

**YANGON UNIVERSITY OF ECONOMICS**

**MASTER OF ECONOMICS**

**A STUDY ON THE ONION PRODUCTION AND ITS IMPACT ON THE  
SOCIO-ECONOMIC CONDITIONS OF MYAUNG TOWNSHIP**

**WAH SO OO**

**MAY, 2018**

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A thesis submitted as a partial fulfillment of the requirements for the degree of  
Master of Economics (Economics)

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**YANGON UNIVERSITY OF ECONOMICS  
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## ABSTRACT

A study on the onion production and its impact on the socio-economic conditions of Myaung Township explore the land use, sown area, yield per acre, growing interest among the onion producers to engage in the cultivation of onions that would ultimately increase the supply of onions in the markets as well as income to the producers and the nation as a whole. Onion production is a potential economic activity for income growth and improved welfare in rural areas.. The study uses descriptive method based on secondary data. Farming system in Myaung Township is mainly traditional one. During the period from 2006/07 to 2015/16, land use in agricultural sector has changed. The study towards improving the production at the district level and thus maximizing the benefits accrued to the community and hence improving their livelihood and national income at large. The objective of the study is trend of onion production in Myaung township and to understand the impact on socio-economic conditions of Myaung township. Sown area and production of onion decreased during the study period. An approach to find the solution to the problem of various challenges during onion production.

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# CHAPTER I

## Introduction

### 1.1 Rationale of the Study

Onion is one of the most important commercial vegetable crops grown in Myanmar. There is a growing interest among the onion producers to engage in the cultivation of onions that would ultimately increase the supply of onions in the markets as well as income to the producers and the nation as a whole. In 2016/2017, a total of 4667.17 tones of onions were sold in the markets from the number of 2,120 households involved in onion production (Myaung Township Profile, 2017). The volume of onions sold is an indication of the demand and potential opportunities for onion producers to exploit more in Myaung Township. Therefore, onion production is a potential economic activity for income growth and improved welfare in rural areas. However, it has been observed that, onion production have not brought a remarkable change to the people in Myaung Township. This shows that, people in Myaung Township have not exploited this opportunity effectively in their efforts to reduce poverty.

In order to reduce poverty at household level, strategies and improvement of infrastructures such as roads and markets have also been made by the government, non-government organizations and different development partners. Despite of all these efforts, poverty is still persisting in the study area. People have no decent houses; fail to pay school fees for their children and other related expenses like health services (Myaung District Profile, 2017). Onion production can therefore be a best solution to poverty reduction in the area. This will be a stepping stone towards improving the production at the district level and thus maximizing the benefits accrued to the community and hence improving their livelihood and national income at large. The study will be useful in different ways. Findings from this study will provide the base for policy makers and planners at different levels to set appropriate strategies on improvement of infrastructure, marketing and provision of social services like health and education. Extension workers and planners will use this study to set up plans which can assist farmers to improve their socio-economic status. Through the use of this study, there is a possibility of increasing foreign currency revenue through exporting onions. The study will also be helpful to other interested researchers to conduct researches on similar issue and then the result of it will pave

the way for more findings. Likewise the result of this study will provide the base for policy makers and planners at various levels to set appropriate strategies on improvement of the policy making process that will favor farmers and emphasize on onion production, marketing, schools construction and health services.

## **1.2 Objectives of the Study**

The objectives of this study is to study an assess the trend of onion production in Myaung Township and to understand the impact on the socio-economic conditions of Myaung Township.

## **1.3 Method of the Study**

When the onion production of Myaung Township is studied, it is studied by descriptive method that are based on the facts of statistics books, from the Local Department of Agriculture, Department of Land Management, Mechanized Department and Department of General Administration, papers and books from library and data from Internet Websites.

## **1.4 Scope and Limitation of the Study**

This study was conducted in Myaung Township, at the Sagaing Region. The study intended to study of onion production and its impact on the socio-economic conditions of Myaung Township. The researcher was faced with the following constraints during data collection and report writing; the selection of onion producers and non-onion producers was based on the visit and willingness of the particular person to answer the questions and thus had some limitations. The study covers the period from to 2006 to 2016.

## **1.5 Organization of the study**

The thesis is organized into five chapters. Chapter One is the introduction. It includes the rationale, objective, method, scope and limitation, and organization of the study. Chapter Two contains literature review. Chapter three contains the agricultural sector in Myanmar's economy and agricultural policies. Chapter Four is the historical background of Myaung Township. Chapter Five is the conclusion which include finding and suggestion.

## CHAPTER II

### LITERATURE REVIEW

#### 2.1 History of Onions

The onion (*Allium Cepal*, from Latin *cepa onion*)<sup>[1]</sup> also known as the bulb onion or common onion is a vegetable that is the most widely cultivated species of the genus *Allium*. Its close relative includes the garlic, shallot, leek, and chive.

This genus also contains several other species variously referred to as onions and cultivated for food, such as the Japanese bunching onion (*Allium fistulosum*) the three onions (*A. v. proliferum*) and the Canada onion (*Allium Canadense*). The name wild onion is applied to a number of *Allium* species, but<sup>[2]</sup> *A. cepa* is exclusively known from cultivation. Its ancestral wild original form is not known, although escapes from cultivation have become established in some region. The onion is most frequently a biennial or a perennial plant, but is usually treated as an annual and harvested in its finest growing season.

#### 2.2 Uses of Onion in World Countries

Onions were domesticated in central Asia, and have been cultivated for more than 4000 years for food, flavor, health, and also for religious purposes. Onion cultivation was adopted in India around 600 B.C; from there they were originally brought to Peru from Louisiana, where they were introduced from French and Italian. Onions found their niche in the temperature valleys and altiplano, where cooler conditions and irrigated agriculture provided favorable condition for cultivation.

Onions are cultivated and used around the world. As a food item, they are usually several cooked, as vegetable or part of a prepared savory dish, but can also be eaten raw or used to make pickles or chutneys.

The geographic origin of the onion is uncertain because the wild onion s extinct and ancient records of using onion span western and eastern Asia. The first cultivated, farmed onions are the subject of much debate, but the two regions that many archaeologists, botanists and food historians point to are central Asia or Persia. They were probably and almost simultaneously domesticated by peoples all over the globe, as there are species of the onion found the world over. Food use of onion date

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<sup>1</sup> "History of Onions". Us National Onion Association, Greeley, Co.2011.

<sup>2</sup> Cumo, CE (2015). Onion. In: Food that Changed History: How foods Shaped Civilization from the Ancient World to the present.

back thousands of years in China, Egypt and Persia. Traces of onions recovered from Bronze. Age settlements in China suggest that onions were used as far back as 5000 BCE.

Onions grew in Chinese gardens as early as 5000 years ago and they referred in some of the oldest Vedic writing from India. There is evidence that the Samaritans were growing onions as early as 2500 BC. One Samaritan text dated to about 2500 BC tells of someone plowing over the city governor's onion patch.

Most researchers agree that the onion has been cultivated for 5000 years or more and that they were first grown in Iran and West Pakistan. However, the archaeological and literary evidences suggest cultivation probably took place around two thousand years later in ancient Egypt.<sup>[3]</sup>

For centuries, men believed onion had therapeutic properties. Onions were used off infection. The English and French would use onion to ward off the plague. Indians in America would roast onion, smear them with honey and use them to treat snake bites. And even today people feeling a cold coming on are advised to place a chopped onion next to their bed. The majority of the researchers agree that onion has been cultivated for 5000 years or more. Since onion grew untamed in various regions, they were probably frenzied for thousands of years and disciplined simultaneously all over the world onion may be among the earliest grown crops because they were less delicate than other foods to the time were portable were simple grow and could be grown in a diversity to soil and climate.

### **2.3 Progress of World Onion Production**

Onion is a smallholder crop and is consumed locally without the internal trade and domestic processing. Globally, China is the leading onion producing country followed by India. World production of onion is shown in the following table 2.1.

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<sup>3</sup> "Ansari NA (2007) "Onion Cultivation and Production in Iran"

**Table (2-1) Area, Production and Productivity of Onion in Major Onion Producing Countries by 2016**

No.	Country	Area ('000ha)	Production ('000MT)	Yield (hectogram per hectare)
1.	China	1086711	23,907,509	219,999
2.	India	1199,850	19,415,425	161,815
3.	Egypt	84,878	3,115,482	367,054
4.	United State	53,650	3,025,700	563,970
5.	Iran	61,809	2,345,768	153,077
6.	Turkey	65,607	2,120,581	323,226
7.	Russia	88,563	2,023,271	28,456
8.	Pakistan	135,912	1,739,054	127,955
9.	Bangladesh	177,492	1,735,334	97,770
10.	Brazil	57,464	1,657,441	288,431
311.	Mexico	51,504	1,635,049	317,458
12.	Sudan	87,696	1,583,900	180,613
13.	Indonesia	149,635	1,446,869	96,693
14.	Myanmar	69,962	1,123,084	160,528
15.	Ukraine	55,100	1,017,120	184,595
16.	Nigeria	466,277	1,004,153	21,536
17.	Vietnan	96,105	352,884	36,719
18.	Uganda	83,224	333,779	40,106

Source: FAO- (2016)

Table 2.1 shows that among the onion producing countries in the world India ranks second in production, the first being China. The highest productivity of onion in the world is that of United States of 563,970 (hectogram per hectare) while the lowest productivity is that of Nigeria with the productivity of 21,536 (hectogram per hectare).

Some selected the world countries, the variation of the onion export in this country is due to the difference of the onion production depend on the change climate, geographical, weather conditions, uses fertilizer and pesticides, farmers and agricultural loans.

## 2.4 Environmental Requirement of Onion

Onion can be grown in a wide range of climate environments, but it thrives best at mild climate without excessive rainfall or extremes of heat and cold. Onion is a cool season crop that has some frost tolerance but is best adapted to a temperature range between 13 and 24°C. Optimum temperature for early seedling growth is between 23 and 27°C, growth is slow at above 30°C. Acclimated plants are able to tolerate some freezing temperature. Best production is obtained when cool temperature prevails over an extended period at time, permitting considerable foliage and root development before bulb formation starts. After bulb formation begins, high temperature and low relative humidity extending into the harvest and curing period are desired (Purseglove, 1985, Rubatzky and Yamaguchi, 1997, Jilani et al., 2010), so the size of the leaves part of the plant also influences bulb size. Thus the more leaves present and larger the size of plant at the onset of bulb initiation, the larger will be the crop yield (Hamaski et al., 1999).

The onion develops distinct bulbs depending on the varieties. These bulbs are varying in size (small, medium, large). Bulb weight may be one kilogram in some Southern European cultivars, and to flattened disk form. The color of the membranous skins may be white, silvery, buff, yellowish, bronze, rose red, purple or violet. The color of the fleshy scales can vary from white to bluish-red. There is also much variation in flavor and keeping or storage ability of the bulbs (Balooch 1994, Rabinowitch and Currah 2002).

Favorable soil pH is about 6.5 – 8.0 in mineral soils (Rubatzky and Yamaguchi 1997, Savva and Frenker 2002) light and temperature influence the process of bulbing. Both factors must be at optimum for initiation of the bulbs. Cold condition, although there are cultivars that tolerate warm conditions and short-day-lengths. Cool conditions are usually required during the first of the season, when the plants start to form bulbs. Warm and dry weather is needed for harvesting and curing. Each cultivar differs in its sensitivity to day-length (Savva and Frenken 2002).

The onions are grouped into short-days and long-days depending on the day-length requirements. The bulbs that require day length of 11.5 hours are categorized into short-day group and those that take 14 hours or more for bulb formation fall into long day group. Onion also requires varying day length and temperature for the purpose they produced. A relatively high temperature and long photoperiod are required for bulb formation and for seed production; temperature is of immense importance than day-



length. Onion bulbs specific temperature requirement for seed and bulb production (Baloch 1994). Light intensity, light quality, and other factors interact with temperature and dry length to influence the bulbing response to onion cultivars. With warm weather and bright days, onions bulb at shorter-day-lengths than when the days are cool and over cast (Hamasaki, et al 1999).

Onion dry bulb are established either by direct sowing the field, by transplanting seedling or from dry-set depending on the growing conditions of the specific regions. Sowing seeds directly into the soil where the crop is to be grown is potentially the most economical method of raising an onion, crop, particularly, where the availability of labor for transplanting is limited and its cost high or where the ability of labor for transplanting is limited and its cost is high or where the availability of facilities for raising transplant is limited (Brewster, 1994). Sets and transplants are used in areas where the season is not long enough for proper bulb development. Transplants have the advantage on economic use of seed, selecting superior (healthy and vigorous) seedling. It saves weeding and watering effort during the early weeks of onion growth it enables the farmers attend to those seedlings in a compact area (Lemma and Shimeles 2003). Onions can be grown on a wide range of soils. Varying in texture from coarse-grained sands to clays. Lighter soils are easy to manage. Soils should be 50-60 cm deep and well drained. Soils with high water holding capacity are better able to provide moisture to the shallow rooting system but must also drain well to be suitable. Growth is retarded when available soil moisture is low, but onions are also sensitive to a high-water table or water logging. Uniform moisture availability about 400-800 mm per crop is conducive to large bulb size and high yield.

