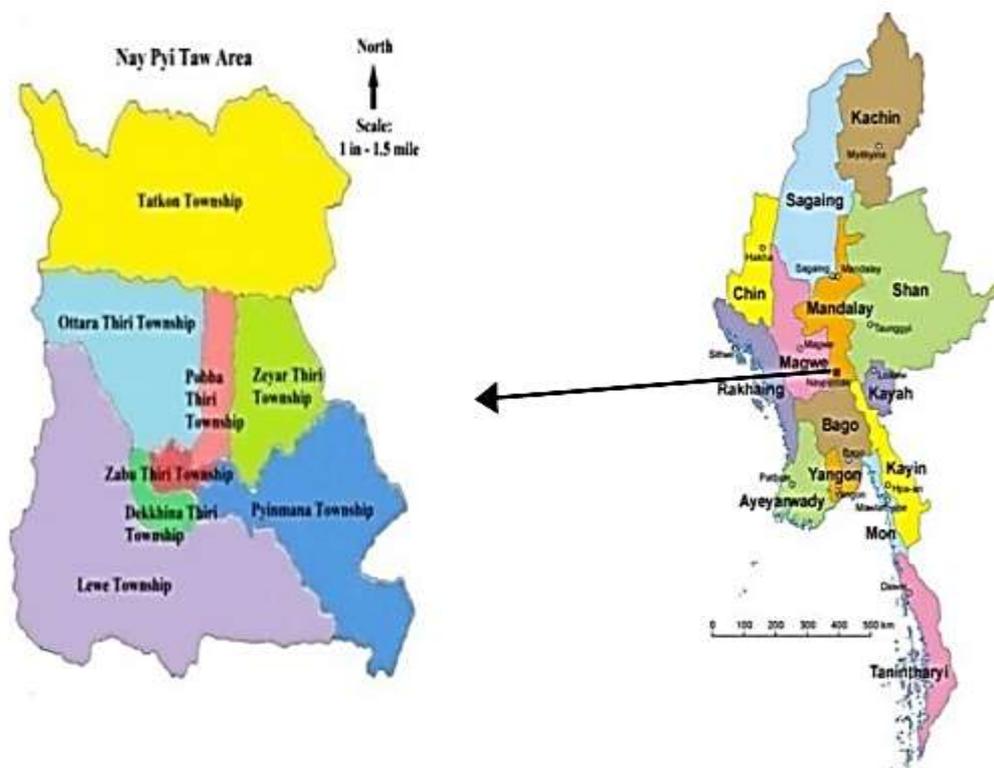
Myanmar’s agriculture sector is full of potential, but faces many challenges including a lack of infrastructure, investment and market access. There were efforts to bring the potential to its full result, but many of these efforts have been hindered by the COVID-19 pandemic and the unstable political climate in 2021. the pandemic and political situations affected the agricultural market and the economy as a whole causing

disruption in the banking and transportation system as well as access to market, loans, and agri-inputs. (MAN,2021)

3.2 General Description of Nay Pyi Taw

Nay Pyi Taw is the administrative capital of the Republic of the Union of Myanmar. It stands at 19° 45' North latitude and 96° 6' East longitude and placed at 400 ft elevation above the sea level. Figure (3.4) shows the location of Nay Pyi Taw which located between the Bago Yoma and Shan Yoma Mountain ranges. It is situated in central Myanmar and it is 376 km from Yangon and 274 km from Mandalay, being easily accessible from all parts of the Union. The climate of Nay Pyi Taw is tropical. In winter, there is much less rainfall than in summer. The average temperature was 26.8° C and the average precipitation was 1,167 mm.

Figure (3.3) Location Map of Nay Pyi Taw



Source: Myanmar National Land Cover Portal

Nay Pyi Taw comprises four districts and eight administrative townships which were shown in table (3.3). There were about 1,558,367 populations in these townships of Nay Pyi Taw (Department of population, 2014).

Table (3.3) Districts and Townships in Nay Pyi Taw

| No. | District | Township |
|-----|----------------------|------------------------|
| 1. | Zeyarthiri District | Zeyarthiri Township |
| 2. | | Pobbathiri Township |
| 3. | Ottarathiri District | Ottarathiri Township |
| 4. | | Tatkon Township |
| 5. | Pyinmana District | Pyinmana Township |
| 6. | | Zabuthiri Township |
| 7. | Lewe District | Lewe Township |
| 8. | | Dekkhinathiri Township |

Source: Department of population, 2014

3.2.1 Land Utilization and Farmers in Nay Pyi Taw

According to Myanmar Agricultural Statistics (2012-13 ~2020-2021), the area of Nay Pyi Taw Union Territory is 7067.50 sq.km and population density is 184.00 per sq. km. Net area sown is 371,591 acres and occupied area is 372,446 acres. Cultivable waste land area is 2806 acres.

Total growing acres and total farmers in each township and districts can be seen in the following table (3.4). In this table, the largest numbers of farmers are from Tatkon, Pyinmana and Lewe townships which are the main areas of growing crops.

Table (3.4) Sown Acreage and Number of Farmers (by Areas)

| No. | Township | Total Sown Area (acres) | Number of Farmers (persons) |
|------------|-----------------------------|------------------------------------|--|
| 1. | Tatkon | 150,651 | 39,331 |
| 2. | Ottarathiri | 17,777 | 3,564 |
| | Ottarathiri District | 168,428 | 42,895 |
| 1. | Zayarthiri | 24,236 | 7,476 |
| 2. | Pobbathiri | 25,125 | 2,960 |
| | Zayarthiri District | 49,361 | 10,436 |
| 1. | Pyinmana | 28,304 | 10,384 |
| 2. | Zabuthiri | 2,304 | 556 |
| | Pyinmana District | 30,608 | 10,940 |
| 1. | Lewe | 122,127 | 28,414 |
| 2. | Dekkhinathiri | 11,448 | 3,445 |
| | Lewe District | 133,575 | 31,859 |
| | Total | 381,927 | 96,130 |

Source: Nay Pyi Taw District Agriculture Department (2023)

3.2.2 Main Crops and Crop Production in Nay Pyi Taw

The common crops grown in Nay Pyi Taw are rain-fed lowland rice, irrigated rice, maize, green gram, black bean, pigeon pea, sesame, cotton, sugarcane, sunflower, groundnut, and other vegetables like cauliflower, chilly and onion. Most of the farmers in the study area grow rice and other crops under irrigation condition. However, those farmers who practice irrigation for rice also plant groundnuts and other cash crops under rain-fed condition. Such cash crops including Pigeon Pea and Sesame are planted under rain-fed condition and profitability of pulses and oil crops are usually higher than that of rice.

Table (3.5) describes the numbers of farmers who grew the main crops from 2018 to 2021 in Nay Pyi Taw. The numbers of farmers who grew paddy (both Monsoon and Summer), maize, green gram, pigeon pea, sugarcane and cotton were decreased distinctly in 2020-2021. Many more workers migrated to neighboring countries in the last three years. Major construction in the new capital also provided wage-earning opportunities of which the landless or land-poor could take advantage.

