

**YANGON UNIVERSITY OF ECONOMICS
DEPARTMENT OF APPLIED ECONOMICS
MASTER OF PUBLIC ADMINISTRATION PROGRAMME**

**A STUDY ON THE GROUNDNUT CULTIVATION AND
PRODUCTION IN MYANMAR
(CASE STUDY IN MOHNYIN TOWNSHIP, KACHIN STATE)**

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MPA – 3 (21st BATCH)**

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

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This is to certify that this thesis entitles “**A Study on the Groundnuts Cultivation and Production in Myanmar (Case study in Mohnyin Township, Kachin State)**” submitted as the requirement the Degree of Master of Public Administration has been accepted by the Board for of Examiners.

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ABSTRACT

This study analyses the current situation of groundnut cultivation and production in Mohnyin Township, Kachin State. Groundnut cultivation plays a vital role in Mohnyin Township and explores the current practices, challenges, and potential improvements of groundnut farming in the study area. Through face-to-face interviews with the local farmers, the study identifies key aspects such as the demographic characteristics of the respondents, climate conditions, crop management practices, pest and disease management, and yield outcomes. Most of the farmers have farming experience between 40 years and 60 years. It shows that the farmers in Mohnyin Township have good knowledge and practice for growing the groundnut crop. Most of the respondents are between 41 years and 50 years. It shows that the middle-aged and old-age population are the farmers in Mohnyin Township and people under 40 years do not work in the family business or local area. Most of the farmers about 90% of the respondents use the manual method and 10% of the respondents use the mechanical method. According to these results, the farmers in Mohnyin Township have a low standard of living and also the infrastructure such as road transportation, communication – internet and telephone connection in Mohnyin Township is an underdeveloped situation. Therefore, the government should improve the infrastructure in Mohnyin Township to accelerate the productivity of the agriculture sector.

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CHAPTER I

INTRODUCTION

1.1 Rationale of the Study

Myanmar's Dry Zone is a vast semi-arid area with a monsoonal climate and diverse agroecological conditions (Myanmar National Report, 2004). Rice, the staple crop, is generally produced at low yields, which is insufficient to meet the consumption needs of subsistence farmers (Hood, 2007). As a result, farmers are compelled to cultivate other crops, such as peanuts, pulses, cotton, bananas, and toddy palms, and raise livestock to sustain themselves. Peanuts, or groundnuts, are particularly important for rain-fed subsistence farmers in the Dry Zone, providing cooking oil, food for home consumption, edible oil for cooking, and livestock feed, with any surplus sold for cash (Phyo, 2008).

Groundnut, commonly referred to as peanut, is a key crop in Myanmar, significantly contributing to both the agricultural sector and the economy. Its cultivation depends on various factors, including climate, soil quality, farming techniques, and market conditions. Groundnut is an essential legume in Myanmar, offering oil, protein, and vital nutrients. It is widely grown by smallholder farmers, playing a crucial role in ensuring food security and generating income. Oilseed crops are especially important due to the high demand for cooking oil. Although oilseed production in Myanmar has been rising, it remains insufficient to meet the growing domestic demand caused by the increasing population. Myanmar's annual average production of vegetable oils, mainly groundnut and sesame oils, is around 500,000 tonnes, with an additional 160,000 tonnes of palm oil imported each year. Among the oilseed crops, groundnut is one of the most significant in Myanmar, though its productivity remains lower than the global average. The national average yield is about 560.20 kg per hectare (CSO, 2006).

Groundnut production in Myanmar has been declining due to high production costs. For farmers, the profitability and quality of groundnut seeds are critical factors. As such, production technologies and operational challenges are key considerations in increasing groundnut production, improving farm incomes, and reducing the edible oil

shortage in Myanmar. This study, therefore, aims to assess the current state of groundnut production in Myanmar, with a particular focus on Mohnyin Township.

1.2 Objective of the Study

The objectives of the study are:

- (i) To study the current status of groundnut cultivation in Mohnyin Township
- (ii) To identify opportunities and challenges faced by a groundnut farmer's cultivation and production in Mohnyin Township.

1.3 Method of Study

This study used descriptive method with the survey data. The secondary data were collected from the general administrative department and the Department of Agriculture and Irrigation in Mohnyin Township in Kachin, the Statistical Year Book and the corresponding websites. The primary data were collected by using a structured questionnaire from the 100 respondents who are farmers in Mohnyin Township.

1.4 Scope and Limitations of the Study

This study focuses on the production of groundnuts in Mohnyin Township. The study period covers from 2008 to 2022 including groundnut-growing regions in Myanmar and Kachin State mainly focuses on the current status of Groundnut cultivation and production in Mohnyin Township, Kachin.

1.5 Organization of the Study

There are five chapters in this study. Chapter 1 presents an introduction including the rationale, objectives, method, scope, limitations, and organization of the study. Chapter 2 shows a literature review and Chapter 3 includes an overview of groundnut cultivation and production in Kachin State. Chapter 4 examines survey analysis and Chapter 5 the conclusion with findings and suggestions in Chapter 5.

CHAPTER II

LITERATURE REVIEW

2.1 Historical Background of Groundnuts

The historical background of groundnuts includes an examination of their origin, along with the physical and biological factors, such as edaphic and climatic conditions, and the soil structure requirements for groundnut cultivation. This also covers aspects like temperature and water needs.

2.1.1 Origin of Groundnuts

"Edible groundnuts" generally refer to those intended for human consumption in forms other than oil. The term "confectionery groundnuts" applies to medium and small-seeded varieties of the Spanish, Valencia, and prostrate Virginia types, which are typically marketed in shelled form. Virginia varieties can be sold either shelled or unshelled for consumption as whole nuts (Robert, 2002).

Groundnut plants are believed to have originated in Brazil or Peru. Peanut, also known as groundnut (*Arachis hypogaea* L.), is a native crop of the New World. The *Arachis* species originated in South America and thrive in tropical and subtropical regions. Groundnuts are a valuable dietary addition in developing countries, where diets often consist of low-protein cereals. Groundnuts are also rich in essential minerals such as phosphorus (P), calcium (Ca), magnesium (Mg), and potassium (K), and vitamins E, K, and B. Although not a direct source of vitamin A, groundnuts can help combat vitamin A deficiency since their oil aids in vitamin A absorption. Additionally, their flavor enhances the often-bland taste of cereal-based foods.

Groundnuts can be used in various dishes as a nutritious ingredient or consumed raw as a snack. Their oil is also highly valued in the developing world, as it can be easily produced at the village level and is excellent for cooking (Robert, 2022).

2.1.2 Physical and Biological Environment: Edaphic and Climatic Factors and Soil Structure

Soil structure plays a critical role in groundnut cultivation. The soil must be

soft enough to facilitate the pegging process and allow for the easy lifting of ripe pods. Groundnuts thrive in well-drained, aerated soils due to their high respiratory needs during pod formation. Sandy or fine-textured friable soils with good infiltration are ideal. While clay soils can produce high yields, they are more challenging to manage, often requiring mechanization and irrigation to achieve success.

Groundnuts are highly sensitive to soil conditions. Acidic soils (pH below 5) or soils lacking calcium oxide can lead to manganese toxicity, especially when crops are grown continuously without soil amendments. Alkaline soils (pH above 8) or those prone to waterlogging may cause iron deficiency.

(i) Temperature and Sunlight

Groundnuts perform best in temperatures between 25°C and 33°C. Germination is inhibited when temperatures fall below 15°C or rise above 45°C. Large daytime temperature fluctuations (more than 20°C) and nighttime temperatures below 15°C significantly slow growth and can delay the plant's life cycle. These conditions are common in temperate regions or high-altitude areas, where low temperatures early or late in the growing period often result in immature pods at harvest. Groundnuts are also affected by day length, with long days (more than 14 hours) combined with nighttime temperatures above 30°C potentially leading to increased haulm production at the expense of seed yield. In both rain-fed and irrigated systems, early sowing typically results in higher yields.

(ii) Water Requirements

Although groundnuts are relatively drought-tolerant, their sensitivity varies depending on the growth stage. During germination, groundnuts require substantial water, close to the soil's retention capacity. However, as soon as germination begins, the embryo has a high oxygen requirement. From planting to flowering (0 to 30 days), groundnuts exhibit good drought resistance. Dry conditions are again favorable as the plant approaches maturity, and rainfall at this stage can have a detrimental impact on yields, especially for non-dormant varieties, which may sprout prematurely in wet conditions. Early cessation of rains can cause mature pods to crack, allowing water to penetrate the seeds. An annual rainfall of 500 to 1,000 mm is typically sufficient for groundnut cash cropping, with the distribution of rainfall and the relationship between total rainfall and the variety's growing duration being critical for success.