#### **2.4.1 Soil and Climate for Onions**

Onion is a temperature crop but can be grown under a wide range of climate conditions such as temperate, tropical and sub-tropical climate. The best performance can be obtained in a mild weather without the extreme of cold and heat and excessive rainfall. However, onion plants are hardy and heat in the young stage can withstand freezing temperature also. In India, short-day-onion is grown in the plain and requires 10-12 hours day length. The long-day onion is grown in hills requiring 13-14 hours day length. For vegetative growth lower temperature combined with short photoperiod is required whereas relatively higher temperature along with photoperiod temperature for vegetative phase and bulb development in 13-24°C and

16-25°C, respectively. It requires about 70% relative humidity for good growth. It can grow well in place where average annual rainfall is 650-750 mm with good distribution during the monsoon period. Areas with low (<650 mm) or heavy rainfall (>750 mm) are not particularly suitable for rain fed crop.

Onion can be grown in all types of soils such as sandy-loam, clay-loam, still-loam and heavy-soils. However, the best soil for successful onion cultivation is deep, friable loam and alluvial soils with good aeration, moisture holding capacity and sufficient organic matter. In heavy soils, the bulbs produced may be deformed. Onion crop can be grown successfully on heavy soil with application of organic manure prior to planting and preparation of the field for onion cultivation should be very good. The optimum PH range, regardless of soil type is 6.0-7.5, but onion can also be grown in mild-alkaline soils. Onion crop is more sensitive to highly acidic, alkali and saline soils and water logging condition.

#### **2.4.2 Land preparation**

Timely field preparation facilities timely sowing which ensures higher yield initial ploughing should be done in an optimum moisture range in order to get better tillage. Number and depth of ploughings depends on weed intensity size of the crop seed to be sown, rotting pattern of the crop type of tillage required minimize number of ploughing as fast as possible in order to reduce cost of cultivation since certain crop may not require through fine tillage. Summer ploughing is always advantageous and hence takes up, whenever possible. Summer ploughing is very common summer showers are received or profuse irrigation water is available.

After initial ploughing wait for 4-5 days, in order to reduce moisture content of the soil and subsequent ploughing and harrowing better physical conditions of soil could be obtained with less operation. Harrowing of the soil should invariably follow after each ploughing facilities to reduce the clod size. Ploughing operations should be repeated when the weed seeds are just germinated. Whenever it is possible plough the land immediately after harvesting of the previous crop. Initial ploughing should not be carried out at excess or under moist conditions. After getting suitable and required tillage of soil land should be perfectly leveled by using bullock drawn or tractors drawn levelers. Leveling helps in irrigating the fields with high water use efficiency. As also helps in draining excess water without stagnation and heavy rainy days or immediately after giving irrigation.

## 2-5 Description of Onion Crop

In Myanmar, the cropping season, starting plant of onion in the month of January, the rainiest month of the year. Most farmer choose to plant their seedbeds during the rain because there is less risk that the crop will be suffer from lack of water towards the end of the dry season. Also, the most commonly used variety, the Farmers prepare the seedbeds with great care, and many ally animal manure to the soil in the preparing process. The recommended practice is to rotate seedbeds to prevent the buildup of soil borne diseases, but the application of the technique is variable. Many times farmers clear new land of shrubby vegetation to plant the onion seedbed in the leaf litter of the shrubs. Once the seedbeds have been prepared, the farmers level them and distribute the seed evenly across the surface of the bed. The bed is then water tree or with a trap. The seed germinate within 6 to 8 days of being period.

Management of the seedbed is a dedicate operation. Approximately a week after germination, the seedbed must be weeded. This is the time consuming task requiring patience. Because rainfall pattern are variable, even during the rainiest month of the year, the farmers must be careful to water the onion seeding when necessary.

At this time, young onion seedlings are susceptible to damping off and many farmers have lost significant quantities of seedlings to thus common disease, some farmers have tried to control the effects of damping off by planting in sandy, well-grained soils, by rotating seedbeds, and by covering the seedbed with a trap during heavy rains.

After the seedbeds have been planted, the farmers prepare the land where the onion seedling will be transplanted. Before tillage, the farmers apply manure to the field, spreading it out over the field to be incorporated by the action of the plow. Women participate in the preparation by pulling up weeds that can afford the hourly rate often hire a tractor to plow their fields. Sometimes, the field must be plowed many times, as the rain cause high level of soil compaction.

A month after germination, the seedlings are ready to be transplanted. First, the onion are pulled from the seedbeds and placed in a wooden box. Usually they are covered with something to keep the dedicate stems out of the sun. The labor for this task is separated by gender. The men male rows for the plants with small pick, and they control the flow of the irrigation water the moves through the rows.

The distance between plants is approximately 10 cm, and the distance between row varies from 20 cm to 30 cm. both sexes perform this task with amazing proficiency, the men are able to work long hours making row after row, and the women are extremely fast at pushing the thin stems into the wet ground. In comparison with other local crops, such as peanuts, the tillage and planting requirements for onions are much more labor intensive.

After the planting have been completed, the farmers must monitor field condition carefully. As the rainy season reaches its end in March, timely irrigation of the early crop is essential. Several weeks after planting, the farmers begin the first important weeding operation; male workers use the hoe to reshape the row in which the onions were originally planted. The hoe is also use to remove any emerging weeds. Some farmer will task to opportunity to apply the first fertilizer treatment, the farmers will weed the fields second time by hand. Both male and female worker do this task.

Six to eight weeks after transplanting, the male labors perform most labor-intensive tasks of onion farming. The operation involves the loosening of soil between the onion rows with a small pick. Weeds are removed as the worker pass over weedy patches. Once this has been completed, the farmers go back over the loosened soil with the same pack to recreate the rows that were destroyed in the loosening process.

It is has this line that the remaining amount of chemical fertilizer is applied to the fields, just before the digging occurs. Once this final mechanical operation has been completed, the farmers' primary concerns are timely irrigation to maintain adequate soil moisture and fumigation to control insect pests and disease.

An onion bulbs increase in size, photosynthetic is transferred from foliage leaf blades into storage leaves. Once this happen, onions leaves become to collapse. This occurs 80 to 170 days after planting, depending on the cultivar. Harvesting onions is usually much easier if the soil is damp. Leaving the top on, let them cure for at least a week. This will help the top of the bulb to seal which will prevent them from rooting for longer period of time.

To cure onions, they need to be in dry place with good air circulation. Turn them over at least once during the curing process to make sure that all sides of the onions are drying out. Some people cure their onions by hanging them off of a fence or railing. As the onions cure, the root ends will begin to shrivel up and the tops of the bulb will slowly dry out.

After the onions have cured, use shears and clip off the tops, leaving about an inch above the bulb. Try and get as much as dirt off the onion without using water or damaging the outer dry skins. Onions can be stored for 3-4 months in cool, dry places. A basement or root cellar works best.

### **2-5-1 Insect Pests and Disease of Onion**

In the Myaung Township, the incidence of onions disease is determined by a number of climatological variables, primarily annual rainfall, temperature, relative humidity and wind. Human behavior and farm management, however, greatly affect the incidence of the disease and the yield of the crop. Closely planted onions encourage moisture and dew information, which provides certain fungi with the perfect micro habitat for reproduction and dispersal. Poor fumigation technique can lead to the development of resistant fungal strains. Most importantly, the lack of a scientifically design crop rotation scheme causes the year to year increase in airborne fungal spore.

Downy mildew (*Peronospora destructor*) is one of the most serious diseases affecting onion production in the region. The diseases attack onion leaves, especially, during the period of cool, moist weather and causes serious losses in the yield and bulb quality. Initially, infected plants extended, light green lesions along the length of leaf surface. In serious cases, the fungus completely destroys the affected leaves, which causes the plant to form new leaves, resulting dramatically reduce the bulb size. The funguses remain dormant in onion plants, infected bulb, and store seed. Infection is initiated during cool temperature (less than 22°C) and the present of rain or drew on the leaf surface. Spore production occur at night, newly produced spores are the dispersed by wind during the day. Suggest method of control include destruction of containment crop residues, sufficient space between plant sets, and a 3-4 year rotation that excludes *Allium* crops. It is not advisable to irrigate the onion crop during the evening or early morning, as this creates the cool, moist conditions favorable to dew formation and mildew attack.

Stemphylium leaf blight (*Stemphylium vesicarium*) is one of the most commonly observed diseases in the onion field of the Myaung Township. The black, ash-like spores often mask the symptoms of Downy mildew, yet the two diseases seem to infect plants in tandem.

The organism will often attack plants on lesions formed by downy mildew, where upon it reproduces and attacks the entire leaf surface of the plant, especially in period of warm weather. Almost every farmer in the area complains about losses incurred from this disease. Given the serious nature of the disease and its failure to respond to fumigation, crop rotation is highly recommended for its control.

Cladosporium leaf blotch (*Cladosporium alli-cepae*) is a serious disease affecting onion plant in the cropping cycle. The defining symptom is a distinct yellowing of the leaf area.

Infected debris and infected seeds are most the most likely candidates for disease transmission from year to year. Low temperature (5-8.5°C) and high humidity in the absence of light encourage maximum sporulation. Plowing under of debris and fumigation late in the cropping cycle are suggested methods of control.

Purple blotch (*Alternaria porri*) is commonly observed in the area. Although not isolated under laboratory conditions, the unmistakable symptoms of this disease make it easy to identify. Upon infection the leaf displays white, oval lesions that quickly expand in a concentric fashion, becoming purple in the center as they do so.

Favorable conditions for this disease are very similar to those for downy mildew; it reproduces at night in the dew formed on the leaf surface of the plant sets. Daytime temperature in excess of 26°C is favorable to the disease. It is dispersed by rainfall and wind. As with other disease, it can be controlled by destroying crop residues, controlling the moisture on leaf surface and through crop rotation.

Pink roots (*Pyrenochaeta terrestris*) a disease causing fungus that lives in the soil, sometimes at a depth of 45 cm, from where hyphae attack and penetrate root tips. Pink root is most severe in fields where onions are planted for consecutive years. It is possible to control the disease through soil fumigation, but considering the level of technology and available capital in the area, this does not seem to be a feasible solution. Again, crop rotation is the most advisable course of action to prevent the disease from reaching epidemic proportions. The recommended rotation is 3-6 years.

Thrips (*Thrips tabaci*) are the most commonly occurring insect pest attacking onions in the Myaung Township. Thrips are extremely small, measuring 0.5 to 1.2 mm when immature, reaching a size of 2 mm when fully mature. Most thrips seek refuge in the base of the leaves at the bottom of the plants. Adult thrips can fly. Though onions and garlic are preferred hosts, thrips can be found in cabbage, cotton, celery, tomatoes, beans, cucumber, and pineapple, and other weedy plants as well.

Thrips can complete the life cycle in 14 to 30 days at temperature above 30°C the life cycle is shortened to 10 or 11 days. Thrips feed by removing the green plant tissue from the surface of onion leaves. The damage can reduce yield drastically, by as much as 66% in the some tropical countries. They can also act as a vector for *Alternaria*, and the lesions and plants stress generated by thrips make the onion plant more susceptible to attack by other pathogens. To reduce incidence of thrips, all onion volunteer plants must be incidence of thrips, especially during period when onions are not being cultivated. Plants should be kept well watered and free from other diseases such as nutrient deficiencies. A continuouspresence of onion plants means that thrips constantly have refuge in which they can reproduce and disperse.

Unaware of alternative disease control methods, farmers are increasingly forced to reply more and more of control. Lack of proper equipment (e.g. masks, gloves, goggles, etc.) and poor fumigation techniques pose a serious threat to human health. Resistance, moreover, increasingly becomes a concern as farmers haphazardly spray chemicals without any well-designed fumigation plan. It is certain that many diseases in the area, not just affecting onions have already become resistant to chemical biocides. The highest incidence of disease occurs when the onion begin to bulb. In most cases in the Myaung Township, difficulties controlling disease results in a serious reduction in crop yields.

## CHAPTER III

### **Agricultural sector in Myanmar's economy and agricultural policies**

#### **3.1 Background of Myanmar's economy**

Myanmar is the largest country in the mainland Southeast Asian. Myanmar is geographically located on the mainland of southeast Asia between latitudes 91° 32' N and 28° 31' N and longitudes 92° 10' E and 101° 11' E. Myanmar is bordered on the north and northeast by the People's Republic of China, on the east and southeast by Laos and kingdom of Thailand, on the west by the people's republic of Bangladesh and the republic of India, on the south by the Andaman sea and on the west by the bay Bengal.

The total surface area of Myanmar is 676,578 square kilometers (216,228 square miles) in size. The estimated population of Myanmar according to year 2016-2017 is 54million. In 1962, when Ne Win took control, Myanmar was one of Asia's most prosperous countries. However, strict state control and decreasing export price forced the economy into disarray. Since 1988, the military government has been unable to improve the country's financial management. The drop in world prices has been accompanied by shrinking and smaller volume of sales.