The numbers of farmers who grew sesame were 17,782 in 2018-2019 and 17,050 in 2019-2020. But in 2020-2021, the numbers of farmers who grew sesame increased to 19,659 and the number of farmers who grew black bean were also increased to 14,652 comparing with the previous years.

Table (3.5) Main Crops and Number of Farmers in Nay Pyi Taw

| No. | Name of Crops | Number of farmers (Yearly) | | |
|-----|-----------------|----------------------------|-----------|-----------|
| | | 2018-2019 | 2019-2020 | 2020-2021 |
| 1. | Paddy (Monsoon) | 53,935 | 60,030 | 53,842 |
| 2. | Paddy (Summer) | 10,523 | 6,037 | 4,117 |
| 3. | Maize | 5,026 | 4,587 | 4,121 |
| 4. | Groundnut | 11,606 | 11,934 | 11,845 |
| 5. | Sesame | 17,782 | 17,050 | 19,659 |
| 6. | Sunflower | 349 | 256 | 259 |
| 7. | Green gram | 16,249 | 16,260 | 10,310 |
| 8. | Pigeon pea | 217 | 255 | 163 |
| 9. | Black bean | 12,030 | 12,931 | 14,652 |
| 10. | Sugarcane | 3,525 | 3,512 | 3,318 |
| 11. | Cotton | 4,528 | 4,322 | 3,752 |

Source: Nay Pyi Taw District Agriculture Department (2023)

The following table (3.6) indicates sown acreage, harvested acreage and yield of crops in Nay Pyi Taw from 2018 to 2021. By comparing data from this table yearly, total sown area of Monsoon Paddy in 2018-2019 was 171,514 acres and increased 455 acres in 2019-2020 but decreased 199 acres in 2020-2021. In the same way, total yield in 2018-2019 was 84.37 percent which increased 84.79 percent in 2019-2020 and slightly decreased 84.25 in 2020-2021. Total sown area of Summer Paddy in 2018-2019 was 31,900 acres which sharply reduced 18,928 acres in 2019-2020 and 14,860 acres in 2020-2021. Cultivation of Summer Paddy depends on availability of irrigated water. In 2020-2021, there was difficulty to get enough irrigated water as rain fall decreased in some areas of Nay Pyi Taw. Total sown area of other crops like Maize, Sunflower, Sugar cane and cotton gradually declined from 2018 to 2021 but yield of crops were not quite different. Then, total sown area and yield of groundnut, pigeon pea and black bean were further increased in 2019-2020 but slightly down in 2020-2021.

There are many reasons of decreasing production of crops: local lock down and restriction of COVID-19 first wave (April 2020) and second wave (September 2020) shock; increasing prices of agricultural inputs such as fertilizers, hiring machinery, and hiring labor; sickness of farmers and their families, etc.

Table (3.6) Sown Acreage, Harvested Acreage and Yield of Crops (2018 -2021)

| No. | Crop | 2018-2019 | | | 2019-2020 | | | 2020-2021 | | |
|-----|----------------------|-------------------|------------------------|----------------------|-------------------|------------------------|----------------------|-------------------|------------------------|----------------------|
| | | Sown Area (acres) | Harvested Area (acres) | Yield per acre (tin) | Sown Area (acres) | Harvested Area (acres) | Yield per acre (tin) | Sown Area (acres) | Harvested Area (acres) | Yield per acre (tin) |
| 1. | Paddy (Monsoon) | 171,514 | 171,075 | 84.37 | 171,969 | 171,863 | 84.79 | 171,315 | 166,071 | 84.25 |
| 2. | Paddy (Summer) | 31,900 | 31,900 | 99.66 | 18,928 | 18,928 | 105.41 | 14,860 | 14,860 | 98.04 |
| 3. | Maize | 18,095 | 18,077 | 67.06 | 16,517 | 16,517 | 68.43 | 14,837 | 14,837 | 67.67 |
| 4. | Groundnut | 51,069 | 51,069 | 50.81 | 52,031 | 52,031 | 51.49 | 51,646 | 51,631 | 51.25 |
| 5. | Sesame | 77,532 | 77,324 | 8.74 | 74,339 | 74,337 | 8.79 | 85,716 | 85,523 | 8.74 |
| 6. | Sunflower | 1,522 | 1522 | 24.43 | 1,119 | 1,119 | 25.25 | 1,129 | 1,129 | 24.44 |
| 7. | Green gram | 70,846 | 70,846 | 14.64 | 70,918 | 70,918 | 14.32 | 44,953 | 44,921 | 14.37 |
| 8. | Pigeon pea (Monsoon) | 949 | 949 | 14.27 | 1,113 | 1,113 | 14.31 | 713 | 713 | 14.10 |
| 9. | Black bean (Winter) | 52,452 | 52,452 | 17.45 | 56,383 | 56,383 | 17.89 | 63,881 | 63,881 | 17.89 |
| 10. | Sugarcane (Winter) | 13,231 | 13,231 | 25.83 | 12,921 | 12,921 | 26.50 | 11,670 | 11,670 | 27.19 |
| 11. | Cotton (Monsoon) | 9,460 | 9,460 | 550.20 | 9,412 | 9,412 | 560.27 | 9,373 | 9,373 | 565.17 |

Source: Nay Pyi Taw District Agriculture Department (2023)

3.2.3 Agricultural Inputs in Nay Pyi Taw

Increasing availability and access to better quality fertilizer, agrochemicals, seeds, machinery and other inputs is an important driver in increasing the productivity and quality of Myanmar's agricultural products. Since the farmers normally convince

the importance of improved seed to increase the productivity of the crops, the improved seeds are disseminated to the farmers through extension agencies and also farmers to farmers. In order to achieve the target yield, investment for fertilizers, sufficient irrigation water and development of seed program are the factors for increased productivity. In Nay Pyi Taw, there were three sources of seed: own reserved seed, buying seeds from neighboring farmers, and buying from other areas availability.

The most important factors of production to achieve the target yield are the efficient utilization of the fertilizers and improved varieties. With the limited credit and low investment to the farmers, utilization of fertilizer in even major crops is minimal amount far below the recommended dose. In Nay Pyi Taw, farmers utilized the different kinds of fertilizers (urea, NPK compound, phosphorous, special potash and foliar) depending on crops and time of applications).

The Myanmar government has allowed the private sector to import and distribute fertilizers. Despite the increases in prices, few private companies were willing to import and distribute fertilizer because of uncertain domestic demand and unclear importing procedures. Therefore, the fertilizer price was totally free market price based on international fertilizer price, transportation cost and exchange rate between currency of Myanmar and trade partners after 2003 (Hnin Yu Lwin et al. 2013).