2.2 Classification of Groundnuts

Groundnuts are classified internationally based on their size and use, as follows:

- (i) **Large-seeded Virginia types:** Primarily used for roasting whole in their shells or as snack foods, such as salted peanuts and other confectionery items. Undersized or broken nuts from this variety are often processed into peanut butter or relishes.
- (ii) **Runner varieties with medium-sized seeds:** The larger seeds are typically used for premium confectionery products, like sugar or chocolate-coated peanuts. Medium-sized kernels are often utilized in baked goods, such as biscuits. Smaller or split kernels are commonly made into peanut butter or relishes.
- (iii) **Small-seeded Spanish varieties:** While the largest seeds may be processed into snack foods, most of this variety is used to produce peanut butter or relishes.
- (iv) **Small-seeded Valencia varieties:** These are usually roasted while still in the pod or shelled to cater to specific market needs.

2.3 Factors Influencing Groundnut Cultivation and Production

Several factors play a role in influencing groundnut cultivation and production. These include the use of fertilizers, labor on the farm, herbicides, pesticides, and the size of the farm used for cultivation. Effective management practices in groundnut farming involve:

1. Avoid deep sowing
2. Rotate the crop with groundnut and wheat.

2.3.1 Avoid Deep Sowing

In groundnut cultivation, the practice of shallow sowing is recommended to promote better seed germination and plant establishment. Deep sowing can hinder seedling emergence, particularly in sandy or heavy soils, where the energy required for the seed to break through the surface is greater. Studies have shown that when groundnut seeds are planted too deep, they often struggle to access sufficient oxygen and moisture, resulting in poor germination rates and delayed plant growth (Patel &

Sharma, 2015). Additionally, the energy expenditure of seedlings to reach the surface can lead to weaker plants and lower yields.

A study by Singh et al. (2018) demonstrated that groundnuts sown at shallow depths of around 5 cm performed significantly better in terms of germination speed and overall crop health compared to those sown at depths greater than 8 cm. Their study highlighted that shallower sowing ensures that the seeds remain in the upper soil layers, where temperature and moisture conditions are more favorable for early growth stages. Moreover, shallow sowing reduces the chances of waterlogging, a factor that can negatively affect groundnut development, particularly in regions prone to heavy rainfall.

Another study by Kumar and Rao (2019) emphasized the importance of optimal sowing depth in maximizing yields. Their findings indicated that groundnut crops grown under shallow sowing conditions showed enhanced root development and nutrient uptake, ultimately improving productivity. This research aligns with broader agronomic recommendations for legumes, which consistently advocate for shallow sowing as a key factor in successful crop establishment (Sharma et al., 2017). Overall, avoiding deep sowing not only enhances early-stage growth but also plays a crucial role in achieving higher yields and improving overall farm efficiency.

2.3.2 Rotate the Crop with Groundnut and Wheat.

Crop rotation, especially the alternation of groundnut with wheat, is a well-established agronomic practice that offers numerous benefits for soil health, pest management, and yield optimization. Groundnut is a legume that fixes atmospheric nitrogen, enriching the soil with essential nutrients, while wheat, a non-leguminous cereal, benefits from the residual nitrogen and improved soil structure left by the groundnut crop (Rao et al., 2016). This rotation not only enhances the productivity of both crops but also helps maintain long-term soil fertility.

Studies have demonstrated that rotating groundnut with wheat reduces the risk of soil-borne diseases and pest infestations that can build up when monocropping is practiced. For example, research by Patel and Singh (2017) showed that fields where groundnut was rotated with wheat had lower incidences of soil-borne pathogens such as *Rhizoctonia* and *Fusarium*, which commonly affect groundnut crops. The alternating

crop cycles disrupt the lifecycle of pests and pathogens, reducing their population over time, and leading to healthier crops and higher yields.

In addition to pest and disease management, crop rotation also improves soil health by preventing the depletion of specific nutrients. Groundnut, as a nitrogen-fixing crop, contributes to soil nitrogen levels, which benefits the subsequent wheat crop, reducing the need for synthetic nitrogen fertilizers (Kumar et al., 2018). This practice is particularly valuable in regions where farmers have limited access to chemical fertilizers. Moreover, the deep-rooting nature of wheat helps break up compacted soil layers, improving water infiltration and root development for future groundnut crops (Mishra & Reddy, 2019).

Research by Sharma et al. (2020) further supports the rotation of groundnut with wheat, noting that it increases overall farm profitability by diversifying crop production and reducing input costs. Their findings suggest that crop rotation helps maintain soil organic matter, improves water use efficiency, and mitigates the environmental impact of farming, leading to sustainable agricultural practices. Therefore, rotating groundnut with wheat not only enhances yield potential but also contributes to the long-term sustainability of farming systems.

2.4 Socio-economic Impact of Groundnut Production

Groundnut farming, also referred to as peanut production, has a significant socio-economic impact in regions where it is a key agricultural activity. These effects can be evaluated from different perspectives, including economic development, employment opportunities, food security, and social progress. The primary socio-economic impacts of groundnut production are outlined below:

(i) Income Generation

For Farmers: Groundnut cultivation is a major source of income for millions of smallholder farmers, particularly in developing countries like Nigeria, India, and Sudan. As a cash crop, groundnuts can be sold both in domestic and international markets, providing farmers with opportunities to improve their livelihoods.

For Processors and Traders: Groundnut production supports various participants in the value chain, including local traders, exporters, and processors who transform groundnuts into oil, flour, and snacks. This creates numerous opportunities for income generation beyond just farming activities.

(ii) Employment Creation

Labor-Intensive Crop: Groundnut farming is highly labor-intensive, creating employment opportunities, especially in rural areas. Various stages of the cultivation process, such as planting, harvesting, shelling, and processing, require substantial human labor, contributing to rural job creation.

Industrial Employment: The processing of groundnut products, including oil extraction and peanut butter production, generates jobs in the agro-processing industry, further stimulating economic activity, particularly in urban areas.

(iii) Contribution to National Economies

Export Revenue: Groundnuts are an important export crop for many countries. In nations such as Senegal and Sudan, groundnut exports generate foreign exchange earnings, contributing to national economic growth and development.

Industrial Growth: The production of groundnut oil, animal feed made from groundnut shells, and other by-products supports the agro-industrial sector, boosting economic growth and overall development.

(iv) Food Security and Nutrition

Protein Source: Groundnuts are a rich source of protein, essential fats, and vitamins, making them a crucial food staple for millions of people. In regions where malnutrition is prevalent, groundnuts help improve dietary diversity and reduce protein-energy malnutrition.

Food Stability: Groundnuts are a drought-resistant crop that contributes to food security in arid and semi-arid areas where other crops may not thrive. Their ability to grow in challenging conditions ensures a stable food supply in these regions.

(v) Poverty Reduction

Groundnut farming plays a significant role in poverty alleviation, particularly among rural households. Income from groundnut sales can be used to improve access to healthcare, education, and better living standards. Furthermore, groundnut farming allows farmers to diversify their income sources, making them less vulnerable to market fluctuations and climate-related shocks.

(vi) Empowerment of Women

In many developing countries, women play a central role in groundnut farming, especially in post-harvest activities such as shelling and processing. Through their

participation in these activities, women can earn income and gain financial independence, contributing to their empowerment and social inclusion.

(vii) Environmental Impact

Soil Fertility: As leguminous plants, groundnuts fix nitrogen in the soil, enhancing soil fertility and reducing the need for chemical fertilizers. This has positive implications for sustainable agriculture and environmental conservation.

Climate Adaptation: Groundnuts are resilient to varying climatic conditions, helping farmers adapt to climate change. However, poor farming practices, such as monocropping, can lead to soil degradation and reduced biodiversity, highlighting the importance of sustainable practices.

(viii) Challenges Affecting Socio-economic Impact

Market Access and Price Fluctuations: Farmers often encounter difficulties in accessing stable markets and receiving fair prices due to inadequate infrastructure, limited market information, and fluctuations in global prices. These challenges can limit the socio-economic benefits of groundnut farming.

Pests and Diseases: Groundnut crops are susceptible to diseases such as aflatoxin contamination, which can reduce both yield and quality. This affects the marketability of groundnuts and diminishes farmers' incomes.