Myanmar is endowed with exceptionally fertile land, and has a wealth of mineral resources, including gas and oil. The economy is heavily dependent on the agricultural sector, which generates 60 percent of the country's GDP and provides employment for 70 percent of the workforce. Myanmar economy is concerned with 14 sectors.

These are:

- (1) Agricultural
- (2) Livestock and fishery
- (3) Forestry
- (4) Transportation
- (5) Energy
- (6) Trade
- (7) Mining
- (8) Processing and Manufacturing
- (9) Power
- (10) Construction



- (11) Communication
- (12) Financial institution
- (13) Social and administrative services
- (14) Rental and other services

Economic reforms of Myanmar aimed its integration with the world economy. The basic of economic reform were:

- (a) To transform the right inefficient economic management into a market oriented economy,
- (b) To encourage private investment and entrepreneurial activity at home and
- (c) To open the economy to foreign direct investment and to promote export.

Economic reforms have resulted in the expansion of the private and public sector in the economy and earned FDI into the economy. All nation of the world is working hard for their economic development by trying to not only for domestic consumption but also for export. As trade is driving force for economic development, Myanmar is trying to export its products and measures are being taken for boosting trade.

### **3.2 The Role of Agriculture in Economic Development**

In agriculture-based countries, agriculture is an effective engine for economic development. Compared to any other sector of an economy, growth in the agriculture productivity has directly involved in raising real income of the poor in rural area, and thus reducing poverty.

There are many development paths or strategies. The resources endowments and stage of development of a country influence the policies and strategies adopted by that country. Depending on the existing resources endowments and stage of development, the optimal development path can vary from country to country. In addition, rapid growth or stagnation of the economy in long term would depend on choice of the paths or strategies. Most countries are trying to increase agricultural productivity and enter the international trade with some reservations in regard with “free and openness” of the trade. In other words, the economies of many developing countries nowadays are the semi-open type with the agriculture sector playing a vital role in economic development activities.

In the early stage of development process, the majority of populations involve in agriculture and the sector provides the large percentage of national income. So,

### 3.3 Agricultural Policies in Myanmar

Myanmar is an agricultural country, and the agricultural sector is the backbone of its economy. Its visions for moving on to agro-base industries and selective industrialization, depend on modernizing, expand and increasing productivity of the agricultural sector. The state has laid down twelve political, economic and social objectives in its endeavors to establish a peaceful, modern and developed nation. One of major objective is “development of agricultural as a base and all –round development of other sector of the economy as well”. Since 1992-1993, the Economic Developing Year, integrated development strategy has been applied for agricultural development, with specific sector objectives and policies. The government laid down economic objective.<sup>[4]</sup> These includes

- (1) Building of modern industrialized nation through the agricultural development, and all-round development, of other sector of the economy.
- (2) Proper evolution of the market –oriented economic system.
- (3) Development of the economy inviting participating in terms of technical know – how and investments from sources insides the country and abroad.
- (4) The initiative to shape the national economy must be kept in the hands of the State and the national people.

The economic objectives clearly reveal that the whole economy is based upon agricultural development of all economic sectors some line or directions, the Ministry of Agricultural has its own objective . These include

- (1) To achieve surplus paddy production
- (2) To achieve self- sufficiency in edible oil
- (3) To stop up cultivation and export of pulses and industrial crops

These objectives clearly state that the overall agricultural development simply relies upon rice, groundnut, sesame, pulses, and industrial crops like cotton and sugarcane. Although the government has a self –sufficiency drive for groundnut and sesame, it intends to step –up on export drive for rice, pulses as well as cotton and sugarcane.

The ministry of Agricultural and Irrigation laid down certain principles that must be following to enhance agricultural development . These include,

- (a) The development of new agriculture land

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<sup>4</sup> Thin Thin Swe (2015) A Study on Rice Production in Ayeyarwaddy Region (From 2004 to 2014)

- (b) The provision of adequate irrigation water
- (c) The provision and support for agriculture mechanization
- (d) The acceleration of technology transfer
- (e) The development and utilization of high yielding quality seeds.

### **3.4 Production of Onion in Myanmar**

Sagaing region has a total population of 5,123,058, rural population of 4,279,001 and urban population of 774,752. Sagaing region is boarder by India to the north, Kachin State, Shan State, Mandalay region to the east, Mandalay and Magway region to the south and Chin State, and India to the west. The leading crop of the Sagaing region is rice, which occupies most the arable ground. Other crops include wheat, sesame, peanut, pulses, cotton and onion.

**Table (3-1) Yield per Harvested Acres of Onion by State and Division Year 2006-2007 to 2015-2016) Absolute Values in Acres**

State and Division	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Kachin	1358	1612	1594	1858	1914	1421	1408	1320	1304	1328
Kayah	2107	2384	2957	3019	3050	2770	2823	2884	1601	2584
Kayin	119	251	301	190	215	54	54	51	51	34
Chin	1673	1619	1972	1692	1705	1646	1668	1622	1622	1651
Mon	151	89	130	70	57	73	-	-	-	-
Rakine	3616	3383	3464	3437	3503	1897	1755	1753	1756	1752
Shan	9843	11228	11419	11797	12455	12443	11594	12154	11117	10988
Sagaing	33327	35431	31347	30935	30667	31471	35072	35159	37291	37711
Tanintaryi	9	1	1	-	-	-	-	-	-	-
Naypyidaw	-	-	-	-	-	1491	1592	1215	1215	1449
Bago	2413	2844	2470	2602	2631	2053	2103	2157	2120	2105
Magway	44012	47293	46472	48567	49124	49162	19166	47173	49180	49164
Mandalay	62449	66460	65155	72002	70772	73322	70513	81667	84625	78837
Yangon	30	13	1	2	4	4	2	-	-	-
Ayeyawady	2653	2668	2581	2605	2602	1883	1838	1851	1809	1754

Source: Statistical Year Book (2006-2016)

A rise in illegal onion imports from China is crowding out local onion producers and could eventually lead to our over supply and lower price. Onions from China first entered the country on a large scale in 2015, when the Ministry of Commerce authorized the import of 800 tones of onions from China and Thailand. That year, onion prices rose average high of K 3,000 per viss.

Currently, local onion prices are about K 1650 per viss, when onions were selling for below K 800 per viss. Onion prices rose sharply in 2014 after bad weather during harvesting season. Prices were Furth inflated as farmers, wary of the rising incoming supply of Chinese onions. Produces in China have been large supplies of onions into the local market to take advantage of the higher price. In fact, onion imports are actually prohibited in Myanmar.

In Myanmar, onions are harvested over the summer, winter and rainy seasons. During the summer, onions produced in the Mandalay, Sagaing and Magway regions exceed local demand and are typically exported to countries including China. Myanmar exports onions to China and Thailand through border trade and to Indonesia, Malaysia and Viet Nam through normal trade. Currently, onion exports are suspended due to low supply.

#### **3.4.1 Production of Crop**

Onion is the essential crop for humans. Lands, labor, investment, technology and management are the most important things for the production of crops that are the main food for humans and animals. When it comes to lands, the lands are the natural inputs including the lands mainly used in agriculture. Although the lands and natural inputs, that are able to plant in some regions, are the suitable conditions for agricultural production, the conditions of lands and natural inputs in some less-rained, hot and dry regions are in unfavorable conditions for agriculture. That is, agriculture is successful in the regions, that have the great power of productions of land and resource materials, and consequently, the incomes of farmers, who are depending on agriculture, are also fine. In some regions, as the lands for agriculture are barren, the incomes of farmers from agriculture are really low.

In agriculture, there are three kinds of labour; human labour, animal labour and technical labour. Among these, human labour is the basic. Human labour and animal labour are the main important inputs in agriculture in developing countries.

In developed countries, technology is playing more important role than human labour. The use of human labour is more in the agriculture of developing countries because only human labour can be available with low wages in agriculture of developing countries. As the population in the countryside of developing countries is the most in total population of the country, human labour is mainly used in agriculture. The condition of developed countries is the amount of population in countryside is different from developing countries and the population in cities increases more if it is compared with countryside. That is, as there is only minority in countryside, the use of technical labour is concentrated instead of human labour in agriculture. In developed countries, the condition of the use of technology is concentrated from start to end in planting, harvest time, and also sprinkle time of pesticides and fertilizers.

Another important input in agriculture is the agricultural investment. In developing countries, the investment in agriculture is less and the origin of investment is really less in the countryside of developing countries. In developing countries, the lack of banking development, less private investment in agriculture, the lack of capital market can be found. Generally, agriculture of developing countries is the working condition with low investment. Agriculture of developed countries is working well-concentrated with a lot of investment and economically in agriculture.

In agricultural production, the development of the amount of production is mainly depending not only on the inputs but also on the technique of production. The technique in agriculture means that the well and modern condition of using inputs, development of production steps and organized flow as business. In other words, the use of improved seeds, the change from normal way to modern way in agricultural production and also the use of modern ways from normal ways in harvesting. In developed countries, as agricultural researches and agricultural education is widely carried on, the technology of agriculture is specially improved like now.

In addition, because of the inventions of the technique that can resist the weather condition, the production of agriculture obviously developed in those countries. In developing countries, the production is not obviously developed because of the lack of new agricultural techniques and the reluctance to use the modern ways of normal farmers.

In agriculture, management is the important input for economically production and normally planting. As the farmers that plant normally in developing countries, the

facts of which crop will be planted when, with what input, and how to sell in capital market is needed to manage. Management is playing an important role in economically agriculture from developed countries. Along the process from the beginning of planting to harvesting and selling in market, good management is the essential thing. There are three important economic relationships in crops production. They are;

- (1) The relationship between inputs and inputs
- (2) The relationship between inputs and outputs
- (3) The relationship between outputs and outputs.

In the relationship between inputs and inputs, the inputs will be produce with what ratio, in otherwise, the use of lowest budgets inputs for production are in one production processes. As the inputs can be replaced with one another, it is economically production, in other words, theories of which inputs should be decreased and which inputs should be used with the lowest budgets.

When it can be seen the relationship between inputs and outputs, the connection of how much should be produced by using what inputs can be seen. This is the theory of how to produce to get the most profits in crops production. The budget of inputs, the budget of outputs and the edge theory will be including in this case. And then, the theory of technology changes, the size of planting and production prices will be including too. The relationship between outputs and outputs includes the theory of how to associate with one crops production to another. It also includes the processes of thinking the way to get the most income after associating with the outputs from one agricultural producer to another.

### **3.5 The importance of Agricultural Sector of Myaung Township**

In agricultural sector of Myaung Township, farmers worked in several methods in agricultural tasks with agricultural supply such as land, labor and capital in order to gain the maximum net profit in all ages. Although they cultivated only for food sufficiency at past, they shifted to the step of cultivating commercially. Changing into commercial level broadens not only agricultural production sector but distribution of agricultural production and making effort to gain net profit. Since the agriculture of Myaung township is under the agricultural sector of Myanmar, there were adaptive changes to the policy of the agricultural sector of Myanmar.

In studying the field of agriculture of Myaung township, it is (111,468) acre spacious and the cultivated area is (91,883) acre, agrarian area is (22,411) acre, farming area is (42,924) acre, dry cultivation land is (25,697) acre, other are fallow lands and it is almost empty to find out uncultivated land. Land utilization for each person is (1.5) acre.

### **3.5.1 Land Utilization**

One fourth of total area of country is cultivatable, and after 1988, the government make effort to expand the sown areas of crops by initiating the reclamation of new agricultural land in the in the flooded areas, deep water area and existing fallow, waste and virgin land are for large scale commercial farming land consolidation is also being undertaken in the existing agricultural land with proper drainage, irrigation and farm roads. Apart from the traditional small scale crop cultivation, development of modernized large scale agricultural business in the private sector is also encouraged. Private investors are invited and encouraged to participate in crop production in this reclaimed area with full-coordination and cooperation of government agencies concerned.

Presently, the total land area in Myaung Township is approximately 111,468 acres. Land utilization in Myaung Township can be studied from the table (4-3) during the period from 2006-2007 to 2015-2016. The land use of Myaung Township can be classified into four types. Agricultural land, cultivated land, forest land and other. Other are included such as for the urban and rural reside entail areas, religious land, cemeteries, land under water bodies (river, stream, lakes and ponds). According to the table 4-3, net cultivated land decrease from 92390 acres in 2006 to 91883 acres in 2016. Other land increased from 19278 acres in 2006 to 19585 acres in 2016.