Table (3.7) Prices of Fertilizer (2020-2022) in Nay Pyi Taw

| No. | Fertilizer (NPK ratio) | Pack (kg) | May 2020 (MMK) | November 2021 (MMK) | March 2022 (MMK) |
|-----|---------------------------|--------------|-------------------|---------------------------|------------------------|
| 1. | (15:15:15+8.3S+TE) | 50 | 37,500 | 70,000 | 80,000 |
| 2. | (13:13:21+6.9S+TE) | 50 | 38,500 | 71,000 | 81,000 |
| 3. | (16:16:8+9.1S) | 50 | 35,500 | 64,000 | 72,000 |
| 4. | (18:12:6+12.9S) | 50 | 32,000 | 58,000 | 65,000 |
| 5. | (18:4:5+15S) | 50 | 25,000 | 52,000 | 59,000 |
| 6. | (16:8:8+12S) | 50 | 29,000 | 54,500 | 63,000 |
| 7. | (25:7:7+7.5S) | 50 | 32,500 | 65,500 | 70,000 |
| 8. | (12:24:12+5.1S) | 50 | 39,000 | 71,500 | 81,000 |

Source: Local agents from fertilizer company

The price of different kinds fertilizer can be seen in table (3.7). According to this, the fertilizer prices were sharply increased year by year. In May 2020, the price of 50 kg fertilizer bag (NPK ratio 15:15:15+8.3S+TE) was 37,500 Kyats but the price increased to 70,000 Kyats in November ,2021 and 80,000 Kyats in March 2022 respectively. NPK 15:15:15 fertilizer contains 15% nitrogen, 15% phosphorus and 15% potassium.

In the same way, price of fertilizer bags which contain different fertilizer ratio were also increased. For example, the price of a 50 kg fertilizer bag (NPK ratio 13:13:21+6.9S+TE) increased from 38,500 MMK (May 2020) to 71,000 MMK (November 2021). In March 2022, the price reached 80,000 MMK per bag. Most of farmers also use herbicide and fungicide to control pest, disease and weed in crop production.

Technological inputs must be applied wisely and economically to bring about the desired increased outputs of production. Mechanization is one of the critical inputs of production followed by preservation of food crops. Agricultural Mechanization Department (AMD) in Nay Pyi Taw distributed the types of agricultural machineries such as Leyar-16, Leyar-22, Dong-phan, Thai-buffalo and AMR 994. AMD also provides farm mechanization services for land preparation, transplanting, harvesting, and threshing in paddy cultivation. Besides agricultural mechanization department, there are companies and sale centers that sell agricultural machines in Nay Pyi Taw. (Myint Myat Moe, 2012)

Water resource is one of the main inputs for agriculture sector. In Nay Pyi Taw, there are totally 12 dams, 12 weirs and 8 reservoirs covering the beneficial area of 75,433 acres and also groundwater facilities of 40 shallow tube wells and 170 deep tube wells covering the beneficial area of 936 hectares. (IWUMD,2022).

3.3 General Description of the Studied Townships and Villages

In this study, three townships: Tatkon, Pyinmana and Lewe which were the largest growing areas in Nay Pyi Taw were selected as the study area based on crop grown areas. Four villages in each township were selected to collect data for this study. So, there were totally twelve villages in three townships. The general description of each township was described in table (3.8).

Table (3.8) General Description of Tatkon, Pyinmana and Lewe Township

| Item | Tatkon | Pyinmana | Lewe |
|---------------------------|---------|----------|---------|
| Ward | 6 | 5 | 7 |
| Village Tracts | 49 | 30 | 60 |
| Villages | 176 | 144 | 261 |
| Population | 233,119 | 176,554 | 296,598 |
| Number of Households | 32,104 | 37,609 | 66,390 |
| Number of Farm Households | 39,331 | 7,659 | 27,020 |

Source: GAD (2019)

Tatkon Township is under Ottarathiri District. According to the data of GAD (2019), in Tatkon Township, there are 6 wards and 49 village tracts consisting of 176 villages. Total population is 233,119 and the number of households is 53,104. The majority of the people in the Township live in rural areas with only (19.2%) living in urban areas (Myanmar Population and Housing Census 2014). The total number of farmers is 39,331 and total sown area is 150,651 acres. In Tatkon Township, four villages: Latpankone, Nweyit, Thapyaythar and Nyaungngapin were selected. The general descriptions of selected villages are showed in table (3.9).

Table (3.9) General Description of Selected Villages in Tatkon Township

| Village | Latpankone | Nweyit | Thapyaythar | Nyaungngapin |
|-----------------------------------|------------|--------|-------------|--------------|
| Population | 1,705 | 3,142 | 449 | 898 |
| Number of Households | 70 | 700 | 32 | 180 |
| Number of Farm Households | 40 | 300 | 25 | 70 |
| Number of Cultivated Area (Acres) | 1,500 | 1,695 | 667 | 1,334 |

Source: Survey Data (2022)

Pyinmana Township is under Pyinmana District. There are 5 wards and 30 village tracts consisting of 144 villages. According to the data of GAD (2019), total population is 187,565 and the number of households is 36,450. The total growing acres is 28,304. The number of farm household is 7,659 and the total number of farmers is 10,384. In Pyinmana Township, four villages: Maezalikone Ngakaungkan, Natthayae,

and Zeephyupin were selected. The general descriptions of selected villages are mentioned in table (3.10).

Table (3.10) General Description of Selected Villages in Pyinmana Township

| Village | Maezalikone | Ngakaungkan | Natthayae | Zeephyupin |
|-----------------------------------|--------------------|--------------------|------------------|-------------------|
| Population | 676 | 439 | 1,523 | 4,754 |
| Number of Households | 140 | 107 | 495 | 863 |
| Number of Farm Households | 50 | 80 | 335 | 589 |
| Number of Cultivated Area (Acres) | 611 | 1,724 | 2,092 | 2,290 |

Source: Survey Data (2022)

Lewe Township is under Lewe District. There are 7 wards and 60 village tracts consisting of 261 villages. According to the data of GAD (2019), the total population is 296,598 and the total number of households is 66,390. The number of farm household is 27,020 and the total growing acres is 122,127. In Lewe Township, four villages: Kyunkone, Thaekawlay, Sharchaung and Yonetaw were selected. The general descriptions of selected villages are described in table (3.11).

Table (3.11) General Description of Selected Villages in Lewe Township

| Village | Kyunkone | Thaekawlay | Sharchaung | Yonetaw |
|-----------------------------------|-----------------|-------------------|-------------------|----------------|
| Population | 850 | 1,120 | 2,470 | 1,320 |
| Number of Households | 101 | 253 | 589 | 337 |
| Number of Farm Households | 50 | 40 | 250 | 81 |
| Number of Cultivated Area (acres) | 250 | 115 | 1,400 | 333 |

Source: Survey Data (2022)

CHAPTER IV

ANALYSIS ON CHALLENGES FACED BY FARMERS DURING COVID-19 PANDEMIC

This chapter presents analysis on challenges of farmers during COVID-19 Pandemic. There are four sections in this chapter. They are survey design, survey profile, demographic factors and challenges of farmers in the study area.