Climate Vulnerability: While groundnuts are drought-tolerant, extreme weather events such as floods or prolonged droughts can negatively affect production, threatening food security and farmer incomes.

Groundnut farming offers substantial socio-economic benefits, particularly in rural regions where it provides income, employment, and food security. Its contributions to national economies through exports, as well as its role in improving nutrition and empowering women, make it an invaluable crop. However, to maximize these benefits, it is essential to address challenges related to market access, climate vulnerability, and sustainable farming practices.

2.5 Review of Previous Studies

San Sint Wai (2019) conducted an analysis on value-added processing opportunities and the profit function of groundnut farmers. The study involved a sample of 150 groundnut farmers from three villages in Myinmu Township, Sagaing Region, selected through purposive random sampling. The main objectives were to explore

opportunities for value-added processing of groundnut products, analyze the marketing margins for each groundnut product among the sampled farmers, and identify the factors that determine profitability for different types of groundnut sellers. The study utilized descriptive statistics, cost and return analyses, marketing margin calculations, and regression analyses. The findings indicated that farmers require various agricultural inputs, such as land, irrigation, machinery, technology, quality seeds, and fertilizers, to enhance productivity.

Khat Phoo Wai (2018) examined groundnut production in the Bago region over a ten-year period from 2007 to 2017, focusing on land use, sown area, yield per acre, and overall production of groundnuts. The results revealed that both the area sown and the production of groundnuts had increased during this period, with groundnut prices doubling in 2016-2017. The study highlighted the significance of groundnuts for domestic consumption and their potential as a key export product. To promote groundnut production, it recommended increased support for technology, infrastructure, and financing for farmers, emphasizing the agriculture sector's critical role in producing marketable agricultural products that can generate foreign exchange.

Win Win Htet (2018) investigated the production of groundnuts and sesame in the Magway region, analyzing land use, sown areas, yield per acre, and overall production. The objective was to assess the state of groundnut and sesame production to ensure sufficient food availability. Findings indicated that the geographical and climatic conditions in the selected areas were favorable for growing both crops. The study suggested that expanding groundnut and sesame production and export requires timely access to market information for farmers and exporters. Furthermore, it emphasized the necessity for farmers to acquire effective input utilization skills and recommended the establishment of an appropriate credit system or subsidies to incentivize groundnut and sesame cultivation.

Aung Thi Ha (2022) explored the relationship between inputs and outputs in groundnut production in Aung Lan Township, Magway Region. Groundnuts are primarily grown as a cooking oil source for domestic use and serve as the main cash crop for households in the study area. The survey included data from nearly 950 crop-producing households on planted area, quantities harvested and sold, and total production costs for 13 key crops over the previous 12 months. The results highlighted the importance of not only the number of farmers but also their skills, knowledge, and

experience. The study concluded that enhancing farmers' education could facilitate the adoption of new technical knowledge. It recommended providing agricultural extension services and upgrading farmers' knowledge regarding the selection of quality seeds, proper use of fertilizers and pesticides, and effective soil management to improve groundnut yield and production.

CHAPTER III

OVERVIEW OF GROUNDNUTS CULTIVATION AND PRODUCTION IN MYANMAR

3.1 The Role of Agriculture in Myanmar

For approximately 25 years, Myanmar followed a socialist economic planning system. However, by the late 1980s, the country faced negative growth for three consecutive years, primarily due to low productivity in key sectors that impacted foreign trade and led to an unfavorable balance of payments and foreign exchange position. This decline in investment was exacerbated by reduced loans and aid from bilateral and multilateral sources, highlighting the need for economic restructuring. Consequently, the Socialist Planning System was replaced by a market-oriented approach with the establishment of a new government in 1988.

Before 1988, Myanmar's economy suffered significantly, prompting the government to implement urgent reforms aimed at recovery. The economy stabilized during the initial three years from 1989/90 to 1991/92. To foster a market-oriented system, the government initiated economic reforms, including:

1. Decentralizing central control
2. Encouraging private sector development
3. Abolishing price controls and reducing subsidies
4. Allowing foreign direct investment
5. Implementing institutional changes
6. Establishing a new financial management system
7. Streamlining taxes and duties
8. Promoting exports by simplifying export and import procedures
9. Diversifying exports by introducing new products
10. Improving infrastructure support
11. Restructuring wages and prices
12. Permitting farmers to cultivate crops of their choice

The recent satisfactory economic growth has been largely attributed to the strong performance of the agriculture sector, which remains the backbone of the

economy and is prioritized by the government. Various innovative strategies have been implemented to ensure farmers receive necessary inputs, and significant investments have been made in building dams and irrigation systems, enabling successful harvests and facilitating double or even triple cropping. The liberalization of price controls has also incentivized farmers to enhance their productivity.

Myanmar is predominantly an agrarian society, with about two-thirds of the population relying on rural livelihoods. Agriculture is a crucial part of the economy, employing a significant portion of the population. The government prioritizes the development of a modern, mechanized agro-based industry. Currently, the agriculture sector accounts for 32% of the country's GDP, 17.5% of total export earnings, and employs 61.2% of the labor force (FAO, 2020).

However, agricultural performance in Myanmar is affected by various constraints, including biophysical and environmental factors, as well as economic and policy-related challenges. The soils in the Central Dry Zone (CDZ) are coarse-textured, with low water retention and high leaching potential, leading to nutrient deficiencies and low productivity. Inadequate nutrient inputs from farmyard manure and mineral fertilizers worsen soil nutrient shortages (Herridge et al., 2019). Climate-related issues, such as rising temperatures, erratic rainfall, and intense monsoon events, result in floods, dry spells, and soil erosion, jeopardizing grain cropping sustainability. Erratic rainfall and excessive heat during the early growth stages adversely affect rice production. Although the Myanmar Agriculture Development Bank was established to promote agricultural, livestock, and rural economic initiatives and has increased funding for farmers, serious issues such as indebtedness, insolvency, and illiquidity persist.

3.2 The Role of Oilseed Crops in Myanmar

Oilseed crops are crucial to Myanmar's agricultural sector, ranking third in importance after cereals and pulses. Cereal crops account for approximately 39% of the total sown area, while pulses cover around 20%. Oilseeds comprise about 15% of the total sown area, highlighting their significant role in food production and economic contributions (FAO, 2019). These crops are particularly vital in central Myanmar, where they help ensure food security and provide essential cash income for education, healthcare, and other social necessities (Herridge et al., 2019).

The primary oilseed crops in Myanmar include groundnut, sesame, sunflower, mustard, and ginger. Among these, sesame occupies the largest area, representing around 46% of the total oilseed sown area in 2011-2012 (MOALI, 2012). Groundnut, the second most significant oilseed, covers 26% of the oilseed area, while sunflower accounts for 16%, and mustard and ginger collectively make up the remaining 13% (FAO, 2020). Groundnut cultivation has seen considerable growth, expanding from 479,000 hectares in 1996-1997 to 877,000 hectares by 2010-2011, emphasizing its increasing significance in Myanmar's agricultural economy (MOALI, 2012).

Oilseed crops are central to Myanmar's high consumption of cooking oil, which exceeds that of neighboring countries. Groundnut oil, in particular, is a staple in many households' diets. The growth of groundnut cultivation has not only met this demand but also supported the livelihoods of farmers in oilseed-producing areas. These crops serve domestic consumption needs and contribute to Myanmar's agricultural exports. The rising global demand for edible oils presents new opportunities for further development of Myanmar's oilseed sector (Aye et al., 2022). The government has backed these initiatives by improving farming practices, enhancing productivity, and promoting exports to boost the competitiveness of Myanmar's oilseed crops in international markets (FAO, 2020).

3.3 Historical Background of Groundnut Cultivation in Myanmar

Groundnut (*Arachis hypogaea*), commonly referred to as peanut, has a long history of cultivation in Myanmar, where it plays a vital role in the agricultural and economic sectors. The crop was introduced during the British colonial period in the 19th century, mainly for oil production and as a cash crop for export. Groundnut quickly adapted to Myanmar's diverse agro-ecological zones, particularly in the central dry zone, where its drought-resistant qualities made it valuable. During the colonial era, groundnut cultivation steadily increased, grown alongside other oilseeds like sesame to meet domestic and international edible oil demands.