**Table (3-2) Land Utilization in Myaing Township (2006-2016)**

No.	Contact	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
1.	Cultivated Land	92190	91335	91681	91678	93702	91737	91962	91737	91189	91084	1709
	Net Cultivated Land	92390	91335	91681	91678	93707	91737	91962	91737	91189	91084	91883
	-Paddy	11593	22593	22593	22593	22592	22592	2420	22592	22411	22411	22411
	-Pulse	42994	43019	43124	43014	43119	43119	43119	42934	43119	42932	42925
	-	25723	25723	25964	25966	26026	26026	25916	26026	28846	25748	25697
	Other	880	-	-	105	1965	-	-	-	-	-	851
2.	Other Land	19278	20133	19787	19790	19731	19731	20207	19731	20279	20384	19585
	Road	1709	1709	1709	1709	1709	1709	1709	1709	1709	1709	1709
	Railway	37	37	37	37	37	37	37	37	37	37	37
	River/underwater	11760	12059	11818	11821	11761	11761	11761	11761	11831	11929	11130
	Dam	609	609	609	609	609	609	609	609	609	609	609
	Lake	506	506	506	506	506	506	506	506	506	506	506
	Industry/Religion	959	959	959	959	959	959	959	959	1094	9/1092	9/1092
	Town/Village	3546	3546	3546	3546	3546	3547	3547	3890	3547	420/3470	420/3470
	Not classified land	152	708	603	603	603	603	603	603	603	603	603
	Total	111468	111468	111468	111468	111468	111468	111468	111468	111468	111468	111468

Source: Land Record Department, Myaing Township

**Table (3-3) The Number of farmer Household and Area**

No.	Type of Area	Household		Area	
		Frequency	Percent	Acre	Percent
1	Under 5 acres	24479	82.97	50763	55.76
2	5 acres to 9.99 acres	3992	13.5	26564	29.18
3	10 acres to 19.99 acres	974	3.3	12116	13.31
4	20 acres to 49.99 acres	60	0.2	1589	1.75
5	50 acres to 99.99 acres	-			
6	Above 100 acres	-			
	Total	29505	100	91032	100

Source: Myanmar Agricultural Enterprise, Myaung Township

### 3.5.2 Agricultural Mechanization

Since the colonial era, research activities for the utilization of farm machineries were made to reduce manpower and use of draught cattle. However, it was not completed successfully due to lack of experience. After gaining independence, agricultural mechanization scheme was made through distribution of machineries, production of farm machineries adaptable to Myanmar agricultural land for land expansion and development in planned crop area. Under the market-oriented economic system, in addition to the state sector, private sector participation is increasing the utilization the farm machineries and equipments for various activities of agricultural production. Increased cropping intensity has expanded the use of machineries in agriculture from land preparation to harvesting and drying. Required machineries are being produced and assembled locally or imported for distribution to farmer.

The Farm machinery Factories under the Agriculture Mechanization Department, Ministry of Industry and many small scale private factories are producing and distributing agricultural machineries and implements. Farm mechanization has benefited the Farmers in terms of time saving, Labor saving and human energy saving. In addition, it has contributed to increase cropping intensity of the country. In Myaung Township, among the Farm machineries, water pumps are the most utilization of various Farm machine. Seeder is the least use machine. The

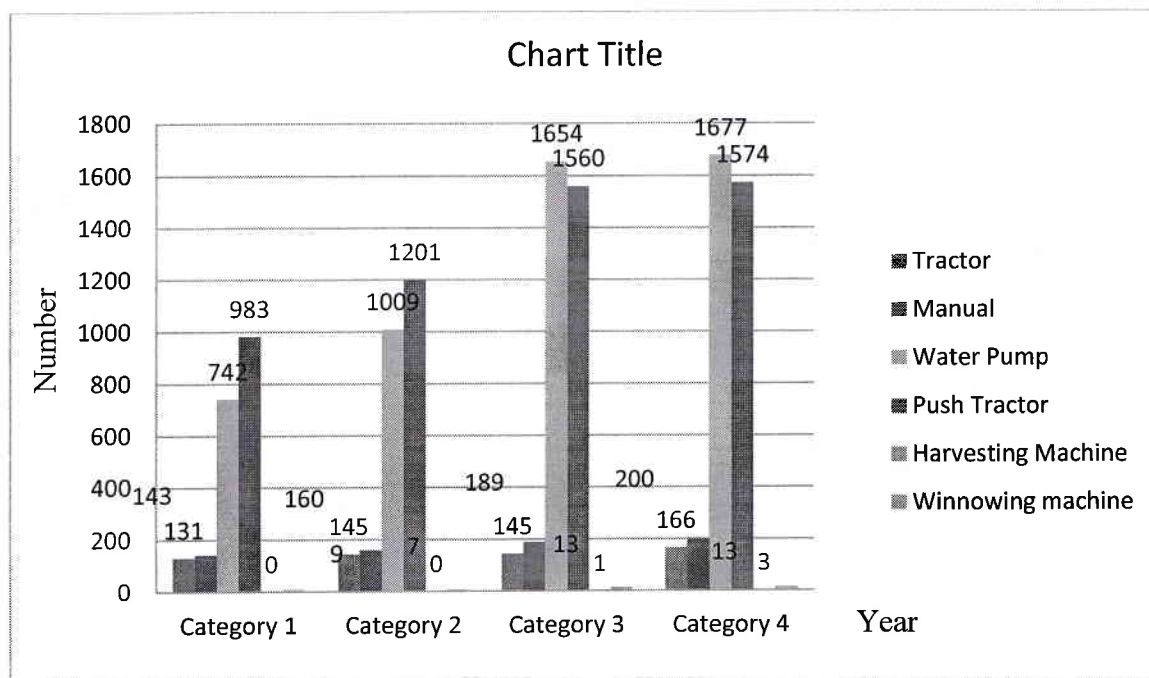
condition of utilization of various Farm machines by the Farmers can be seen in table (4-5) the utilization of machine power have been increased year by year.

**Table (3-4) Utilization of Machineries and Farm Implements in Myaung Township.**

No	Machinery	2013/14	2014/15	2015/16	2016/17
1	Tractor	131	145	145	166
2	Manual Tractor	143	160	189	200
3	Water Pump	742	1009	1654	1677
4	Push tractor	983	1201	1560	1574
5	Harvesting machine	-	-	1	3
6	Winnowing machine	9	7	10	13

Source- Agricultural Mechanization Department, Myaung Township

**Figure (3-1) Utilization of Machineries and Farm Implements**



Source: Agricultural Mechanization Department, Myaung Township

## CHAPTER IV

### History Background of Myaung Township

#### 4.1 History Background of Myaung Township

Myaung is a town in the Sagaing Region in Central Myanmar. It is a crowded and peaceful town where is located on the west bank of Ayeyarwady River. It is a region between the River of Ayeyarwady and Chindwin. Myaung Township is officially demarcated with the neighbor boundaries of Chaung-U in the north-west, of Minbu in the east and north east. In the township of Myaung, Kyauk Nagar Mountain is very famous, where every ancient rocky status like the rocky dragon-shaped status is found, and the Buddhist Religion rich of many pagodas are situated.

Myaung is located in the western part of Sagaing District, 14 miles away from and in south west of Minbu, at the basin area between two rivers of Ayeyarwady meeting with Chindwin and at right bank of Ayeyarwady. The rural road of Chaung-U-Ma Yoe Kone passes through the town.

#### 4.2 Location, Area and Size

Myaung Township consists of 5 wards, 48 village tracts and 85 villages. It is situated between North Latitude 22.5°-5' and 23' and between East Longitude 95°25' and 90'. It is 174.17 square miles wide. Myaung is located in the western part of Sagaing District, 14 miles away from and in south-west of Minbu.

In order to protect the flooding risk, a dam is dammed on North Main Lake called Myauk Inn Ma Kyi. Myinchan-Mandalay ship moored at harbor in the town. There are administration office, police station, public hospital, basic education high school and other official building in the town. Myaung Township is known Paung Myaung Teik ago and it was founded by Bagan King Narapatisithu.

#### 4.3 Population, Races and Religions

Population of Myaung Township is 106,411. Population sector is an important factor, which should be taken into account when studying the development of either a region or a country because all development planning and data collecting strategies are based on the population. The population of Myaung Township is going to be presented as per following headings. Myaung Township is organized with 4 wards, 85 villages and 48 village tracts. The population is 106,411 and the area is 174.17 square

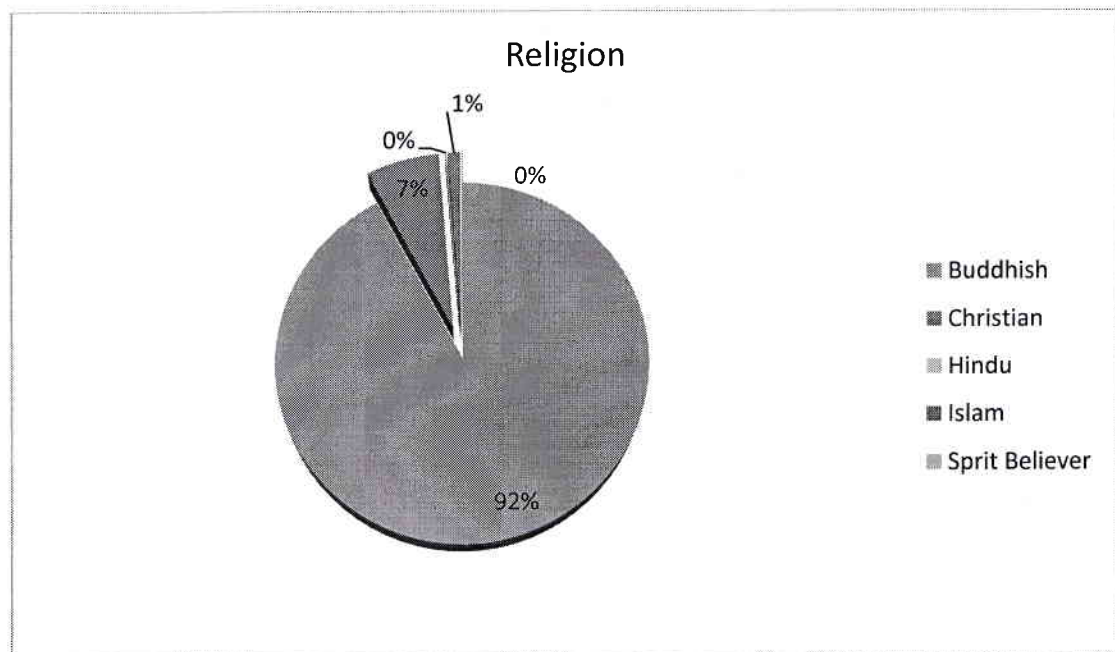
miles. Among them 98,616 of total population live in rural area and 7,796 of people live in urban areas. Nearly 80% of the township people engaged in agriculture. According to the table (4-1), there are Buddhist, Christian, Hindus, Islam and Sprit Believer. The number of Buddhist is the largest. The number of Sprit Believer is the least in the region. In studying, the population in Sagaing Region, there is low density in Sagaing District.

**Table 4-1 Structure of the Population by Religion in Myaung Township**

No.	Religion	Percentage (%)
1.	Buddhist	92.2%
2.	Christian	6.5%
3.	Hindu	0.1%
4.	Islam	1.1%
5.	Sprit Believer	0.1%
	Total	100%

Source: Immigration and Manpower Department, Sagaing Region.

**Figure 4-1 Structure of the Population by Religion in Myaung Township (2015-2016)**



Source: Table (4-1)

#### **4.3.1 The Use of Technology**

In onion production, the change of technology and the use of new technology are also the main important facts. In one planting, the ways of production can be changed by using new technology or changing the ratio of inputs. As the farmers who plant onions, the total production of onions becomes developed by using the improved seeds and without changing other inputs. Again, as technical changes can become in the production of improved onions, the farmers can use cheaper and better improved seeds and can see the development of production. Generally, making changes the connection of inputs and outputs can improve the rate of onion production.

There are three kinds of technological change in onion planting. The first one is in the industry that uses new technology, the effect of the cost and the production of two products can be seen. The second one is because of this effect; the purchased demand of inputs and the supply of outputs producing will change and develop. The third one is this effect can support the total domestic product growth through the local onion production.

In onion production, the ratio of inputs and outputs is also important, regarding technological change. As the experiences of developed countries, the ratio of inputs and outputs is getting decreased. That means as the result of technological changes, the outputs can produce more from one unit of inputs. In this case, consequently with the technological changes, the ratio of inputs and outputs become decreased like this because of the development of agricultural management. This ratio becomes decreased because of the development of inputs quality which is used in agriculture of developed countries. As technical power and harrow power of farming equipment which are used in onion production become higher, the farming equipment can be used to produce more outputs without expanding the amount of inputs.

Another input is the improvement of the quality of farm workers. The basic reason of the improvement of those agricultural inputs is education. The improvement of the quality of workers like this is the reason of inputs and outputs ratio becoming decreased.

The things that change the ratio of inputs and outputs are research and the development of budgets. In developed countries, although the effect of research and the development of budgets increasing are happening, the production of onion isn't obviously increasing because those budgets are extremely low in developing countries.