4.1 Survey Design

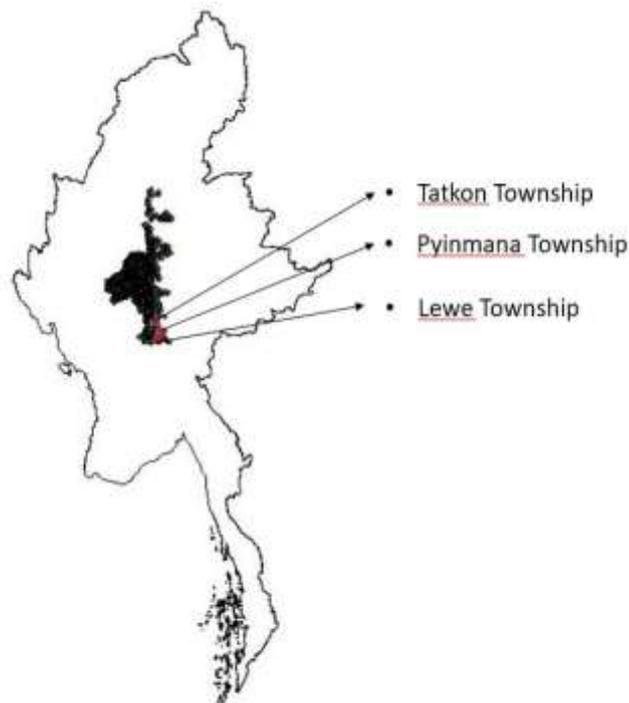
To implement the objective of the study, the study depends on the primary information from the review questionnaires. Descriptive method is used in this study. Primary Data is gathered from 305 farmers. Sample of respondents which was 23% were collected from 100 farmers out of total 435 farmers from four villages in Tatkon Township, 10% from 102 farmers out of total 1054 farmers from four villages in Pyinmana Township and 25% from 103 farmers out of total 421 farmers from four villages in Lewe Township. The questionnaire constructs of two sections which contains 19 questions. Section 1 consists of demographic information and farm related information. Section 2 consists of questions related with challenges and constraints of farmers during COVID-19 Pandemic including financial constraints, difficulties in farm operation, laborers, distribution of goods, markets and other influencing factors.

In this study, data analysis was carried out mainly based on the quantitative data of individual interviews results in combination with the qualitative information from the key informant interviews. A 5-point Likert scale: ranging from 5(strongly agree), 4(agree), 3(neutral), 2(disagree), 1(agree) is used to find out this study. After conducting the survey, the obtained data are processed and analyzed using Statistical Package for Social Science to conduct descriptive statistics such as frequency distribution, mean, standard deviation.

4.2 Survey Profile

The survey was conducted in November 2022 in selected villages of Tatkon, Pyinmana and Lewe Townships. There were 53,876 rice growing farmers in total representing about 163,678 acres in Nay Pyi Taw area (DOA, 2016). The selected areas were identified as key areas of the large production of rice and other crops. Primary data was collected through field observation, household survey, key informant interviews, and focus group discussion.

Figure (4.1) Map of Survey Townships in Nay Pyi Taw



Source: Myanmar National Land Cover Portal

Based on the appropriate literature review, this study was focused on undertaking surveys. Secondary data collection gathered from respective township agricultural offices in Nay Pyi Taw. A total 11 village tracts (four villages per each township) in three townships were selected and three hundred and five farmers were interviewed. Review and secondary research were used to analyze the constraints of farmers regarding the impact of COVID-19 Pandemic in the study area.

The study methodology includes both qualitative and quantitative data collection of Individual farmers, key respondents from Department of Agriculture in selected townships. Primary data were gathered by using structured questionnaire in the

study area. So, the survey questionnaire has two sessions which are based information on

- (i) Demographic Profile of farmers and Farm related Information
- (ii) Impact of COVID-19 Pandemic on farmers.

The survey was conducted with (305) farmers who are cultivating mostly paddy, others crops and vegetables in totally (12) villages in Tatkon, Pyinmana and Lewe Townships. Theses villages were chosen by the recommendation of respective Township Agriculture Department. Detail surveyed date and name of villages were described in table (4.1) as follows:

Table (4.1) Number of Townships, Villages and Farmers Conducted Survey

| No. | Survey Date | Township | Name of Village | Number of Respondents | |
|--------------|-------------|----------|------------------------|-----------------------|--------------------|
| 1 | 20.11.2022 | Tatkon | Lat Pan Kone | 25 | |
| 2 | | | New Yit | 26 | |
| 3 | 21.11.2022 | | Tha Pyay Thar | 21 | |
| 4 | | | Nyaung Nga Pin (North) | 28 | |
| 5 | 23.11.2022 | | Pyinmana | Mazali Kone | 23 |
| 6 | | | | Nga Kaung Kan | 29 |
| 7 | 24.11.2022 | | | Nat Thaye | 20 |
| 8 | | | | Zee Phyu Pin | 30 |
| 9 | 25.11.2022 | Lewe | | Kyun Kone | 26 |
| 10 | | | | Thae Kaw Lay | 25 |
| 11 | 26.11.2022 | | | Shar Chaung | 27 |
| 12 | | | | Yone Taw | 25 |
| Total | | | 3 Townships | 12 villages | 305 farmers |

Source: Survey data (2022)

4.3 Demographic Factors of the Respondents

Demographic characteristics of the respondents are analyzed by gender, age, educational attainment of respondent farmers and their household members, cultivation area, farm size, farming experience, income from farm and off-farm. Table (4.2) describe the demographic profile of 305 respondents as follow.

Table (4.2) Demographic Profile of Respondents

| No. | Particular | Number of Respondents | Percentage |
|------------|-------------------------|------------------------------|-------------------|
| 1. | Gender | | |
| | Male | 223 | 73.11 |
| | Female | 82 | 26.8 |
| | Total | 305 | 100.0 |
| 2. | Age | | |
| | 20-30 | 14 | 4.5 |
| | 31-40 | 44 | 14.4 |
| | 41-50 | 80 | 26.2 |
| | 51-60 | 81 | 26.5 |
| | 61-70 | 86 | 28.1 |
| | Total | 305 | 100.0 |
| 3. | Education Level | | |
| | Primary | 125 | 40.9 |
| | Middle | 103 | 33.7 |
| | High | 55 | 18.0 |
| | Graduate | 22 | 7.2 |
| | Total | 305 | 100.0 |
| 4. | Family Size | | |
| | 1-5 | 225 | 73.7 |
| | 6-10 | 76 | 24.9 |
| | 11-15 | 4 | 1.3 |
| | Total | 305 | 100.0 |
| 5. | Farm Experiences | | |
| | 1-5years | 16 | 5.2 |
| | 6-10years | 27 | 8.8 |
| | 11-15years | 28 | 9.1 |
| | 16-20years | 32 | 10.4 |
| | 21years and above | 202 | 66.2 |
| | Total | 305 | 100.0 |

Table (4.2) Demographic Profile of Respondents (Continued)

| No. | Particular | Number of Respondents | Percentage |
|------------|---|------------------------------|-------------------|
| 6. | Types of Houses | | |
| | Brick/RC | 132 | 43.2 |
| | Wood | 149 | 48.8 |
| | Hut | 24 | 7.8 |
| | Total | 305 | 100.0 |
| 7. | Monthly Income Level (mmk) | | |
| | under 100,000 | 84 | 27.54 |
| | between 100,000 and 500,000 | 133 | 43.60 |
| | between 600,000 and 1,000,000 | 49 | 16.06 |
| | Above 1,000,000 | 39 | 12.75 |
| Total | 305 | 100.0 | |
| 8. | Other Jobs | | |
| | Agent | 11 | 3.6 |
| | Part-time worker | 14 | 4.6 |
| | Selling Groceries | 19 | 6.2 |
| | Others | 60 | 19.7 |
| | None | 201 | 69.5 |
| Total | 305 | 100.0 | |
| 9. | Number of Household Items (Assets) | | |
| | Television | 279 | 91.4 |
| | Refrigerator | 128 | 41.9 |
| | Motor Cycle | 277 | 90.8 |
| | Car | 55 | 18.0 |
| | Water Pump | 128 | 41.9 |
| | Mobile Phone | 293 | 96.0 |
| | Others | 65 | 21.3 |
| Total | 305 | 100.0 | |

Source: Survey Data (2022)

In this study, gender can be classified into two groups, male and female. From data analysis, table (4.2) found that among 305 respondents, male 73.1% and female 26.8%. Male respondents took larger domain than female. So, most of farmers who are leading their farm operation were male. Male farmers dominated in the study because the male is ranked as household leaders who decide about the household economy and resources all allocations.