Following independence in 1948, groundnut remained a staple oilseed crop within Myanmar's agricultural framework. The government acknowledged its importance not only for oil but also as a vital protein source for the population. However, during the socialist era (1962–1988), state control over agricultural production and pricing mechanisms limited farmers' incentives to expand cultivation or enhance productivity. Despite these challenges, groundnut continued to be

significant for smallholder farmers, who cultivated it on rainfed lands in the central dry zone, benefiting from its low input requirements and resilience to arid conditions (Myanmar Ministry of Agriculture, 2019).

With the transition to a market-oriented economy in 1988, groundnut production saw renewed growth. The liberalization of agricultural markets and government efforts to boost oilseed production led to an expansion in groundnut cultivation. By the 1990s and early 2000s, groundnut became one of Myanmar's most important oilseed crops, accounting for nearly a quarter of the total oilseed production. Farmers were encouraged to increase production through better access to seeds, fertilizers, and irrigation. Additionally, groundnut was promoted for its potential in value-added processed forms, such as peanut oil, which was widely consumed in households and the food industry (FAO, 2020).

In recent decades, groundnut cultivation in Myanmar has continued to grow, with production rising from around 479,000 hectares in the mid-1990s to over 877,000 hectares by 2010 (Myanmar Ministry of Agriculture, 2019). Groundnut is primarily grown in the central and lower regions, where it is rotated with other crops, such as pulses and sesame, to maintain soil fertility. The crop is integral to rural livelihoods, contributing to food security and providing income through domestic and export markets (OECD, 2021). However, despite the increase in cultivated areas, challenges such as limited access to high-quality inputs, fluctuating market prices, and climate-related risks continue to affect the productivity and profitability of groundnut farming in Myanmar.

3.4 Economic Importance of Groundnut Production

Groundnut (peanut) production is economically significant worldwide, especially in developing nations. Its relevance can be highlighted in several key areas:

(i) Source of Income for Farmers: Groundnuts serve as a major cash crop for millions of smallholder farmers, particularly in countries like Nigeria, India, Sudan, and Senegal. The sale of groundnuts and related products provides a reliable income source, enhancing livelihoods and alleviating poverty.

(ii) Employment Generation: The production, processing, and marketing of groundnuts generate numerous employment opportunities along the value

chain. From planting and harvesting to shelling, processing, transportation, and retail, many individuals find jobs directly or indirectly in this sector.

(iii) Industrial Uses and Processing: Groundnuts are essential raw materials for various industries, including:

1. **Oil Production:** Groundnut oil is widely used as cooking oil and has applications in cosmetics, pharmaceuticals, and biodiesel.
2. **Food Products:** Groundnuts are processed into snacks, peanut butter, confectionery, and animal feed.
3. **By-products:** Groundnut cake, a residue from oil extraction, is utilized as livestock feed or fertilizer, adding further economic value to agriculture.

(iv) Export Revenue: Groundnuts and their products are important export commodities for many countries, contributing significantly to foreign exchange earnings. Nations like India and Argentina rank among the largest exporters, benefiting from international market demand.

(v) Food Security and Nutrition: Groundnuts are nutrient-dense, rich in protein, healthy fats, vitamins, and minerals. They play a vital role in addressing malnutrition and food security challenges in many regions.

(vi) Contribution to GDP: In many groundnut-producing countries, agriculture is a substantial component of Gross Domestic Product (GDP), with groundnut farming being a key contributor. For instance, in parts of Africa and Asia, groundnut cultivation notably impacts agricultural GDP.

(vii) Sustainability and Crop Rotation: As leguminous plants, groundnuts fix nitrogen in the soil, enhancing soil fertility for subsequent crops. This ecological benefit reduces the need for chemical fertilizers, making groundnut cultivation both economically and environmentally sustainable, particularly in regions practicing crop rotation.

(viii) Value Addition and Agro-industries: Groundnuts offer numerous opportunities for value addition, stimulating the growth of agro-industries in rural areas. Processing activities, such as oil extraction and snack production, foster rural industrialization by adding local value before export.

Groundnut production is essential to the agricultural economy, supporting livelihoods, industrial development, food security, and international trade. In Myanmar,

groundnut production is particularly significant, with approximately 75% of the output originating from Central Myanmar, especially in the Sagaing Region, Magway, and Mandalay divisions (Aye Aye Mon, 2004). Although groundnut is cultivated throughout the country year-round, the Mandalay and Magway divisions are recognized as the primary production areas. While Myanmar's food crop production generally meets domestic needs, oilseed crops, particularly groundnuts, are exceptions. Groundnuts account for 45% of edible oil consumption, which is based on an average consumption rate of 4.5 vices per person, followed by sesame and sunflower.

Globally, groundnuts are a major legume crop utilized for oil, food, and feed, cultivated in over 100 countries. In 2010, groundnut production reached a gross volume of 38 million tons, covering 24 million hectares worldwide (WTO, 2023).

3.5 Other Uses of Groundnut

Groundnuts serve multiple purposes beyond oil production and are an essential component in many diets. They are primarily marketed for two main purposes: (1) as groundnut oil for cooking and (2) as traditional snacks. Groundnuts are available in various forms, including whole edible nuts, crushed nuts, seeds, and as inputs for the animal feed industry. Raw groundnuts can either be used as seeds or processed into "prepared" groundnuts through roasting, salting, or flavoring. These processed groundnuts are used in various food industries, including the production of peanut butter, snacks, and sweets, or are crushed for oil and groundnut meal. Groundnut butter, in particular, has long been a popular product in Western countries.

Food processing plays a critical role in the economies of developing nations, especially in urban areas where low-income households often lack the resources to process agricultural and animal products themselves. Processing allows people to consume agricultural products, including seasonal ones, throughout the year. In Myanmar, groundnuts are commonly processed into groundnut brittle, a sweet confection made of hard sugar embedded with groundnut seeds, known locally as "lone san". This treat is widely produced, with many variations found around the world. In Magway Township, a popular local variety of groundnut brittle called "Kaung-Mon" is made extensively for the domestic market.

Edible oil processing is a key activity in transforming oilseed crops into products for consumer use. In Myanmar, the private sector is heavily involved in

milling oilseeds like sesame, groundnuts, and sunflower. The peak season for edible oil processing occurs after the oilseed harvest, when millers collect the crops and distribute the processed oil, often relying on their own investments or loans from private banks. Groundnut oil is typically the most expensive edible oil in the market, whereas palm oil is the cheapest. However, the prices of edible oils fluctuate depending on domestic oilseed crop production and the volume of palm oil imports (Kyaw and Raphy, 2009).

Currently, Myanmar faces a shortage in the production of edible oil and oilcake, resulting in large imports of palm oil to help meet domestic demand. While outright bans on imports or exports are challenging to enforce, informal imports of palm oil help bridge the domestic shortfall. Similarly, informal exports of groundnuts for the snack market contribute to maintaining stable domestic prices for groundnuts.

3.6 Groundnut Cultivation, Yield, and Production in Various Countries

Groundnut production has reached significant levels in several countries, with India leading the way, accounting for 22.84% of the global groundnut acreage. China follows closely with 18.36%, while Myanmar ranks third, contributing 3.66% to the world's harvested area for groundnuts. In 2009, global groundnut production totaled 36,457 thousand metric tons (MT), with Asia contributing 23,351 thousand MT, which represents 64.05% of the total production and a yield of 1,966 kilograms per hectare (kg/ha).

During the 2010-2011 period, Myanmar continued to hold its position as the third-largest groundnut producer in Asia, with a production of 1,392 thousand MT and a yield of 1,587 kg/ha. In the global context, Myanmar accounted for 3.81% of total groundnut production, while its share in Asia was 5.96%. For detailed information on groundnut production in Myanmar and its neighboring countries, refer to Appendix 7 (MOAI, 2012).

Key oilseed exporting countries include Argentina, Australia, Brazil, Canada, Paraguay, Ukraine, and the United States, primarily comprised of developed Western nations. In contrast, the main oilseed importing countries are China, Egypt, Indonesia, South Korea, Taiwan, Thailand, the EU-27, and Mexico, with many of these imports coming from developing and middle-income countries.

Table 3.1 Groundnut Production in Some Countries (2000-2023)

Country	Area (000 ha)	Yield (Ton per ha)	Production (‘000 ton)
China	3658	2.6	9737
India	7740	0.98	7609
Indonesia	661	1.7	1159
Myanmar	493	1	506
Vietnam	239	1.2	302
Pakistan	98	1	99
Turkey	3	2.4	75
Thailand	97	1.5	143
Syria	13	2.2	28

Source: FAO (2023).