#### **4.3.2 How Markets expanded**

The expansion of onion production and selling market is a part of agricultural development. In multiple steps of production and selling onion, goods are delivered to country side brokers as the first step from farmers who cultivate onion, those goods are delivered to goods bankers and storehouses by those brokers. Then goods flow to consumers from those goods bankers. These are called trade-routes. In developing countries, it is observed that such trade-routes exist long. Since they are long, the price of onion is high while flowing from producers to consumers by several steps. Otherwise, it is generally found that participants who involve in every step of such routes gain the benefit and farmers who produce goods only gain low benefit. On the other hand, consumers are facing price being high. In developed countries, the role of intermediary brokers is important in which a situation of delivering agricultural goods from the production to consumer market.

In studying onion market, there are two parts market for farmers, buying market and selling market. The buying market of farmers is the market that supply which necessary for agricultural farms are bought. The selling market of farmers is the market that cultivated onions are sold. These two markets are relating each other. The important facts of both markets are supply price and output price. In general, it is found that the change in onion selling market is getting enlarge. In the market of onion production, there are two parts of markets as local market and international market. In both markets, the quantity of onion producer mainly depends on onion production and cultivation. The onion production also depends on many facts and some facts that human are not able to control are weather and situation of natural environment. The price will change up and down by depending on price on that market, cultivated quantity in the market and the condition of supply which occurs on the market. One fact which is remarkably found in the market is that farm income usually decreases in years which high quantity of goods are produced in the market, and farm income usually increases in years which less quantity of goods are produced. Therefore, generally, it was observed that the quantity of farm products and farm income are inversely related.

By studying the situation of the long-term prices of onion market, potentials of decreasing gradually in price are found in comparison with industrial products. In other words, by studying the exchange ratio of goods between agricultural and industrial goods, it is observed that there is a disadvantageous exchange ratio of goods

for agricultural goods in the long-term because of being high changes of price of agricultural goods. As consequence, huge problems in agricultural sector have occurred because of such decreasing in price of onion cultivation and production in the long-term.

In studying the situation of demand of onion cultivation goods, the theoretical concept that economists found generally is that the higher the income of consumers, the lower the percentage of income is used to consume onion as food. Such thing is an aspect or a feature which is usually found in developed countries. The utilization of income on buying onion will be varied according to the difference between developed countries and developing countries.

On the other hand, according to the concept of Matt Malthus 1798, it is said that the long-term food problem will occur since long-term natural population growth rate can grow much faster than the food growth rate. According to the opinions of other economists, there is a concept that there will be no global food problem if global food production rate is faster than the global population rate.

#### **4.4 Study Area**

The study was conducted in Myaung District in Sagaing Region. Myaung was chosen for the study because it is one of the few districts where onion production is practiced. Myaung District is one of the administrative districts that make Sagaing Region. The District headquarter is known as Myaung Town and is about 59 kilometres from the Region headquarter Sagaing Town. Arable land covers about 91,883 hectares, natural and planted forests 19,858 hectares and 603 hectares is used for human settlements and other uses. Myaung stands on a broad upland of plateau with an attitude ranging between 200 – 1000 and annual rainfall ranging between 800 – 1200 millimetres. The district shares borders with Chaung-U in the north-west and, Minbu in the east and north-east, Sagaing in the west.

Primary data were obtained from respondents who are onion and non-onion producers through face to face interview and questionnaire to key informants. Key informants included agricultural extension workers and ward executive officers. The researcher used interview to collect primary data from onion producers and non-onion producers. This method was appropriate to obtain primary data due to the socio-economic and demographic characteristics of the study population. The important



things are to consider when making a decision leading to primary data collection method.

In this study, secondary data were obtained through documentary review on onion production from Myaung Agricultural and Livestock Department, Myaung Land Record Department, earlier researches, personal records, and mass media as secondary data resources.

#### 4.4.1 Respondents' Characteristics

The analysis of respondents' age simply aimed at looking out the involvement of different age groups in onion production. This study showed that onion production is practiced by all age groups however the majority (86.67 percent) of onion producers was within the age ranging from 15 to 60 years. Other onion producers with the age below 14 years comprise only 4 percent because most of them engaged in schooling due to school going age they have. These findings are in contrast to the existing complaints that majority of youth and middle aged people do not prefer to participate in agriculture as their income generating activity. Findings revealed further that there is enough involvement of youth who can take responsibilities of onion production efficiently and effectively since they are active working group of the society. Therefore, onion production is a potential activity in reducing poverty. Table 4-2 below summarizes involvement of different age groups in onion production.

**Table 4-2 Age of the Respondents**

Respondents' age group		Frequency	Percent
Validity	Below 14 years	6	4
	Between 15 years and 53 years	130	86.67
	Above 65 years	14	9.33
		150	100

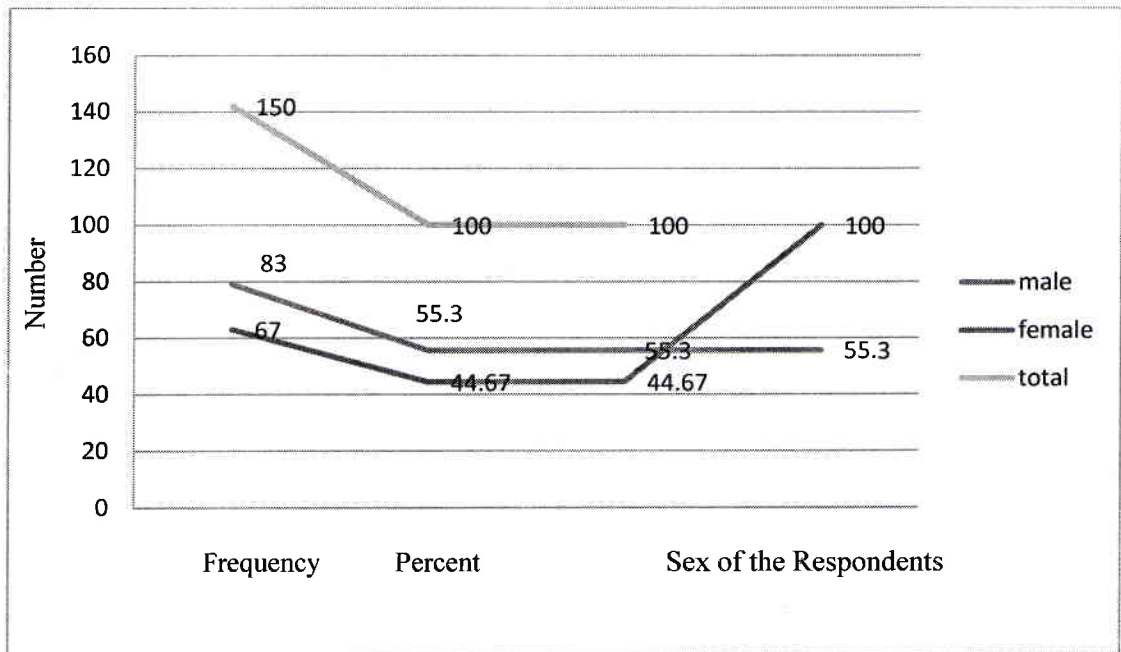
Source: Field Data, 2017

#### 4.4.2 Sex of Respondents'

Figure 4.2 shows that 83 out of 150 respondents were males while 67 were females. Percentage wise males make 55.3 percent of the respondents while 44.67 percent of the sample size is females. This representation shows that women do not

take part in decision making of what have produced though are actively involved in the production process.

**Figure 4-2 Sex of the Respondents**



Source: Field Data, 2017

#### 4.4.3 Education Level of the Respondents

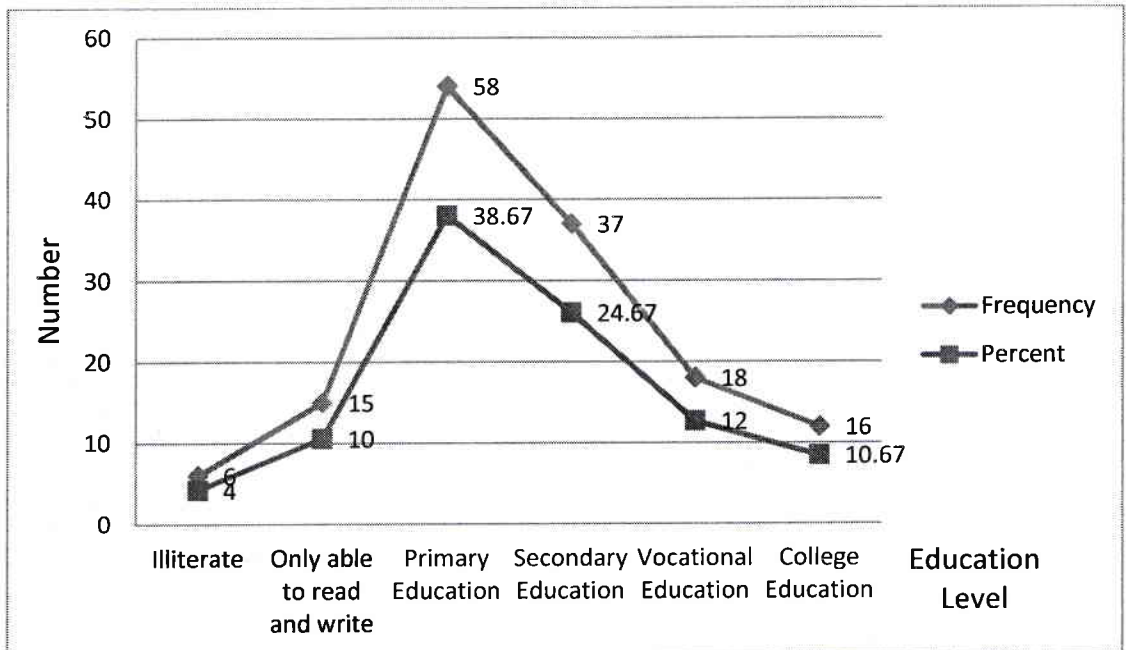
The aspect of education was considered important since lack of knowledge is a challenge to poverty reduction strategy. The level of education an individual person has may contribute to one's ability to reduce poverty. It was revealed that some of the respondents (14 percent) had non-formal education; this can make the learning environment bad as it can be difficult for them to receive new agricultural knowledge and skills. Others, 38.67 percent of the respondents have acquired primary education, 24.67 percent have secondary education and those with tertiary education make only 12 percent. This implies that a majority of the population do not go beyond primary education. Education level attained by the population can lead to positive or negative effects upon onion production hence contributing to poverty reduction in the study area revealed that universal primary education, the eradication of illiteracy and the attainment of a level of tertiary education and training commensurate with a critical mass of high quality human resources required to effectively respond and master the development challenges at all levels. Table 4-3 presents education level of respondents in the study area.

**Table 4-3 Education Level of Respondents**

No.	Educational Level	Frequency	Percent
1.	Illiterate	6	4
2.	Only able to read and write	15	10
3.	Primary Education	58	38.67
4.	Secondary Education	37	24.67
5.	Vocational Education	18	12
6.	College Education	16	10.67
Total		150	100

Source: Field data, 2017

**Figure 4-3 Education Levels of Respondents**



Source: Field Data, 2017

**4.4.4 Number of Children/ Dependents**

The aspect of household size was considered as crucial in this study because large or small household size can have impact on the fight against poverty reduction. Family size of the respondents ranges between non to more than five children per respondent. This study showed that, 8 percent are single and have no children while 39.33 percent have less than three children. Households with children between three and five make 34 percent and 18.67 percent have more than five children. Average household size concluded that enabling people to have children helps to stimulate

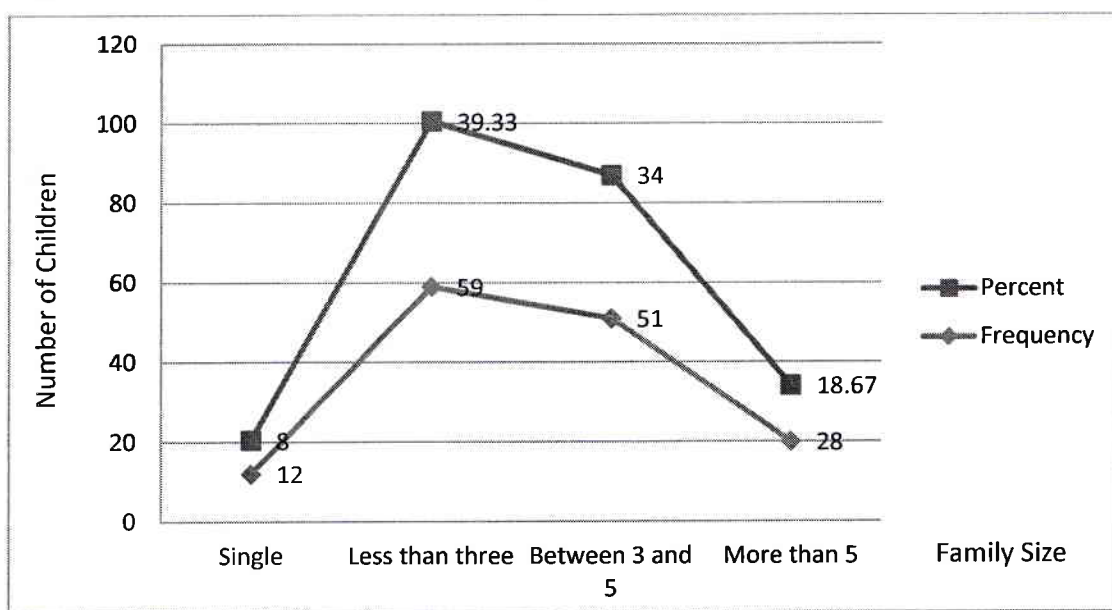
development and reduce poverty both in individual households and at the macro-economic level. The distribution of households' number of children is presented in Figure 4-4.