In this study, age is divided into five groups; consist of 20-30 years, 31-40 years, 41-50 years, 51-60 years and 61-70 years. According to the Table (4.2), among the 305 responses, the age of the respondents is divided into five categories. The age of respondents is largely involved between 41-70 years but the respondents 20-30 years old and 31-40 years old are less involved. From this study found that range of age between 61-70 is largely domain in survey as number of 86 (28.1%) of respondents and second largest range of age 51-60 years of age groups was 81 number, (26.5%) of respondents, the range of age between 41-50 years of age group was 80 number (26.2%), the age range between 31-40 years of age group was 44 number (14.4%) and (20-30) years was 14 number, (4.5%). It indicates that only older members of the groups largely involved in farming. It could be also concluded from the above that farmers in the area were in their middle and old ages.

In this study, educational level is divided into four groups; consist of primary, middle, high and graduate. The farmers were asked to show the highest level of education they have attained. Majority of the farmers (40.9%) in the study area had primary education and followed by the farmers who had middle education (33.7%). From the study found that only (18.0%) of people can attain a high school education level. Farmers who had graduated were found to present a small number of (7.2 %) in this study area.

According to survey data, the family size ranges from 1 to 15 members. The mean household size was approximately five persons (standard deviation $sd = 1.68$). The family size (1 to 5) is 73.7%, (6 to 10) is 24.9% and (11 to 15) is 1.3%. As in farming experiences of the respondents range from 1 to 21 years and above and the average farming experience of the respondent farmers was 25.90 years ranging from 2 to 50 years. From data analysis, among 305 respondents, majority of farmers (66.2%) have over 20 years in farm experience. Other 10.4% of farmers has 16 to 20 years, 9.1% has 11-15 years, 8.8% has 6 to 10 years and 5.2% of farmers has 1 to 5 years of farm experiences.

In Table (4.2), there were totally three types of houses: Brick/RC, Wooden and Hut. Among (305) respondents, 48.8% live in Wooden House, 43.2% live in Brick/RC House and the rest 7.8% live in Hut. In related with household assets, over 90% of farmers possessed mobile phone, television, and motor cycle. 41.9% of farmers had refrigerator and water pump at their home. 18% of farmers owned car and tractor.

According to the survey data, there were 133 respondents (43.6%) whose monthly income was between 100,000 and 500,000 MMK. And monthly income of 84 respondents (27.5%) was under 100,000 MMK and between 600,000 and 1,000,000 MMK included 49 respondents (16.0%). The rest of 39 respondents (12.75%) got above 1,000,000 MMK. Therefore, average monthly income of a farmer is 387,000 MMK. The average farm income was 14.29 with the standard deviation of (1.05).

Concerning with other income, 65.9% of farmers had only their farm works for all seasons. Other 19.7% had other jobs like construction workers, 6.2% of farmers had groceries shops, 4.6% of farmers had part-time worker and 3.6 % of farmers worked as agents.

Table (4.3) Farm Related Information of the Respondents

| No. | Particular | Number of Respondents | Percentage |
|-----|--------------------------|-----------------------|------------|
| 1. | Farm Size (acres) | | |
| | a. 1-10 | 259 | 84.9 |
| | b. 11-20 | 35 | 11.4 |
| | c. 21-30 | 9 | 2.9 |
| | d. 31 and above | 1 | 0.3 |
| | Total | 305 | 100.0 |
| 2. | Types of Acres | | |
| | a. Own | 299 | 98.0 |
| | b. Tenant | 6 | 2.0 |
| | Total | 305 | 100.0 |
| 3. | Types of Land | | |
| | a. Farm Land | 172 | 56.4 |
| | b. Ya Land | 17 | 5.6 |
| | c. Both Farm and Ya | 116 | 38.0 |
| | Total | 305 | 100.0 |

Table (4.3) Farm Related Information of the Respondents (Continued)

| No. | Particular | Number of Respondents | Percentage |
|------------|--|------------------------------|-------------------|
| 4. | Cropping Pattern | | |
| | a. Rice-Rice | 118 | 38.7 |
| | b. Rice-Pulses | 10 | 3.3 |
| | c. Rice-Pulses-Rice | 77 | 25.2 |
| | d. Rice and others crop | 15 | 4.9 |
| | e. Other Crops (Vegetables, Sunflower, Sesame, Cotton, etc.) | 85 | 27.9 |
| | Total | 305 | 100.0 |
| 5. | Number of farm workers (including family members) | | |
| | a. Between 1 to 5 | 146 | 47.8 |
| | b. Between 6 to 10 | 45 | 14.7 |
| | c. 11 and above | 114 | 37.4 |
| | Total | 305 | 100.0 |
| 6. | Water Resources | | |
| | a. Irrigation | 168 | 55.1 |
| | b. Rainfed | 31 | 10.2 |
| | c. Irrigation and Rain fed | 86 | 28.2 |
| | d. Irrigation and Tube Well | 3 | 1.0 |
| | e. Tube Well | 17 | 5.6 |
| | Total | 305 | 100.0 |

Source: Survey Data (2022)

Concerning with farm size, growing acres were divided into four groups; 1-10 acres, 11-20 acres, 21-30 acres and 31 and above. According to table (4.3), 84.9% of farmers were small land holders as farm size was less than 10 acres. 11.4% of farmers have between 11 and 20 acres and 2.9% of farmers possessed between 21 and 30 acres. The rest 0.3% of farmers have 31 acres and above.

In the study area, most of the farmers own their agricultural land by inheritance from their parents and grandparents. So, 98% of the respondents owned their agricultural land and only 2.0% of respondents were tenants. In related with types of

land, 56.4% of the farmers cultivated their crops in farm land, 5.6% of farmers cultivated in ya land and 38.0% of farmers had both farm and ya land.

In the study area, the main crop was rice that is grown as monsoon rice and summer rice. The rice-based cropping patterns mostly grown in the study area. In table (4.3), 38.7% of farmers cultivated both monsoon and summer rice. Monsoon rice was cultivated from July to November and summer rice was cultivated from March to June. 25.2% of farmers grew not only monsoon and summer rice but also grew pulses in winter. 27.9% of farmers did not grow rice and they grew only other crops and vegetables like sesame, cotton, maize, etc. In some villages, 3.3% of farmers cultivated only monsoon rice and pulses because irrigation water was not available. 4.9% of farmers grew monsoon rice and other crops. Therefore, pulses and other crops were grown as winter crops which was grown from November to March.