According to Table 3.1, most of the developing countries especially the countries based on the agriculture sector grow the groundnut crop. Among the developing countries in Asia, China has the highest production of groundnut and the production area is 3658 (‘000 ha). The yield per hectare of groundnut production is 2.6 tons per hectare. The second most production of groundnut is from India and the third one is Indonesia. It means that the consumption of cooking oil and the export product – cooking oil is increased in these countries. In Myanmar, the production of groundnut is 302 (‘000 tons) per year.

CHAPTER IV

SURVEY ANALYSIS

4.1 Survey Profile

The location of the area of the study, survey design and survey results are shown in this chapter. In the survey result, the demographic characteristics of the respondents, preparation of land for groundnut cultivation, usage of the types of fertiliser to grow the groundnut, pest and disease management, post-harvest activities, and economic impact of groundnut farmers including household income, market situation, challenges and opportunities of groundnut cultivation of farmers in Mohnyin Township.

4.1.1 Location of the Study

Mohnyin Township is located in Kachin State, Myanmar, in the northern part of the country and within the Mohnyin District. This township is part of the broader Kachin region, characterized by its diverse ethnic communities and abundant natural resources. Mohnyin serves as both an agricultural hub and a transportation center, accessible by road and rail. The township is positioned between 24 degrees 30 minutes 46 seconds and 25 degrees 26 minutes 59 seconds North Latitude, and 96 degrees 48 minutes 3 seconds East Longitude. It spans approximately 40 miles from front to back and 50 miles from south to north. The area includes five cities: Mohnyin Township, Hopin, Indawgyi, Nan Moon, and Nan Ma.

Table (4.1) Location and Area of Mohnyin Township (2023)

Sr.	City Name	City Area in square miles
1	Mohnyin	2.46
2	Hopin	1.39
3	Indawgyi	0.12
4	Nan Moon	0.18
5	Nan Ma	0.68
Total		4.83

Source: General Administration department in Mohnyin Township (2024)

Table (4.1) displays the area of these townships in square miles, indicating that Mohnyin Township is the largest, with the majority of cultivators located in this area.

Table (4.2) Sown Acreage, Harvested Acreage and Production of Selected Crops by Kachin State

Year	Classification	Cereals			Oilseeds	
		Paddy	Wheat	Maize	Groundnut	Sesamum
2017-2018	Sown (Acre)	446807	87	69618	25672	16980
	Harvested (Acre)	442613	87	60408	25672	16980
	Production (Ton)	624977	44	88678	15891	4671
2018-2019	Sown (Acre)	460914	73	71065	27,297	16369
	Harvested (Acre)	459192	73	70058	27,297	16369
	Production (Ton)	648711	36	101791	16,969	4769
2019-2020	Sown (Acre)	477017	73	68197	28,091	20951
	Harvested (Acre)	476894	73	59105	28,091	20940
	Production (Ton)	676696	36	89144	17,512	6107
2020-2021	Sown (Acre)	503741	75	77416	31,957	23184
	Harvested (Acre)	491419	75	61224	31,403	21572
	Production (Ton)	701948	39	92892	19,736	6138
2021-2022	Sown (Acre)	504840	35	79755	30,352	21665
	Harvested (Acre)	500250	35	79755	30,352	21665
	Production (Ton)	711790	18	117678	18,907	6080
2022-2023	Sown (Acre)	506838	35	81236	33,132	22001
	Harvested (Acre)	505642	35	79628	33,132	22001
	Production (Ton)	722271	18	116918	20,649	6259

Source: Statistical Year Book (2023).

According to Table (4.2), there are two types of crops in Kachin State namely Cereals and oilseeds. The cereal crops are paddy, wheat and maize and the oilseeds crops are groundnut and sesamum. Paddy is the largest production in Myanmar because it is the main food for the people in Myanmar. In Kachin State, there are two types of oilseeds, the production of groundnut is higher than sesamum production. The farmers in Kachin State grow the groundnuts in the rainy season and winter.

4.1.2 Overview of Groundnuts cultivation and production in Mohnyin Township

Kachin State is the northernmost state of Myanmar. It is bordered by China to the north and east, Shan State to the south, and Sagaing Region and India to the west. It lies between north latitude 23° 27' and 28° 25' longitude 96° 0' and 98° 44'. The area of Kachin State is 89,041 km².

The Kachin encompass a number of ethnic groups speaking almost a dozen district languages belonging to the Tibeto- Burman linguistic family who inhabit the same region in the northern part of Burma on the border with China, mainly in Kachin State. Strictly speaking, these languages are not necessarily closely related, and the term Kachin at time is used to refer specifically to the largest of the groups (the Kachin or Jinhpho/ Jinghpaw) or the whole grouping of Tibeto- Burman speaking minorities in the region, which include the Maru, Lisu, Lashu etc. The exact Kachin population is unknown due to the absence of reliable census data in Burma for more than 60 years. (content://com.google.android.gm.sapi)

Table (4.3) Climate Situation in Mohnyin Township

Station	2024			
Kachin State	Annual Rainfall in Millimeter	Temperature °C		Mean Relative Humidity Percent
		Mean max	Mean min	
Mohnyin	184.96	30 °C	22 °C	82

Source: General Administrative Department, Kachin State

Table (4.3) shows the climate situation with the annual rainfall, temperatures and relative humidity in Mohnyin Township in 2024. The average temperature in Mohnyin township is between 22 °C and 30 °C, annual rainfall is 184.96 millimeters. The relative humidity per cent is 82.

4.2 Survey Design

A descriptive analysis is conducted among groundnut farmers in Mohnyin Township. The study includes farmers aged 20 years and older, utilizing a simple random sampling technique to gather data. The sample comprises 100 farmers, with data collected through structured questionnaires via face-to-face interviews. The questionnaire is divided into four sections: the first part addresses the demographic characteristics of the respondents; the second part focuses on groundnut cultivation and production; the third part assesses the economic situation of the respondents; and the final part explores the challenges and opportunities faced by farmers in Mohnyin Township using a five-point Likert scale.

4.3 Demographic Information of the Respondents

The demographic characteristics of the farmers are detailed in terms of farming experience, educational background, gender, size of land holdings (acres), and types of crops grown. This information is presented in Table (4.2). A total of 100 farmers from Mohnyin Township participated in the study.

Table (4.4) Demographic Information of the Respondents

Description	Specification	Frequency	Percentage
Farming Experiences	Under 20 years	0	0
	20-40 years	4	4
	40-60 years	75	75
	Over 60 years	21	21
	Total	100	100
Age	41-50	45	45
	51-60	35	35
	Over 60 years	20	20
	Total	100	100
Educational background	Primary School Level	78	78
	Middle School Level	18	18
	High School Level	2	2
	Graduated	2	2
	Total	100	100

Gender	Male	100	100
	Female	0	0
	Total	100	100
Size of Landholding (Acres)	0-5	3	3
	6-10	12	12
	10-15	15	15
	15-20	45	45
	Over 20	25	25
	Total	100	100
Types of crops grown	Groundnut (winter)	100	100
	Rice (rainy)	100	100
	Total	100	100

Source: Survey data, 2024

According to the survey data, all of the groundnut farmers are male because they are not only family heads but also main income earners for families in rural agricultural societies in the survey area. However, some functions of groundnut farming should use the effort of females. It can decrease gender discrimination and increase the motivation of the female situation and the household income.

According to the survey results, the age level of the respondents is as follows, 36% are aged between 41-50 years, 35% are 51-60 years and over 60 years are 20% respectively. Most of the respondents are between 41 years and 50 years. It shows that the middle-aged and old-age population are the farmers in Mohnyin Township and people under 40 years do not work in the family business or local area.

The farming experience of the groundnut farmers exceeds 20 years, with the most experienced farmers having over 60 years in the field. Many farmers fall within the 40 to 60 years of experience range, indicating that those in Mohnyin Township possess substantial knowledge and practical skills for cultivating groundnuts.

The educational background of the local farmers is summarized in the table. According to the survey data, only about 2% of the respondents are graduates, and another 2% have completed high school, highlighting a lack of higher education among farmers in Mohnyin. This situation suggests a need for government initiatives to promote education among farmers in Myanmar to enhance crop production. The majority of respondents, approximately 78%, have completed primary school,

indicating potential challenges in adopting modern agricultural technologies. Additionally, about 18% of the respondents have a middle school education.