**Table 4-4 Number of Children/ Dependents**

No.	Number of Children	Frequency	Percent
1.	Single	12	8
2.	Less than three	59	39.33
3.	Between 3 and 5	51	34
4.	More than 5	28	18.67
Total		150	100

Source: Field Data, 2018

**Figure 4-4 Number of Children/ Dependents**



Source: field data 2017

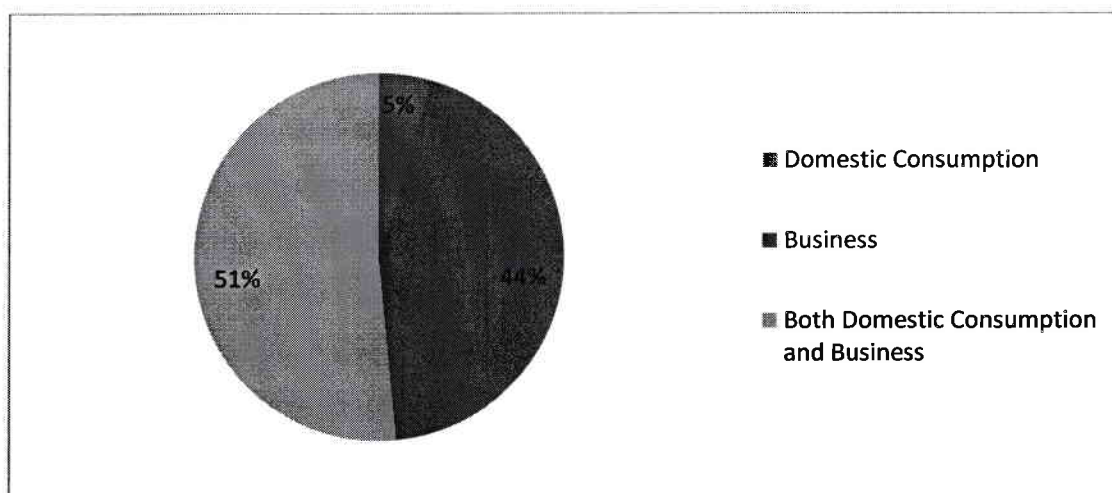
## 4.5 Onion Production in the Region

### 4.5.1 Purpose of Onion Production and Market Potential

The production of onion is purposely for both selling and domestic consumption as it is shown in figure 5.5 that only 4.23 percent of respondents produce onions for domestic consumption only, whereas 40.85 percent of respondents produce

onion for business. Devastating 47.89 percent of respondents produce onion for both domestic consumption as well as business.

**Figure (4-5) Purpose of Onion Production**



Source: Field Data, 2017

Onion is one of the most important commercial vegetable crop in Myanmar. Onion is produced for export as well as for local consumption. Onion is the source of foreign currency earnings to countries producing it. Myaung township has shown the importance of onion production to development of local market and accessible market channels are strengthened. Table (4.5) shows total sown area, harvested area and production of onion in Myaung Township.

**Table 4-5 Sown Area and Production of Onion in Myaung Township**

Year	Sown Area (Acres)	Harvested Area (Acres)	Yield Per Acre	Production in Ton
2006-2007	3732	2832	3850.00	10518200
2007-2008	2349	2349	4050.00	9513450
2008-2009	3305	3305	5000.00	16525000
2009-2010	2435	2435	5050.00	12296750
2010-2011	2405	2405	5050.00	12145250
2011-2012	2416	2405	5050.25	12201404
2012-2013	2782	2728	5050.50	14050491
2013-2014	2742	2742	4550.00	12477471
2014-2015	2728	2728	4665.50	12727484
2015-2016	2852	2852	4667.12	13310626
2016-2017	2849	2849	4667.17	13296767

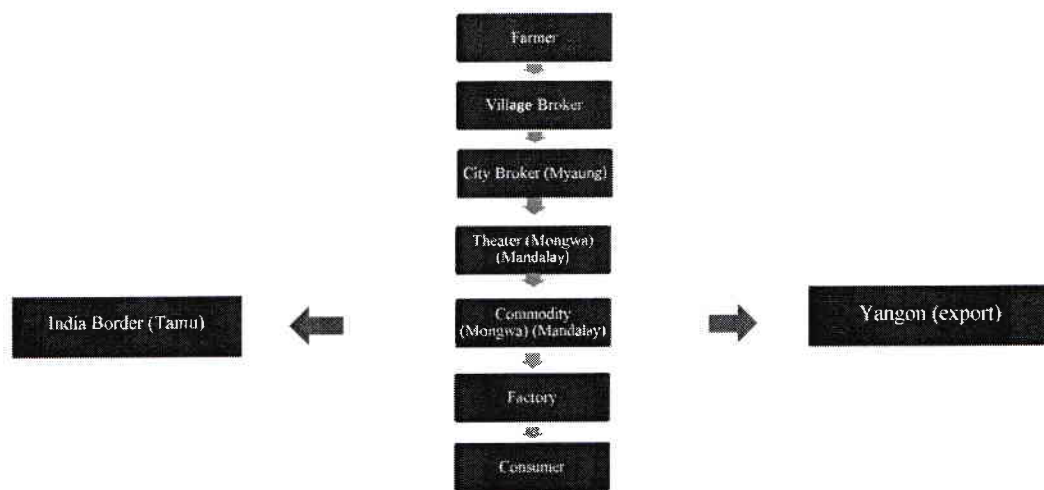
Sources: Agricultural Enterprise, Myaung Township

According to the table (4.5), table sown acres decrease from 3732 (acres) in 2006-2007 to 2349 (acres) in 2007-2008. And total sown area increased again from 2349 (acres) in 2007-2008 to 3305 (acres) in 2008-2009. Show total harvested area decrease from 2832 (acres) in 2006-2007 to 2349 (acres) in 2007-2008. And total harvested area increase from 2435 (acres) in 2009-2010 to 2849 (acres) in 2016-2017. Show production decreases from 10518200 (ton) in 2006-2007 to 9513450 (ton) in 2007-2008. The onion production depends on many factors, such as seasonal pattern of weather condition, geographical dispersion, risks and change of technology. In 2013-2014, production of onions was 12477471 (ton) and gradually decreased about 13296767 (ton) in 2016-2017. Production of onions depends on weather conditions. Production of onions increase from 9513450 (ton) in 2007-2008 to 16525000 (ton) in 2008-2009. Production of onions depends on good quality seeds.

#### 4.5.2 Sales of Onions

Marketing of onions is a problem since there is no good market infrastructure in the study area. Onion farmers are primary concerned with getting their crop to market and day-to-day fluctuations that occur in the market price. First, it is important to realize that almost all farmers in the Myaung Township to village broker. An onion will change hands many time from the moment it leaves the farm until it arrives to the consumer households.

**Figure 4-6 Market Channel of Onion**



Source: Field Data, 2017

### 4.5.3 Income Obtained from Sale of Onion

This study showed that people in the study area earn their living through production of agricultural cash and non-cash crops as presented in Table 4-5. Findings on income obtained from sales of onions for the past five years showed that: 29.58% percent of the respondents got income below 500,000 Kyats, 53.52% percent got income between 500,000 and 1,000,000 Kyats, 14.08 percent earned between 1,000,000 and 2,000,000 Kyats, and 2.82 percent earned 2,000,000 and 4,000,000 Kyats. It was also found that onion producers got benefits from onion production which enabled them to get daily necessities. Table 4-6 presents income gained from sale of onions.

**Table (4-6) Income Gained from Sale of Onion**

No	Type of area	Frequency	Percent	Income(Kyats)
1	Under 5 acres	21	29.58	Below 500000
2	5 acres to 9.99 acres	38	53.52	Between 500000 And 10,00000
3	10 acres to 19.99 acres	10	14.08	Between 10,00000 And 20,00000
4	20 acres to 49.99 acres	2	2.82	Between 20,00000 And 40,00000

Source: Field Data 2017

### 4.5.4 Average Price of onions in Myanmar

Price level that the framers receive at the gate at the harvested time. In connection with price changes, as mentioned above, changes are taking place, due to change of cost of production. Price of onion has been rising from 29500 (kyats per ton) in 2007 to 33268 (kyats per ton) in 2009. When reached 2009 it price jumped to 33268 (kyats per ton). The price of onions was increased significantly from 29500 (kyats per ton) in 2007 to 60708 (kyats per ton) in 2016. In 2017, the price of onions at the highest level 521078 (kyats per ton). After 2009, the price of onions at harvest time was increased year by year.

**Table (4-7) Average price of onions in Myanmar**

Year	Price (Kyats Per Ton)
2007	29500
2008	23337
2009	33268
2010	34263
2011	51690
2012	521078
2013	65198
2014	38362
2015	89063
2016	60708

Source: Data CSO (2010-2016)

Agricultural production is a complex process particularly for vegetable production. The production of onion is associated with number of variable used in production process. The production is onion depends on natural environment, input use and combination of inputs.

The cost of production of onion is classified into fixed cost including land input and variable costs including labour and capital inputs. The labour input cost includes all those cost incurred on field operations and production practices starting from land preparation and up to harvesting which is performed by human, animal and machinery. The main labour costs include the cost of land preparation, sowing, irrigation and harvesting. The capital cost accounts the cost of seed, fertilizers and farm yard manures and interest on input changes. The onion producing farmers have been categorized for the purpose of study as small (under 5 acres), medium (5 acres to 9.99 acres) and large (10 acres to 19.99 acres) and above 20 acres. Table (4.8) presents cost of onion production.



**Table (4-8) Cost of Onion production**

No.	Type of Area	Cost of onion Production (Kyats)
1	Under 5 acres	Between 400000 and 1600000
2	5 acres to 9.99 acres	Between 2000000 and 3600000
3	10 acres to 19.99 acres	Between 4000000 and 7600000
4	20 acres to 49.99 acres	Between 8000000 and 17600000

Source: Field Data 2017

Table 4.8 shows that, on an average, the cost of cultivation of onion per acres for overall farms amounts to Ks 400000, where as the average cost in small, medium, and large farms are between Ks 400000 and 1600000, between Ks 2000000 and 3600000 and between Ks 4000000 and 7600000 respectively. Cost of cultivation of onion per acre showed an increasing trend with the increases in the size of farms. A size group comparison showed that large farms have higher investment per acre than small farms. It is due to their investment capacity for different inputs.

Therefore, it is conducted that the average cost of production of onion of large farms is higher than the small and medium size of farms and overall farm size. The cost of seed is the major portion on the total cost of production of onion.

Findings showed that onion producers got benefits by being involved in the production of onions. As indicated in Table 4.9 benefits accrued from onion production include increase of income whereby 46.84 percent of onion producers showed that their income increased as a result of engaging in onion production, 16.46 percent managed to construct houses, 17.72 percent acquired fixed assets and 21.52 percent used income obtained from sale of onions to meet cost of health services.

**Table (4-9) Benefits Accrued From Onion Production**

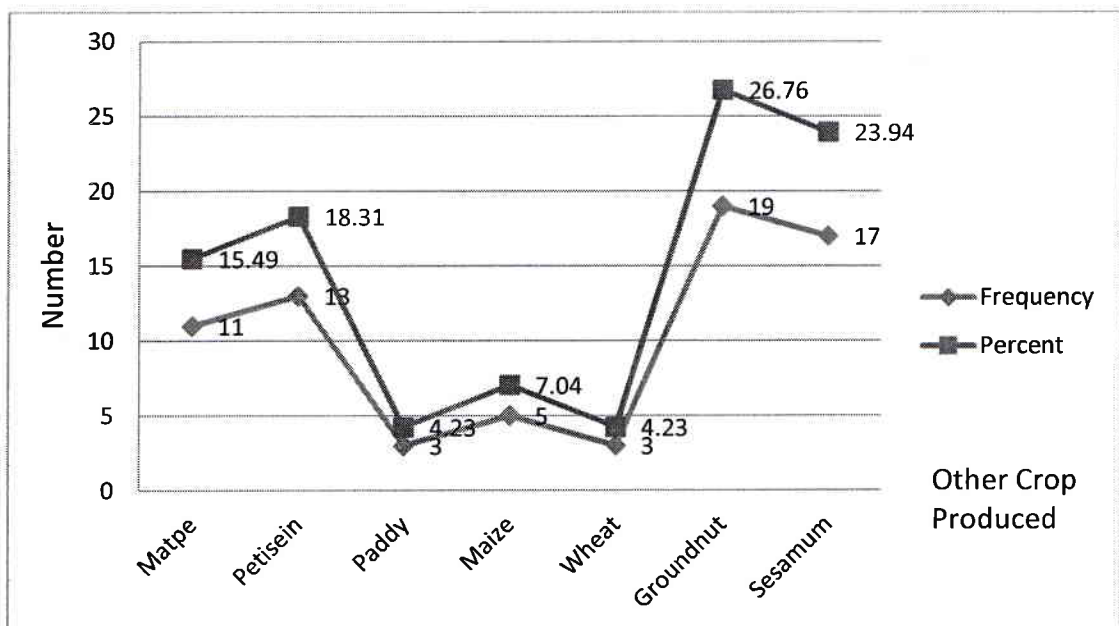
		Frequency	Percent
Valid	Income increase	37	46.84
	Construction of a house	13	16.46
	Ability to buy fixed assets	14	17.72
	To meet cost of health services	17	21.52
	Total	79	
	Non onion producer	71	
		150	100

Source: Field Data, 2017

In comparison to onion production and other crops produced in the area, the study revealed that people are engaged in the production of other crops because they production is practiced for three to four months only in a year. This study conducted further assessment on income obtained and expenses afforded by farmers using income obtained from sale of onions.