Concerning with farm workers in which family members also included, 47.8% of respondents used between 1 and 5 farm workers for their farm operation, 37.4% of respondents hired 11 and above farm workers and 14.7% of respondents used from 6 to 10 farm workers.

According to the survey data, there were five different water resources for farm operation. 55.1% of respondents grew their crops by water from irrigation, 28.2% of respondents used both irrigation and rain fed. Water from tube wells were also used by 5.6% of respondents and water from both irrigation and tube well were used to grow crops by only 1.0%.

4.4 Challenges Faced by Farmers

Farmers are dealing with one of the worst droughts in recent history especially in South East Asia Region including Myanmar and now they also face substantial challenges created by the COVID-19 pandemic. COVID 19 has affected agricultural farming in many ways including security of land tenure and access to credit, capital inputs, remittance income, and safe food and water, etc. Prior to COVID-19, Myanmar's economy was growing rapidly, but nevertheless faced many challenges, including climate change, a legacy of repressive economic policies, prolonged armed conflict and population displacement, and unpredictable trade policies of neighboring countries (especially China and India).

4.4.1 Financial Constraints of Farmers

This survey asked respondent farmers about their agricultural loans and major income sources.

Table (4.4) Financial Sources of Farmers for Farm Operation

| Particular | Mean | Standard Deviation |
|---|-------------|---------------------------|
| We use our own financial investment for growing crops. | 4.9 | 0.11 |
| We receive loans from Government for growing crops. | 4.5 | 0.60 |
| We can get loans from Microfinance Companies easily. | 3.1 | 1.20 |
| We can get loans from relatives. | 2.4 | 0.95 |
| We can get loans from neighbors /friends/other farmers. | 2.4 | 0.95 |
| We can get loans from other financial sources. | 3.1 | 1.20 |
| Overall | 3.4 | 0.83 |

Source: Survey Data (2022)

Table (4.4) showed financial sources of farmers for farm operation in the study area. According to the table (4.4), the overall mean score is 3.4. So, the respondents got loans from different kinds of financial sources for their farm operation. As the highest mean score is 4.9, all respondents have used their own financial investment for farm operation. However, the respondents also mentioned that their own financial investment was not sufficient to cover the actual cost. The second highest mean score is 4.5 for receiving loans from Government for farm operation. These respondents who got the loans from Government confirmed that its interest rate was low for them. So, the respondents also relied on loans from Government for their farm operation. The respondents also agreed that they got loans from Microfinance Companies and other financial sources such as selling or pawning their assets at local pawnshops. But they did not rely on financial sources from their relatives, and from neighbors/friends/other farmers.

According to the interviews with farmers, during COVID-19 Pandemic, limited access to credit was a major problem among farm households. Formal credit availability of farmers did not cover cost of crop production. The main input costs on farm operation are purchase of seed/seedlings, manure and fertilizer insecticides, charge for irrigation

water, hire charge for human labor and charge for hire cost of tractor and harvesting machine. The price of fertilizers, pesticides, fungicides and herbicides are rather expensive. So, although the respondents got loans from different financial resources, they still had difficulties for the cost of farm operation. There were other issues like fewer suppliers who selling on credit, higher interest rates and insufficient amount of credit. Thus, this situation limits the utilization of inputs in crop production.

4.4.2 Challenges on Farm Operation

Table (4.5) shows challenges on farm operation in which 9 statements are classified. The study found that the overall mean score is 2.7. So, generally, COVID-19 Pandemic did not greatly disrupt on farm operation. But the highest mean score is 3.6 for the statement: COVID-19 Pandemic has greatly increased the cost of our farm production, harvesting and distribution. The second highest mean score is 3.4 for the statement: COVID-19 pandemic has led to increase in the cost of inputs. According to the interview with farmers, they confirmed that input prices were getting higher especially the price of fertilizer that leads increasing cost of farm production. They also mentioned that the cost of hiring combine harvester for paddy is 35,000 MMK per acre in 2019 and this cost increased 45,000 MMK per acre in 2020. In 2021, the cost of hiring skyrocketed between 80,000 and 90,000 MMK because of increasing fuel charges.

The respondents did not agree for other statements like insufficient storage facilities and difficulty for rice milling. All the respondents had enough storage for their outputs and rice mills did not close even at harvesting time.

Table (4.5) Challenges on Farm Operation

| Particulars | Mean | Standard Deviation |
|---|-------------|---------------------------|
| The COVID-19 pandemic has brought a new threat to our rice farming and greatly affects farm operation. | 2.3 | 1.20 |
| COVID-19 pandemic is disrupting pre harvest activities in rice farming. | 2.5 | 1.08 |
| COVID-19 pandemic is disrupting post- harvest activities in rice farming. | 2.4 | 1.13 |
| COVID-19 pandemic has led to increase in the cost of inputs. | 3.4 | 1.39 |
| COVID-19 pandemic is difficult to hire the machinery. | 2.6 | 1.13 |
| COVID-19 pandemic has greatly increased the cost of our farm production, harvesting and distribution | 3.6 | 1.14 |
| Insufficient storage facilities are one of the main concerns. | 2.4 | 0.95 |
| Difficult to hire farm machinery and labor shortage cause not to harvest in time which leads to decrease rice production. | 2.7 | 1.17 |
| Some rice mill closed and cannot milling because of COVID-19 restrictions. | 2.3 | 0.96 |
| Overall | 2.7 | 1.12 |

Source: Survey Data (2022)

4.4.3 Labors for Farming

Table (4.6) indicates labors for farm operation. The study found that the overall mean score is 3.0. So, COVID-19 Pandemic did not make difficultly for availability of labors for farm operation. But the highest mean score is 3.8 for the statement: COVID-19 pandemic has increased labor charges. So, the respondents faced difficulties for increasing the cost of hiring labors especially in peak season such as land preparation, growing and harvesting. However, the respondents confirmed that they did not reduce the number of labors due to the increased wages for their needs.

The lowest main score is 2.6 in which there are no difficulties in hiring labor for farm operation during COVID-19 Pandemic. According to the interview with the respondents, the labors were used in the same village for their farm operation. If they could not get enough labors from their village, they could hire labors from near villages

easily. Sometimes, because of sickness and travel restrictions, they hired unskilled labors for their farm operation.

Table (4.6) Availability of Labors for Farm Operation

| Particulars | Mean | Standard Deviation |
|--|-------------|---------------------------|
| There are no difficulties in hiring labor for farm operation during COVID-19 Pandemic. | 2.6 | 1.28 |
| COVID-19 pandemic has led to get not enough farm labor. | 3.0 | 1.17 |
| COVID-19 pandemic has increased labor charges. | 3.8 | 0.93 |
| COVID-19 pandemic led to use/hire unskilled laborers. | 3.0 | 1.21 |
| COVID-19 pandemic led to reduce the number of labor due to the increased wages. | 2.6 | 1.10 |
| Overall | 3.0 | 1.13 |

Source: Survey Data (2022)

4.4.4 Challenges in Transportation

Concerning with challenges in transportation, table (4.7) demonstrates that the overall mean score is 2.5. So, COVID-19 Pandemic did not affect in transportation. According to the results, the highest mean score is 2.6 for the statement: COVID-19 pandemic has affected in transporting crops. The lowest main score is 2.3 in which the COVID-19 pandemic has decreased for purchasing inputs because of the poor transportation system and partial lockdown. During the interviews, the respondents said that most of the retailers from town gave delivery services to their villages for purchasing inputs like fertilizer and pesticides. They could easily order by phone what they need to purchase inputs for farm operation. Some villages had travel restrictions to enter the villages but they were allowed anyone who followed COVID-19 rules and regulations. But increasing the cost of hiring vehicles become one of the constraints for the respondents as fuel charges increased.