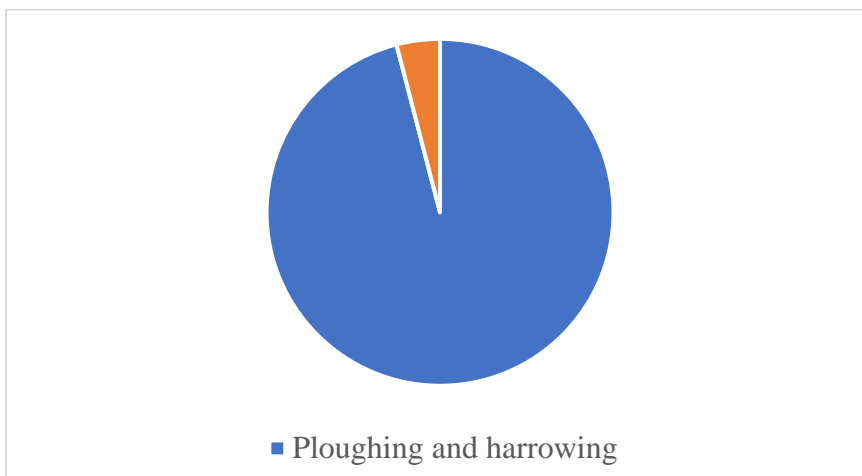
Most farmers who grow groundnuts in Mohnyin possess the size of landholding acres between 10 acres and 15 acres about 45% of the respondents. Fewer farmers about 5% of the respondents possess 5 acres of the farming area. It can be concluded that each farmer owns the landholding areas to grow the groundnut. All of the farmers grow the groundnut in winter and rice in the rainy season. All of the respondents are primarily a groundnut farmer in Mohnyin Township. The region's climate and soil conditions are ideal for cultivating groundnuts, which thrive in this environment. This study focuses on groundnut production and cultivation by contributing to a successful and productive farming practice.

4.4 Analysis on Groundnut Cultivation of Respondents

The local groundnut farmers cultivated both local landraces and improved varieties of groundnuts. The local landraces are well-adapted to the specific conditions of Mohnyin Township, offering resilience and a deep-rooted connection to traditional farming practices. On the other hand, the improved varieties are selected for their higher yields, disease resistance, and better overall performance, which help enhance productivity and meet market demands.

The following Figure (4.1) shows the cultivation methods for preparing groundnut land. There are two methods – traditional ploughing and harrowing and mechanized types of equipment. Most of the farmers use the traditional methods by ploughing and harrowing method about 76% of the respondents. It can be concluded that Mohnyin Township has low infrastructure and other socio-economic factors. The mechanized equipment users are about 24% of the respondents because the road infrastructure will make it difficult to carry the machines and types of equipment.

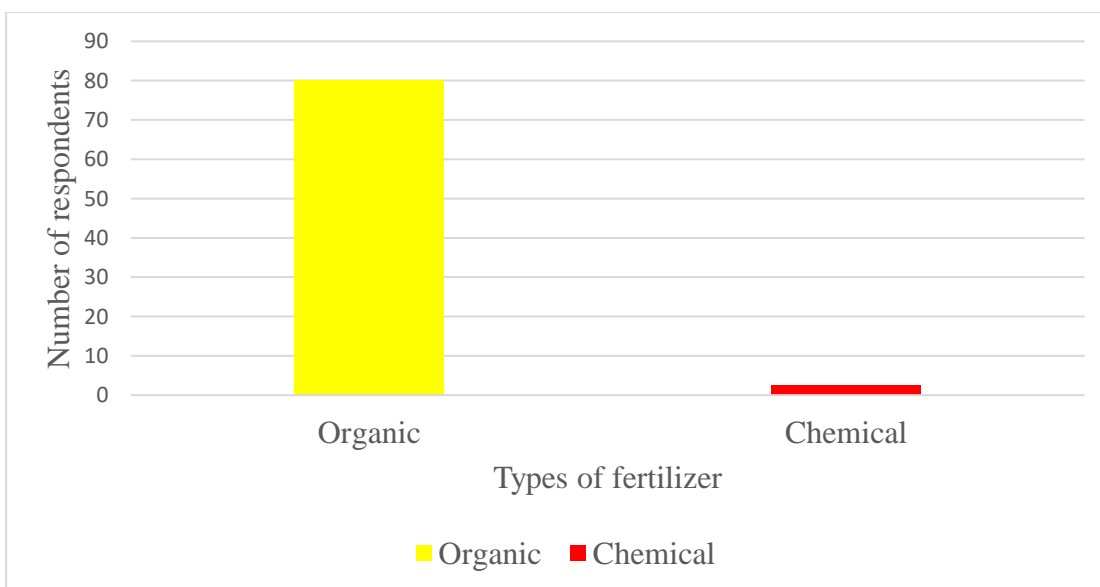
Figure (4.1) Cultivation Methods for Preparing Land of Groundnut



Source: Survey Data, 2024

For groundnut cultivation, the local farmers used the direct seeding technique. This method involves planting seeds directly into the soil, which is well-suited for groundnuts as it allows them to establish a strong root system and promotes healthy growth. Direct seeding is efficient and aligns well with the crop's growth requirements, helping to ensure a successful and productive harvest.

Figure (4.2) Types of Fertilizers in Groundnut Farm



Source: Survey Data, 2024

Figure (4.2) shows the types of fertilizers using in groundnut farm in Mohnyin Township – organic fertilizers such as compost, manure, etc and chemical fertilizers. According to the survey results, about 20% of the local farmers use chemical fertilizers and 80% the organic fertilizer such as compose and manure in this area. According to

the survey result, the respondents used the irrigation for groundnut cultivation. While groundnuts are relatively drought-tolerant, providing supplemental irrigation helps ensure consistent moisture levels, which is crucial for optimal growth and development. This approach helps to mitigate the risk of water stress during critical stages of growth, such as flowering and pod formation, leading to improved yields and better quality of the groundnuts.

Table (4.5) Pest and Diseases Management in Groundnut Farm

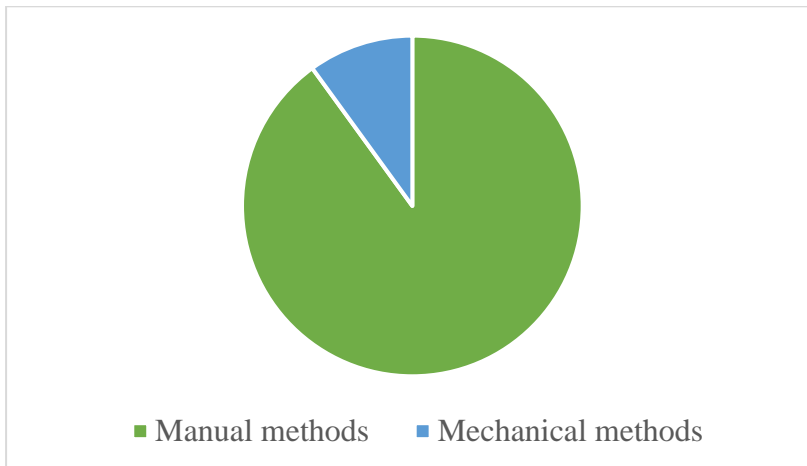
Questions		Frequency	Percentage
Pest Infestations in Groundnut Crops	Yes	92	92
	No	8	8
	Total	100	100
Diseases in Groundnut Crops	Yes	89	89
	No	11	11
	Total	100	100

Source: Survey Data, 2024

Table (4.5) shows the pest and disease management on the groundnut farm in Mohnyin Township. According to the data, most of the groundnut farmers encountered pest infestation in their groundnut crop about 92% of the respondents and a few farmers about 8% of the respondents have not encountered it. 89% of the respondents found the disease in their farms and 11% of the respondents did not take this action. It can be concluded that the cultivation and production of groundnuts succeed in their production due to good practices regarding the pests and diseases in groundnut farming.

Most of the respondents replied that typically harvest the groundnuts at maturity. It ensures that the pods have developed fully and achieved their optimal size and quality. Harvesting at maturity allows the groundnuts to have the best flavour, texture, and shelf life. The plants are usually harvested after the flowering period, once the pods have had sufficient time to mature and dry out in the soil. This helps in maximizing yield and ensuring that the groundnuts are ready for processing and storage.