The study also revealed that people in the study area preferred to grow other crops such as maize, millet, ground nuts, dal, holly and chili rather than onions. The reasons why they grow other crops instead of onions are due to high cost of onion production and evacuating themselves from dependency on a single crop. These findings showed that 15.46 percent grows Matpe, Petisein is grown by 18.31percent, paddy by 4.23 percent, maize by 7.04, wheat by 4.23, ground nuts 26.76 percent while sesame grown by 23.94percent of farmers. Farmers grow different crops so as to curb the gap which might be caused by the failure of mono crop dependence due to problems such as drought and diseases.

**Figure (4-7) Other Crops Produced**



Source: Field Data 2017

#### 4.6 Challenges of Onion Production

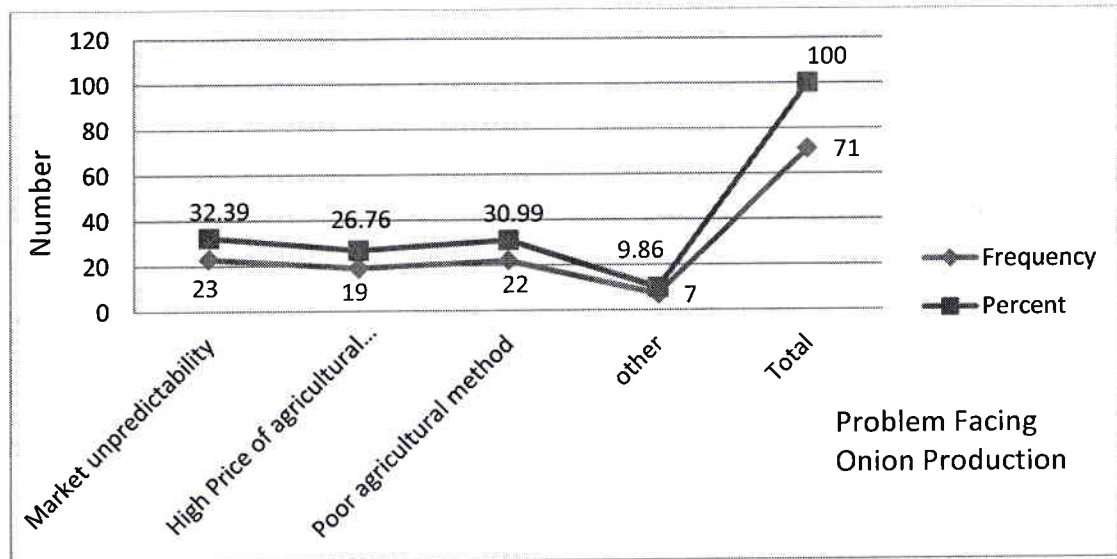
Onion production process is encountered by several problems with respect to existing macro policies or local conditions hence hindering smooth production of onions in the study area. These problems which are presented in Figure 5-12 include;

Low price caused by unpredictability of onion markets whereby 32.39 percent of the respondents identified it to be one of the problems facing them. Besides market unpredictability, identified existence of impassable poor roads specifically during rainy season led to farmers' failure to transport onion produce to the markets situated elsewhere as well as hindering onion buyers to enter the production areas.

High prices of agricultural inputs and unpredictable onion market were responded to it by 26.76 percent were also a barrier facing onion production in the study area. However, 30.99 percent of respondents saw application of poor farming methods a problem. This is caused by the inability of onion producers to fail to adapt new knowledge and skills as a result of low level of education.

Finally, lack of storage facilities was another problem facing onion producers as most of them use local means to store onions. This was responded to it by 9.86 percent showing that they were compelled to sell their onions soon after harvest hence getting low prices. Participation in Vegetable Farming System in District found out that marketing of vegetable is very sensitive due to its perishability and sometimes farmers have to sell their produce on less prices in local markets due to less volume of produce and poor marketing infrastructure and uncertainty in the whole sale market.

**Figure (4-8) Problem Facing Onion Production**



Source: Field Data 2017

This study also showed that there are challenges facing onion producers as presented in Figure 4.8. Most of these challenges were related to policies infrastructures which were formulated and implemented by the government as shown in the following sub-sections.

## CHAPTER V

### CONCLUSION

#### 5.1 Findings

It is on the following: respondents' characteristics (age, gender, marital status, education level of respondents and family size), purpose of onion production, , market prices of onions, income obtained from sale of onion and benefits accrued from sale of onions, challenges and problems facing onion producers during the whole process of production chain i.e. from cultivation to sale of onions.

The findings showed that the majority of onion producers were male while women were seen to be few. Majority of respondents' family size ranges between three and five children/dependents. Age of the majority of the respondents is between 15 years and 49 years which is the working force. Most of the respondents had informal and primary education while respondents with secondary education and post-secondary education were few.

The findings also showed that 79 respondents are onion producers and 71 are non-onion producers. It was found that all respondents (onion and non-onion producers) were engaged in production of other crops like maize, paddy, ground nuts, chili and millet. Majority of onion producers were producing mainly for both domestic consumption as well as business.

On the other hand expenditure priorities of the respondents were on health services, education, purchase of building materials and purchase of household assets. Findings also showed that there were social and economic benefits accrued by respondents engaging in onion production. This is justified by 46.84 percent of onion producers respondents agreed to increase their income, 16.46 percent managed to build houses, 17.72 percent acquired fixed assets like land, 21.52 percent paid for the cost of health services for their families.

Moreover, the study has shown that onion producers are facing various challenges during onion production. These challenges are low level of farmers' education, presence of poor roads, lack of government support to farmers, unreliable market, application of poor farming methods as well as application of poor agricultural tools.

Regarding problems facing onion producers in the study area, study findings has shown that 26.76 percent see low prices of onions as a problem to them, 21.13

percent presence of poor roads, hiked cost of transport was responded to it by 30.99 percent of the respondents, 32.39 percent had the opinion that unpredictable markets as the problems facing onion producers. Besides these problems 9.86 percent of respondents saw that apart from these mentioned problems there are other problems which face onion producers.

The study has found that if the following conditions are worked on properly then onion production could improve. These conditions include; reducing prices of agricultural inputs, make sure that roads are improved, restructure and improve status of primary cooperative societies. Myanmar onion varieties have good storage qualities and are widely appreciated for their flavor. Farmers' yields and income are rather low. Production, storage and marketing improvement can help farmers and trades in the onion to increase their income.

The findings and analysis have shown that onion production contributes to poverty reduction in the study area. This was revealed through income obtained from sale of onions and the ability of respondents to meet various costs such as health services, education, and construction of modern houses and acquisition of furniture. Despite of these benefits, there were problems facing the onion producers which include unstable market, high prices of agricultural inputs, application of poor farming methods, lack of adequate market for the produced onions, inaccessible roads to transport onion produce to neighbour districts and regions looking for customers. When onion is purchased in the villages, traders pay low prices which do not match with the production costs carried by farmers during production.

## **5.2 Suggestions**

In view of the major findings and the above conclusions, the following recommendations were made in order to promote onion production and catalyze its contributions to poverty reduction and other onion producing areas.

The government has to create a conducive environment that encourages existence of reliable onion markets. This can attract fair prices of onions produced hence enabling production increase.

Improve the quality of roads so as to allow smooth transportation of onions and agricultural inputs. Improved roads can capacitate onion producers to enjoy economies of scale since prices of agricultural inputs will be attained at low prices and onions will be produced at low costs.

Provide credits and loans from micro finance institutions at conditions which do not harm the farmers so as to increase production. Availability of credits and loans will assist to stimulate agricultural activities in the study area and a country as a whole.

District authority should make sure that all agricultural produce are sold at authorized markets within the production areas. This will improve revenue collection for the district council hence improving socio- economic services provided by the council.

The government should make sure that villages are allocated with agricultural extension officers who will provide extension services to farmers hence eliminating the problem of application of poor farming methods thereby increase production.

Here the government should ensure that extension officers are employed and the council properly allocate them to villages. These extension officers will instil knowledge and skills to farmers to improve their farming methods.

Decision to reduce prices of agricultural inputs, improve quality of roads, strengthen primary cooperatives, and improve delivery of agricultural extension services and provision of soft loans to small scale farmers is a major step towards poverty reduction to the people who depend entirely on agriculture.

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APPENDIX (I)

နေအိမ်အခြေအနေ

၁။ သင်၏အိုးအိမ်အနေအထားကိုဖော်ပြပါ။

နေအိမ်အမျိုးအစား

(၁) တိုက်

(၂) သွပ်မိုးပျဉ်တောင်

(၃) ခနိမိုး/ဝါးတိုင်/ဝါးခင်း

(၄) တစ်ထပ်/နှစ်ထပ်

ပိုင်ဆိုင်-----ငှားရမ်း၊ ဝယ်ယူ

၂။ အိမ်အသုံးအဆောင်ပစ္စည်းပိုင်ဆိုင်မှု

စဉ်	အမျိုးအစား	တန်ဖိုး
၁။	ကတ်ဆက်၊ ရေဒီယို	
၂။	ဇာပီဇီ စက်	
၃။	ရေခဲသေတ္တာ	
၄။	စက်ဘီး/ဆိုင်ကယ်	
၅။	ထော်လာဂျီ/ ဒိန်းဒေါင်	
၆။	မော်တော်ကား	
၇။	အဝတ်လျှော်စက်	
၈။	တယ်လီဖုန်း	
၉။	စက်လှေ၊ ငါးဖမ်းလှေ၊ သမ္ဗန်	

ပညာရေးနှင့် ကျန်းမာရေး

၃။ သင့်မိသားစုတွင် ကျောင်းသားရှိပါသလား။

ရှိ ----- အရေအတွက် -----

မရှိ -----



၄။ ကျောင်းသားရှိပါက မည်သည့်အတန်းတွင် ပညာသင်ကြားနေပါသနည်း။

မူလတန်း: တက္ကသိုလ်/ အဝေးသင် / Day

အလယ်တန်း: အထက်တန်း

၅။ မည်သည့်ကျောင်းတွင် ပညာသင်ကြားပါသနည်း။

ရပ်ကွက်အတွင်း: အခြားရပ်ကွက် မြို့

အခြား:

၆။ ကျောင်းနေအရွယ်တွင် ကျောင်းမနေသူများရှိပါက အကြောင်းရင်းကိုဖော်ပြပေးပါ။

၇။ သင်တို့မိသားစုသည် (စပါး၊ ပဲ၊ ဗပြောင်း၊ နှမ်း၊ ကြက်သွန်၊ ဆီထွက်သီးနှံ)

စိုက်ပျိုးခြင်းလုပ်ငန်းများကို အဓိကလုပ်ကိုင်ပါသလား။

လုပ်ကိုင်ပါသည်။ မလုပ်ကိုင်ပါ

လယ်၊ ယာ လုပ်ငန်းအခြေအနေ

၈။ လယ်ယာလုပ်ငန်း

သီးနှံအမည်	ကိုယ်ပိုင်	အငှား	စိုက်ကေ	အောင် သော	ခန့်မန်းခြေ အထွက်နှုန်း	ကုန်ကျစရိတ်
ပဲကြား			၁ ဧက		(၁၅) တင်း	(၆) သောင်း
မြေပဲ			၁ ဧက		(၈) တင်း	(၇) သိန်း

၈။ လယ်ယာလုပ်ငန်းအတွက်ပိုင်ဆိုင်သည့်အမျိုးအစား

အမျိုးအမည်	တန်ဖိုး
လယ်ယာသုံးစက်ကိရိယာ	
ခိုင်းကျွဲ၊ ခိုင်းနွား	
လှည်း	
ထွန် လယ် ပိုင်ဆိုင်မှု	
အခြားလယ်ယာသုံး ကိရိယာ	

၁၀။ စိုက်ပျိုးစရိတ်ချေးငွေ

စိုက်ပျိုးစရိတ်ချေးငွေ	ဌာန	ပမာဏ	အတိုး	ဆပ်ပြီးငွေ	ကျန်ငွေ
အစိုးရ					
ပုဂ္ဂလိက					
N.G.O					