Table (4.7) Transportation

| Particulars | Mean | Standard Deviation |
|--|-------------|---------------------------|
| The COVID-19 pandemic has decreased for purchasing inputs because of the poor transportation system and partial lockdown | 2.3 | 1.15 |
| COVID-19 pandemic has affected in transporting crops. | 2.6 | 1.03 |
| COVID-19 lockdown makes difficultly for getting transportation vehicles. | 2.5 | 1.06 |
| Overall | 2.5 | 1.08 |

Source: Survey Data (2022)

4.4.5 Challenges in Market Access

Related with challenges in market access for farmers, table (4.8) indicates that the overall mean score is 2.7. Therefore, the respondents had no difficulties in market access. But the highest mean score is 3.2 for the statement: farmers mostly relied on brokers to sell their product during COVID-19. Prior to COVID-19 Pandemic, there were different channels for market access. Most of the farmers used to sell their output within their villages or the villages nearby. Some farmers sold their output directly in the local market but sometimes they sold it via brokers. However, during COVID-19 Pandemic, almost all of the farmers relied only on brokers to sell their product because of movement restrictions and partial lockdown. So, there was only one channel for market access for farmers during this Pandemic.

The respondents did not face constraints such as market closure, poor demand or no buyers for their outputs. But there were some difficulties to sell their outputs because of movement restrictions. The respondents especially who grew vegetables faced delays in transportation of crops that made losses for them.

Table (4.8) Markets Access

| Particulars | Mean | Standard Deviation |
|---|-------------|---------------------------|
| The price of crop was decreased during COVID-19. | 2.3 | 1.09 |
| There was poor demand or no buyer for output. | 2.3 | 0.95 |
| It was difficult to sell crops because markets were closed. | 2.5 | 1.06 |
| It was difficult to sell crops because of movement restrictions. | 3.1 | 1.23 |
| Farmers mostly relied on brokers to sell their product during COVID-19. | 3.2 | 1.30 |
| Overall | 2.7 | 1.18 |

Source: Survey Data (2022)

4.4.6 Others Difficulties

Table (4.9) shows that the overall mean score is 2.7 for other difficulties of farmers. According to this result, the respondents did not face other difficulties. Follow up observation were made to find the reasons for this. The respondents mentioned that they faced bad weather like drought which is one important reason for lower production. But groundwater facilities like shallow and deep tube wells were constructed by the government planning in the study area. These water resources solved their difficulty and protected from lower production of crops. Then, there are also dams, weirs and reservoirs that covered most of the sown areas. Concerning with exporting crops at border areas, the respondents did not face any problems as they sold their outputs through brokers.

Table (4.9) Other Difficulties

| Particulars | Mean | Standard Deviation |
|--|-------------|---------------------------|
| Bad weather/climate change and pests were the additional reasons for lower production. | 2.8 | 1.19 |
| Lack of irrigation water was the additional cause for lower production. | 2.6 | 1.12 |
| Exporting crops were delayed because of border restrictions during COVID-19 lockdown. | 2.6 | 1.13 |
| Overall | 2.7 | 1.14 |

Source: Survey Data (2022)

4.4.7 Relief Plans

Table (4.10) shows that 78% of the respondents agreed that they received special COVID-19 loan extension from government. They got one year loan extension until 2022 for the loan that they received in 2020.

According to the survey data, only 23.6% of the respondents received technical supports by online trainings. The reason is that the staffs from respected Township Agricultural Departments could reach field visits to the villages during COVID-19 Pandemic. So, the respondents could easily contact with the staff at any time if they needed technical support. There were also agricultural projects in the study area. These projects supported internet fees and phone bills for attending online trainings and awareness sessions. But only 4.2% of the respondents received these supports. Moreover, among 305 respondents, only 103 respondents received subsidies like fertilizers and seeds from government.

Table (4.10) Relief Plans

| Particulars | Yes | |
|--|------------------|----------------|
| | Frequency | Percent |
| Special COVID-19 loan extension was received from government. | 238 | 78.0 |
| Technical supports like online trainings and awareness sessions and information were received through viber/ face book /messenger /zoom/call center. | 72 | 23.6 |
| Supply for internet fees and phone bills were received from NGOs/Companies | 13 | 4.2 |
| Subsidies like fertilizer and seeds were received from government and non-government organization. | 103 | 33.7 |

Source: Survey Data (2022)

CHAPTER V

CONCLUSION

This chapter describes findings and recommendations for COVID-19 challenges faced by farmers in Nay Pyi Taw.

5.1 Findings

To analyze COVID-19 challenges faced by farmers in Nay Pyi Taw, the data was obtained by conducting personal interview with farmers from villages. Primary data was collected from the farmers by using structured questionnaires. Frequencies and descriptive methods were used to present the responses obtained from the respondents.

In accordance with the demographic factors, the majority of respondents are male and fall into age group between 61 and 70 years old. So, older farmers largely involved in farming. Most of the farmers had primary education and they had over 20 years farm experiences. Survey also found that 69.5 percent of total respondents rely on single income source from agriculture. There are only 34.1 percent of respondents who have income source from non-agricultural sector.

Concerning with the financial challenges of farmers, most of the farmers not only used their own investment for growing crops but also got loans and credit from government and other private companies. Although the respondents got loans from different financial sources, they still had difficulties for the cost of farm operation. Because of limited access to loans and credit, the cost of production did not cover.

The main challenge related with farm operation was increasing the cost of production and increasing the cost of inputs. In particular, investment cost like cost of hiring machines for land preparation and harvesting were higher distinctly because of increasing fuel charges. According to the survey results, the challenges related with labors were increasing labor charges. Because of sickness and travel restrictions, unskilled labors were often used during peak seasons like planting, weeding and

harvesting. According to the survey results, the respondents had no difficulties in market access and transportation for their outputs during COVID-19 Pandemic.

The overall findings seems that the relief packages and other initiatives launched by the government and local administrations were partially effective for farmers but not covered for all townships.

5.2 Recommendations

After receiving the result findings, the recommendations are presented for the challenges of farmers. This study reported challenges faced by farmers during COVID-19 Pandemic for their agricultural production.

The extension of loan payment time may offer the solution to farmers who are not able to sell their rice with a good price. However, increasing the loan amount for the future growing season will be a great help for farmers in continuing their production. Getting agricultural inputs with the normal market price in the future is important for farmers. Government should support farmers for hiring more machines, especially tractors and combine harvesters for land preparation and harvesting, to mitigate the labor issue. Mechanization could ease the farmers from the burden for increasing labor charges in the future. Both public and private sectors should be more collaborative for the development of Agriculture Sector.