Figure (4.3) Post-harvest Activities in Groundnut Farming



Source: Survey Data, 2024

Figure (4.3) represents the post-harvest activities in groundnut farming in Mohnyin Township. There are two post-harvest activities such as manual methods and mechanical methods. Most of the farmers about 90% of the respondents use the manual method and 10% of the respondents use the mechanical method. It is shown that the mechanical methods and modernized machines and types of equipment cannot be used by the farmers in Mohnyin Township. Most of the farmers in Mohnyin Township use ploughing and harrowing to prepare the land, using traditional and organic fertilizers and using manual methods in post-harvest activities. According to these results, the farmers in Mohnyin Township have a low standard of living and also the infrastructure such as road transportation, communication – internet and telephone connection in Mohnyin Township is an underdeveloped situation.

4.5 Economic Indicators of Groundnut Farmers in Mohnyin Township

The economic indicators of groundnut farmers can provide insights into the financial health, productivity and viability of groundnut farming. These indicators include both microeconomic and macroeconomic factors influencing profitability, production levels, and sustainability of the farmers' livelihoods. Some key economic indicators for groundnut farmers are yield per hectare, farm income, cost of production, market price of groundnuts, access to credit, labour costs and employment, government subsidies and support programs, adoption of technology, land ownership and land tenure security, climate and environmental factors. The yield per hectare, access to credit, labour costs and employment, government subsidies and support programs, adoption of technology, land ownership and land tenure security are shown in the above

tables and figures. The economic indicators of groundnut farmers in Mohnyin Township are expressed in the household income and the nature of selling products in their area. The following Table (4.6) shows the economic indicators of groundnut farmers in the study area.

Table (4.6) Some Economic Indicators in Groundnut Farm

Items		Frequency	Percentage
Household income for groundnut cultivation	Yes	98	98
	No	2	2
	Total	100	100
Types of selling location	Local markets	95	95
	Direct to traders	5	5
	Total	100	100

Source: Survey Data, 2024

According to the data, 98% of the respondents depend on groundnut production for their household income. It means that the farmers in Mohnyin Township make their income from the cultivation and production of groundnut. It can be concluded that although there are mainly two crops in Mohnyin Township, the main household income will be made from the cultivation and production of groundnut. 95% of the farmers sell their products to the local markets and 5% of the respondents directly contact the traders. It shows that the communication systems in Mohnyin Township are difficult to connect with other places. Therefore, the information about the crops such as the price of the product, the weather conditions of the township and the distribution of the product is more difficult than in other places.

4.6 Cultivation and Production of Groundnut in Mohnyin Township

Mohnyin Township, located in Myanmar's Kachin State, plays a significant role in groundnut cultivation due to its favorable climate and soil conditions. Groundnut, a vital oilseed crop, has become an important source of income for local farmers in this region. The township's agriculture is primarily rain-fed, with the majority of farmers relying on traditional farming methods. However, in recent years, efforts have been made to improve cultivation techniques and productivity. This section explores the

cultivation practices, production processes, and the overall contribution of groundnut farming to the livelihoods of farmers in Mohnyin Township.

The following Table (4.7) shows the cultivation and production of groundnut in Mohnyin Township. The sown acreage of groundnut was the highest in 2019-2020 about 13515 acres. The sown acreage of groundnut in Mohnyin Township decreased between 2009-2010 and 2018-2019. According to the data, the sown acreage of groundnut in 2020-2021 was the lowest due to COVID-19 and the political situation. After 2020-2021, the sown acreages of groundnut were increased year by year.

Table (4.7) Cultivation and Production of Groundnut in Mohnyin Township

Year	Sown Acreage (Acres)	Harvested Acreage (Acres)	Production (Bushels)
2005-2006	2011	2011	80440
2006-2007	2966	2966	118640
2007-2008	4020	4020	160800
2008-2009	4824	4824	192960
2009-2010	10000	10000	400000
2010-2011	7453	7453	298120
2011-2012	8460	8460	338400
2012-2013	6673	6673	266920
2013-2014	6959	6959	278360
2014-2015	6406	6406	256240
2015-2016	6129	6129	245160
2016-2017	7120	7120	284800
2017-2018	10850	10850	434000
2018-2019	11346	11346	453840
2019-2020	13515	13515	540600
2020-2021	1731	1731	69240
2021-2022	3269	3269	130760
2022-2023	4631	4631	185240

Source: Myanmar Agricultural Development Bank, Mohnyin Township, 2023

The above figure shows the harvested acres and production of groundnut in the table (4.7) presents the cultivation and production of groundnut in Mohnyin Township from the agricultural years 2005-2006 to 2022-2023. Over this period, both the sown

acreage and harvested acreage demonstrate fluctuating trends, while production (measured in bushels) follows a similar pattern, correlating with the area of cultivation.

In the early years, the sown and harvested acreage remained stable, such as in 2005-2006 where both stood at 2,011 acres, producing 80,440 bushels. However, significant increases in acreage occurred between 2005-2010, peaking at 10,000 acres in 2009-2010, with a corresponding production of 400,000 bushels. This rise in cultivation is likely due to favorable market conditions, improved agricultural practices, or government incentives encouraging farmers to expand groundnut cultivation.

From 2010-2017, the acreage fluctuated, with a notable dip in 2012-2013 where the sown acreage decreased to 6,673 acres and production dropped to 266,920 bushels. Such declines can be attributed to factors like adverse weather conditions, labor shortages, or pest infestations. On the other hand, 2017-2019 provides a substantial increase, reaching a peak of 13,515 acres in 2019-2020 with 540,600 bushels of production, likely due to improved yields, increased demand, or better support from the Myanmar Agricultural Development Bank.

However, post-2019, there was a sharp decline in sown and harvested acreage, particularly in 2020-2021, which dropped dramatically to 1,731 acres, producing just 69,240 bushels. This could be the result of socio-economic challenges, disruptions in supply chains, or political instability in the region affecting agricultural activities. The acreage and production levels remained relatively low through 2022-2023, with sown and harvested acreage at 4,631 acres and production at 185,240 bushels.

Table (4.8) Bank Credit for Groundnut Cultivation from Myanmar Agricultural Development Bank in Mohnyin Township

Sr.	Year	Village tract	Population	Acres	Loan	Rate
	(Winter)				(Kyats Thousand)	(Acres to Kyats)
1	2006	10	822	2000	18999	9000
2	2007	13	970	2966	23728	8000
3	2008	13	1027	4020	32160	8000
4	2009	13	1194	4824	48240	10000
5	2010	14	1315	10000	100000	10000
6	2011	10	981	7453	74530	10000
7	2012	11	1131	8460	84600	10000

8	2013	10	947	6673	133460	20000
9	2014	9	967	6959	139180	20000
10	2015	9	879	6406	128120	20000
11	2016	8	847	6129	122580	20000
12	2017	8	1082	7120	356000	50000
13	2018	15	1803	10850	1085000	100000
14	2019	14	1767	11346	1134600	100000
15	2020	15	2013	13515	1351500	100000
16	2021	12	249	1731	173100	100000
17	2022	12	485	3269	326900	100000
18	2023	10	689	4631	463100	100000

Source: MADB, Mohnyin Township

Table 4.8 presents the data on bank credit extended by the Myanmar Agricultural Development Bank for groundnut cultivation in Mohnyin Township from 2006 to 2023. It highlights the number of village tracts, population, acres under cultivation, loan amounts, and the rate of loans provided per acre. The table reveals an overall increase in both the loan amounts and acreage over the years, with notable fluctuations influenced by various factors.

In 2006, the bank provided loans totalling 18,999 thousand kyats for 2,000 acres, with a loan rate of 9,000 kyats per acre. Over the following years, there was a steady increase in the number of acres being cultivated and the corresponding loan amounts. For instance, in 2009, loans increased significantly to 48,240 thousand kyats for 4,824 acres, at a rate of 10,000 kyats per acre. The expansion in acres and loans during this period likely reflects favourable agricultural policies, increased demand for groundnuts, or improvements in credit availability to farmers.

In 2010, a major rise occurred, with 10,000 acres under cultivation and a loan of 100,000 thousand kyats at a rate of 10,000 kyats per acre. This year marked a peak in loan disbursements, showing strong support for groundnut farmers. The number of village tracts receiving loans also increased, indicating that more areas and farmers benefited from financial support.