၁၁။ အခြားဝင်ငွေရလုပ်ငန်းများကို လုပ်ကိုင်ပါသလား။

လုပ်ကိုင်ပါသည်။

မလုပ်ကိုင်ပါ။

၁၂။ အောက်ပါလုပ်ငန်းများကို လုပ်ကိုင်ပါသည်။

ဝန်ထမ်း (အစိုးရ၊ ပုဂ္ဂလိက ၊ N.G.O၊ အခြား)

မွေးမြူရေး

ငါးမွေး/ဖမ်းခြင်းလုပ်ငန်း

ကုန်စုံဆိုင်

ဥယျာဉ်ခြံ

အရောင်းအဝယ်

ကျပန်း/နေ့စား

အခြား(အသေးစိတ်မေးမြန်းရန်)

၁၃။ တနိုင်မွေးမြူရေး

မွေးမြူရေးတိရစ္ဆာန်	အရေအတွက်	စရိတ်	ရောင်းရငွေ

၁၄။ သင်၏တစ်နေ့တာဝင်ငွေမည်မျှရှိသနည်း။ (ဖြေနိုင်သူကိုသာမေးရန်။)

၁၅။ အိမ်ထောင်စုဝင်များအတွက် အလုပ်လုပ်သူဦးရေကိုဖော်ပြပါ။

အမည်	အလုပ်အမျိုးအစား	ဝင်ငွေ

အိမ်ထောင်စုအသုံးစရိတ်များ

၁၆။ လွန်ခဲ့သောတစ်ပတ် (တစ်ရက်) အတွင်းစားသုံးမှုစရိတ်မည်မျှရှိသနည်း။

(ခန့်မှန်းခြေ) -----

၁၇။ လွန်ခဲ့သောတစ်လအတွင်း ကျန်းမာရေးစရိတ်မည်မျှရှိသနည်း။

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၁၈။ လွန်ခဲ့သောတစ်လအတွင်း ပညာရေးစရိတ်မည်မျှရှိသနည်း။

၁၉။ လွန်ခဲ့သောတစ်လအတွင်း လူမှုရေးစရိတ် (သာရေး၊ နာရေး၊ ဆွေးမျိုးထောက်ပံ့)၊

ပွဲလမ်းသဘင်) မည်မျှရှိသနည်း။ မည်သည့်ကိစ္စအတွက်အသုံးပြုရသနည်း။

**APPENDIX (II)**

- ၁။ ကြက်သွန်စိုက်/မစိုက်
- ၂။ စိုက်ပျိုးခြင်းရည်ရွယ်ချက် (ဘာကြောင့်ကြက်သွန်စိုက်သနည်း)
  - (၁) စားသုံးရန် (၂) စီးပွားဖြစ်ရောင်းချရန် (၃) စားသုံးရန်နှင့် ရောင်းချရန်
- ၃။ ကြက်သွန်နီမစိုက်လျှင် အခြားဘာသီးနှံစိုက်သနည်း။
  - (၁) ပြောင်းဖူး (၂) ဂျုံ (၃) နေကြာ (၄) ပဲစင်းငုံ (၅) အခြားသီးနှံ
- ၄။ စိုက်ပျိုးမည့်အမျိုးအစား
  - (၁) ကြက်သွန်နီ (၂) ကြက်သွန်ဖြူ (၃) ကြက်သွန်ဝါ (၄) အခြားအမျိုးအစား
- ၅။ လွန်ခဲ့သော ငါးနှစ်အတွင်း ထွက်ရှိသော ကြက်သွန်ပိဿာချိန်ပမာဏ
- ၆။ သင်ထင်သည့် အထွက်တိုးစေ/လျော့စေသော အကြောင်းများကို ရွေးပါ။
  - (၁) ဈေးနှုန်းအတက်အကျများ၊ ဈေးကွက်ပြောင်းလဲမှု (၂) ရာသီဥတု (၃) သွင်းအားစုများ၊ ဈေးတက်ခြင်း(ဓာတ်မြေဩဇာ၊ မျိုးစေ့၊ လုပ်သားစသည့်) (၄) စိုက်ပျိုးသည့်နည်းလမ်း (၅) အခြားသော အကြောင်းများ
- ၇။ လွန်ခဲ့သော ငါးနှစ်အတွင်း ပျမ်းမျှ နှစ်စဉ်ကြက်သွန်ဈေးနှုန်း
- ၈။ လွန်ခဲ့သော ငါးနှစ်အတွင်း ကြက်သွန်ရောင်းချခြင်းမှ ရရှိသော နှစ်စဉ်ဝင်ငွေပမာဏ
- ၉။ လွန်ခဲ့သော နှစ်အတွင်း အသုံးစရိတ်
  - (၁) ကျန်းမာရေး (၂) ပညာရေး (၃) အိမ်ထောင်ပရိဘောဂ
  - (၄) အခြားဝန်ဆောင်မှုများ

၁၀။ အိမ်ထောင်စုရှိ လူဦးရေ

အမည်	အသက်	ကျား/မ	အလုပ်အကိုင်	ပညာအရည်အချင်း	အိမ်ထောင်ဦးစီးနှင့် တော်စပ်ပုံ	ကိုးကွယ်သည့်ဘာသာ	မှတ်ချက်

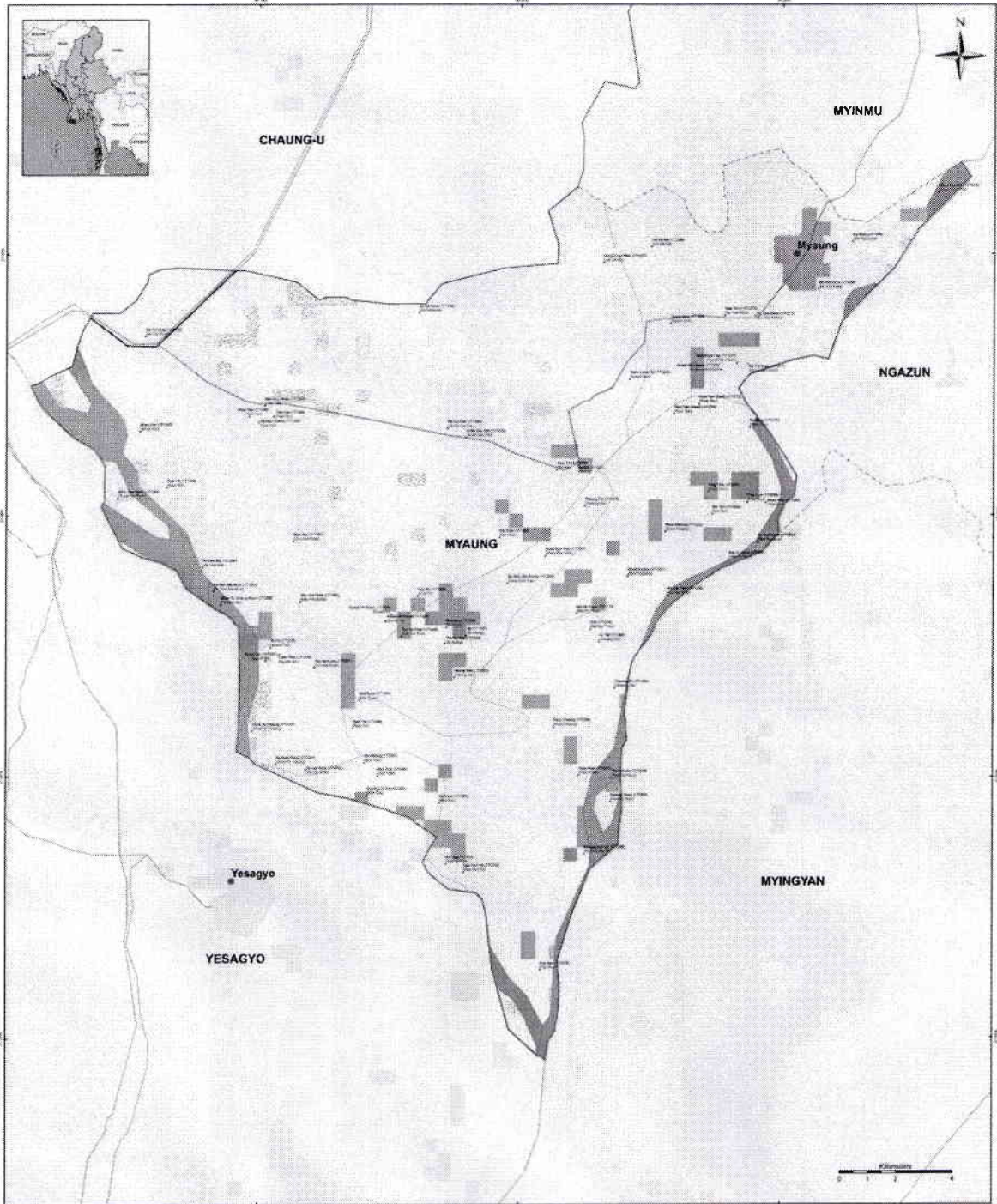
- ၁၁။ ကြက်သွန်စိုက်ပျိုးခြင်းမှ ဝင်ငွေရရှိခြင်းကြောင့် လူမှုရေးနှင့် စီးပွားရေးအကျိုးကျေးဇူး ရရှိခြင်း
  - (၁) ဝင်ငွေတိုးလာခြင်း
  - (၂) အိမ်အသစ်ဆောက်လုပ်နိုင်ခြင်း
  - (၃) အခြားပိုင်ဆိုင်မှုများ ဝယ်ယူနိုင်ခြင်း
  - (၄) ပုံမှန်ကျန်းမာရေး စစ်ဆေးလာနိုင်ခြင်း
  - (၅) ကုန်စည်ဒိုင်၊ ပွဲရုံများ ဖွင့်လှစ်နိုင်ခြင်း
  - (၆) အခြားသောအကြောင်းများ . . .
- ၁၂။ ရောင်းချသည့်ဈေးကွက်နေရာ
  - (၁) ကျေးရွာ (၂) ရပ်ကွက် (၃) ခရိုင်ဈေး (၄) မြို့ဈေး
  - (၅) အခြားမြို့များသို့တင်ပို့ရောင်းချ (၆) ဘယ်မြို့မှာ ရောင်းချလည်း
- ၁၃။ ကြက်သွန်ရောင်းချချိန်တွင် တွေ့ရှိရသောအခက်အခဲများ
  - (၁) ဈေးနှိမ်ခံရခြင်း (၂) လမ်းပန်းဆက်သွယ်ရေး ခက်ခဲခြင်း
  - (၃) သယ်ယူပို့ဆောင်ရေးစရိတ်များခြင်း (၄) ဈေးကွက်မတည်ငြိမ်ခြင်း
  - (၅) အခြားအကြောင်းအရာများ . . .
- ၁၄။ ကြက်သွန်စိုက်ပျိုးချိန်၌ တွေ့ရှိရသောအခက်အခဲများ
- ၁၅။ ကြက်သွန်နီစိုက်ပျိုးထုတ်လုပ်မှု တိုးတက်ရန်အတွက် သင့်ထင်မြင်ချက်

# APPENDIX (III)



Myanmar Information Management Unit

## Myaung Township - Sagaing Region



<p>Map ID: MIMU15494                  Creation Date: 1 May 2016 AT                  Projection/Datum: Geographic/GCS84</p> <p>Data Source                  BASE MAP: MIMU Sources - OHP/created by MIMU 2008.                  Landcover - USGS/ MODIS 2011 1:5 (1 year)                  Place name - Ministry of Home Affairs (LAD)                  Map produced by the MIMU - E-mail: info.mimu@untp.org                  Website: www.thereads.info</p>	<p><b>Legend</b></p> <ul style="list-style-type: none"> <li>Village</li> <li>Town</li> <li>Road</li> <li>Railway</li> <li>Shore</li> <li>Township Boundary</li> <li>Circle Boundary</li> <li>Square Boundary</li> <li>Administrative Boundary</li> <li>Area Protected/Restricted/Forbidden</li> <li>Perennial/Seasonal</li> </ul>	<p><b>Landcover</b></p> <ul style="list-style-type: none"> <li>Crop and Vegetation</li> <li>Forest</li> <li>Mixed Forest</li> <li>Grassland</li> <li>Shrubland</li> <li>Stone Ice</li> <li>Urban Build-up</li> <li>Barren Land</li> <li>Wetland</li> <li>Water</li> </ul>	<p>Myanmar Information Management Unit (MIMU) is a technical response of the Humanitarian Country Team (HCT) providing information management services, including GIS mapping and analysis, to the humanitarian and development sectors both inside and outside of Myanmar.</p> <p><b>NOTE:</b> Due to the limited space of labels for villages, some village's names will not be appeared on this map.</p> <p>Copyright © Myanmar Information Management Unit 2016. May be used free of charge with attribution. For more information see: <a href="http://www.thereads.info/mimu">http://www.thereads.info/mimu</a>. This notice cannot be modified or removed.</p>
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