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APPENDIX

Survey Questionnaires for challenges faced by farmers during COVID-19 Pandemic in Nay Pyi Taw (Case Study: Tatkon, Pyinmana and Lewe Townships)

Dear respondents,

I am a master's degree student from the Yangon University of Economics. Currently, I am conducting a survey of paddy farmers in Lewe, Pyinmana and Tatkon Townships in Nay Pyi Taw. The purpose of this survey is to find out about the challenges faced by farmers and to explore potential interventions as a response. Thank you for your participation.

INSTRUCTIONS;

1. There are two sections in this questionnaire. Please answer ALL questions in ALL sections.
2. Completion of this will take you approximately 10 to 20 minutes.
3. This survey is for research purposes only. I personally assure you that your answers will always be kept strictly confidential and never be revealed to any other people.
4. The only thing I am requesting from you is that you answer the questions truthfully, in your best possible way, and to the best of your knowledge.

Village: _____ Village Tract: _____

Township: _____ District: _____

Section A. Demographic Profile

1. Gender
 - Male
 - Female

2. Age

- 20-30
- 31-40
- 41-50
- 51-60
- 61-70

3. Education

- Primary
- Middle
- High
- Graduate

4. Family Size

- 1-5
- 6-10
- 11-15

5. How long have you been working in farming?

- 1-5 years
- 6-10 years
- 11-15 years
- 16-20 years
- 21 and above

6. Monthly Income level

- Under 100,000 Kyats
- 100,000 – 500,000 Kyats
- 600,000 – 1000,000 Kyats
- Above 1000,000 Kyats

7. Are there any other jobs apart from farming?

- Agent
- Part-time worker

- Selling Groceries
- Others
- None

8. Types of Houses

- Brick/RC
- Wood
- Hut
- Others

9. Please tell us whether there are any of the following items in your household:

- Television
- Refrigerator
- Motor Cycle
- Car
- Water Pump
- Mobile phone
- Others

10. Growing Acres:

- 1-10 acres
- 11-20 acres
- 21-30 acres
- 31 and above

11. Types of Acres

- Owned
- Tenant

12. Types of Land

- Farm land
- Ya land
- Both Farm and Ya

13. Please select the cropping pattern that you are growing.

- Rice-Rice
- Rice-Pulses-Rice
- Rice-Other Crops
- Other Crops (Vegetables, Sunflower, Sesame, Cotton, etc.)

14. How many farm workers do you usually use for farm operation?

- 1-5 workers
- 6-10 workers
- 11 and above

15. How you can get water resource?

- Irrigation
- Rainfed
- Irrigation and Rain fed
- Irrigation and Tube Well
- Tube Well

Section B: Challenges faced by farmers during COVID-19 Pandemic

Please circle your answer to each statement using 5-point Likert scale (1= Strongly Disagree; 2=Disagree; 3=Neutral; 4=Agree and 5= Strongly Agree).

(1) Financial Constraints

| No. | Particulars | Financial Constraints | | | | |
|-----|---|-----------------------|---|---|---|----|
| | | SD | D | N | A | SA |
| 1. | We use our own financial investment for growing crops. | | | | | |
| 2. | We receive loans from Government for growing crops. | | | | | |
| 3. | We can get loans from Microfinance Companies easily. | | | | | |
| 4. | We can get loans from relatives. | | | | | |
| 5. | We can get loans from neighbors /friends/other farmers. | | | | | |
| 6. | We can get loans from other financial sources. | | | | | |

(2) Difficulties in Farm Operation

| No. | Particulars | Difficulties in farm operation during COVID-19 Pandemic | | | | | |
|-----|---|--|---|---|---|---|-----|
| | | S | D | D | Z | A | S A |
| 1. | The COVID-19 pandemic has brought a new threat to our rice farming and greatly affects farm operation. | | | | | | |
| 2. | COVID-19 pandemic is disrupting pre harvest activities in rice farming. | | | | | | |
| 3. | COVID-19 pandemic is disrupting post- harvest activities in rice farming. | | | | | | |
| 4. | COVID-19 pandemic has led to increase in the cost of inputs. | | | | | | |
| 5. | COVID-19 pandemic is difficult to hire the machinery. | | | | | | |
| 6. | COVID-19 pandemic has greatly increased the cost of our farm production, harvesting and distribution | | | | | | |
| 7. | Insufficient storage facilities are one of the main concerns. | | | | | | |
| 8. | Difficult to hire farm machinery and labor shortage cause not to harvest in time which leads to decrease rice production. | | | | | | |
| 9. | Some rice mill closed and cannot milling because of COVID-19 restrictions. | | | | | | |

3. Laborers

| No. | Particulars | Laborers | | | | |
|-----|---|----------|---|---|---|----|
| | | SD | D | N | A | SA |
| 1. | There are no difficulties in hiring labor for farm operation during COVID-19 Pandemic. | | | | | |
| 2. | COVID-19 pandemic has led to get not enough farm labor. | | | | | |
| 3. | COVID-19 pandemic has increased labor charges. | | | | | |
| 4. | COVID-19 pandemic led to use/hire unskilled laborers. | | | | | |
| 5. | COVID-19 pandemic led to reduce the number of labor due to the increased wages band hire them only when needed. | | | | | |

4. Challenges in Transportation

| No. | Particulars | Transportation | | | | |
|-----|---|----------------|---|---|---|----|
| | | SD | D | N | A | SA |
| 1. | The COVID-19 pandemic has decreased for purchasing inputs because of the poor transportation system and partial lockdown. | | | | | |
| 2. | COVID-19 pandemic has negatively affected in transporting crops. | | | | | |
| 3. | COVID-19 lockdown makes difficultly for getting transportation vehicles. | | | | | |

5. Market Access

| No. | Particulars | Market Access | | | | |
|-----|---|---------------|---|---|---|----|
| | | SD | D | N | A | SA |
| 1. | The price of crop was decreased during COVID-19. | | | | | |
| 2. | There was poor demand or no buyer for output. | | | | | |
| 3. | It was difficult to sell crops because markets were closed. | | | | | |
| 4. | It was difficult to sell crops because of movement restrictions. | | | | | |
| 5. | Farmers mostly relied on brokers to sell their product during COVID-19. | | | | | |

6. Other Constraints

| No. | Particulars | Other Constraints | | | | | |
|-----|--|-------------------|---|---|---|---|-----|
| | | S | D | D | N | A | S A |
| 1. | Bad weather/climate change and pests were the additional reasons for lower production. | | | | | | |
| 2. | Lack of irrigation water was the additional cause for lower production. | | | | | | |
| 3. | Exporting crops were delayed because of border restrictions during COVID-19 lockdown. | | | | | | |

7. Relief

| No. | Particulars | Agree | Disagree | Remark |
|------------|--|--------------|-----------------|---------------|
| 1. | Special COVID-19 loan extension was received from government. | | | |
| 2. | Technical supports like online trainings and awareness sessions and information were received through viber/ face book /messenger /zoom/call center. | | | |
| 3. | Supply for internet fees and phone bills were received from NGOs and companies. | | | |
| 4. | Subsidies like fertilizer and seeds were received from government and non-government organization. | | | |

Thank you so much for your answer.