From 2012 to 2017, there were significant fluctuations in loan amounts and acres cultivated. Notably, in 2017, the loan amount jumped to 356,000 thousand kyats for 7,120 acres, marking a substantial rise in the credit available per acre to 50,000

kyats. This rise could be attributed to increased production costs, inflation, or a change in the bank's credit policy to provide more support per acre.

The years 2018 to 2020 saw another major leap in both cultivated acres and loans, reaching 13,515 acres in 2020 with a loan of 1,351,500 thousand kyats. The loan rate also increased to 100,000 kyats per acre, indicating that the financial requirements for groundnut cultivation had significantly increased, likely due to higher input costs or an emphasis on expanding production.

In 2021, there was a sharp decrease in the number of acres to 1,731, with the loan amount dropping to 173,100 thousand kyats, reflecting a reduction in cultivation activity, possibly due to external factors such as unfavourable weather, socio-political issues, or the effects of the COVID-19 pandemic. However, by 2023, the number of acres and loans had begun to recover, with 4,631 acres under cultivation and loans totaling 463,100 thousand kyats. The consistent loan rate of 100,000 kyats per acre from 2018 onward demonstrates the bank's sustained financial support for farmers, although the number of acres cultivated fluctuated in response to various challenges.

4.7 Challenges and Opportunities of Groundnut Cultivation in Mohnyin Township

Groundnut (peanut) cultivation faces several challenges and opportunities, especially in regions where it is a key cash crop. These factors affect its production, profitability, and sustainability. The challenges of groundnut cultivation are climatic variability, pest and disease pressure, poor access to quality inputs, market volatility, limited mechanization, and inadequate infrastructure.

According to the climatic variability, Groundnut crops are sensitive to weather conditions, especially droughts and excessive rainfall. Climate change is leading to more unpredictable weather patterns. It can reduce yields or cause crop failure, making farming risky. Groundnuts are susceptible to pests (like aphids, and thrips) and diseases (such as leaf spots, rusts, and aflatoxin contamination). It can destroy crops, reduce market value, and increase production costs due to the need for pesticides and disease management. Smallholder farmers often lack access to high-quality seeds, fertilizers, and pesticides. This leads to low yields, poor crop quality, and high susceptibility to diseases and pests, ultimately reducing farm income due to poor access to quality inputs. In many regions, groundnut farming is still labor-intensive with limited use of

modern machinery for planting, harvesting, and processing. This increases labor costs and reduces efficiency, making farming less competitive and more exhausting for smallholders. Poor rural infrastructure, including roads, storage facilities, and irrigation systems, limits the ability to market groundnuts effectively. According to its impact, post-harvest losses, higher transportation costs, and inability to access markets reduce farmers' profitability.

The region experiences unpredictable rainfall patterns, which can lead to periods of drought or excessive moisture. Both extremes can adversely affect groundnut growth and yield. Maintaining optimal soil fertility is crucial for healthy groundnut crops. Depleted soil nutrients require regular management and fertilization, which can be resource-intensive. Groundnuts are susceptible to various pests and diseases that can reduce crop quality and yield. Effective pest and disease management strategies are essential but can be challenging to implement consistently. Addressing these challenges requires careful planning, regular monitoring, and adaptation of best practices to ensure a successful harvest.

Opportunities of groundnut Cultivation are high market demand, government support and subsidies and value addition and processing of the product. Groundnuts are in demand for various uses—food products, oil production, animal feed, and export markets. Farmers can capitalize on this demand, especially with value-added products like roasted peanuts, peanut butter, and groundnut oil. Processing groundnuts into products like oil, peanut butter, or snacks can increase the value of the crop. Diversifying into value-added products helps farmers earn more and reduces dependence on raw groundnut sales.

CHAPTER V

CONCLUSION

5.1 Findings

Myanmar has transitioned from a planned economy to a market-oriented economy since 1988-1989, and this shift has significantly influenced the agricultural sector. With the move away from a centrally planned system, farmers now have the freedom to cultivate any crops they choose. Additionally, they can store, process, and trade their products without restrictions. Groundnut cultivation predominantly occurs in the dry zone of Myanmar due to favorable weather conditions and soil characteristics. As a result, it is important to promote groundnut farming in other suitable regions and states.

Most of the farmers have farming experience between 40 years and 60 years. It shows that the farmers in Mohnyin Township have good knowledge and practice for growing the groundnut crop. Among them, 96% of the respondents do not get primary and middle school education. This means that there can be faced difficulties in using modernized technology for farming. According to the survey data, all of the groundnut farmers are male because they are not only family heads but also main income earners for families in rural agricultural societies in the survey area.

According to the survey results, the age level of the respondents is as follows, 36% are aged between 41-50 years, 35% are 51-60 years and over 60 years are 20% respectively. Most of the respondents are between 41 years and 50 years. It shows that the middle-aged and old-age population are the farmers in Mohnyin Township and people under 40 years do not work in the family business or local area.

Most of the farmers about 90% of the respondents use the manual method and 10% of the respondents use the mechanical method. It is shown that the mechanical methods and modernized machines and types of equipment cannot be used by the farmers in Mohnyin Township. Most of the farmers in Mohnyin Township use ploughing and harrowing to prepare the land, using traditional and organic fertilizers and using manual methods in post-harvest activities. According to these results, the

farmers in Mohnyin Township have a low standard of living and also the infrastructure such as road transportation, communication – internet and telephone connection in Mohnyin Township is an underdeveloped situation.

5.2 Suggestions

Groundnuts play multiple roles in Myanmar, serving as both a flavouring ingredient in various dishes and a cooking oil, with some of the oil being exported. The by-product of oil production, known as oil cake, is utilized as feed for livestock and fish farms. Cultivating groundnuts provides farmers with a vital source of income. In the Mohnyin region, farmers require essential agricultural inputs, including land, irrigation, machinery, technology, quality seeds, and fertilizers, to enhance productivity. Groundnuts are a crucial crop in this area, and the study highlights the importance of the agricultural sector in promoting groundnut production as a marketable product that can generate local revenue. Furthermore, encouraging female participation in groundnut farming can help reduce gender discrimination and improve household incomes. The findings indicate that farmers in Mohnyin Township experience a low standard of living, and the local infrastructure such as road transportation and communication services (internet and telephone) is underdeveloped. Therefore, it is essential for the government to invest in improving infrastructure in Mohnyin Township to boost agricultural productivity.

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APPENDIX

SURVEY QUESTIONNAIRE

Personal Information:

1. Name: [.....]
2. Age: [Dropdown menu: Under 18 / 18-30 / 31-50 / Over 50]
3. Gender: [Dropdown menu: Male / Female / Other]
4. Education Level: [Dropdown menu: Primary / Secondary / Tertiary / None]
5. Years of Farming Experience: [.....]

Farming Details:

6. Size of Landholding (in acres): [.....]

7. Types of Crops Grown

- Groundnuts
- Rice
- Pulses
- Vegetables
- Others (please specify: [.....])

8. Are you primarily a groundnut farmer?

- Yes
- No

Groundnut Cultivation Practices:

9. What groundnut varieties do you cultivate?

- Local landraces
- Improved varieties (please specify: [.....])

10. How do you prepare your land for groundnut cultivation?

- Plowing and harrowing
- Mechanized equipment

Others (please specify: [.....])

11. What sowing technique do you use for groundnuts?

Direct seeding

Transplanting

Others (please specify: [.....])

12. What fertilization methods do you use?

Organic (compost, manure)

Chemical (fertilizers)

Others (please specify: [.....])

13. Do you use irrigation for groundnut cultivation?

Yes

No

If yes, please specify the irrigation method: [.....]

Pest and Disease Management:

14. Have you encountered pest infestations in your groundnut crops?

Yes

No

If yes, please specify the types of pests: [.....]

15. Have you encountered diseases in your groundnut crops?

Yes

No

If yes, please specify the types of diseases: [.....]

Harvesting and Post-Harvest Handling:

16. When do you typically harvest your groundnuts?

After flowering

At maturity

Others (please specify: [.....])

17. How do you handle post-harvest activities like drying and storage?

- Manual methods
- Mechanical methods
- Others (please specify: [.....])

Economic Impact:

18. How important is groundnut cultivation to your household income?

- Very important
- Somewhat important
- Not important

19. Where do you primarily sell your groundnut produce?

- Local markets
- Direct to traders
- Others (please specify: [.....])

Challenges and Opportunities:

20. What are the main challenges you face in groundnut cultivation?

- [.....]

21. What opportunities do you see for improving groundnut cultivation practices?

- [.....]