

The Role of Black gram Cultivation and Benefit of farmers in Hinthada Township

Kyaw Min Htike¹, Myint Thida², Nwe Ni Oo³

Abstract

This paper presents the production of the Black gram in Hinthada Township with comparing the years between 2006-07 and 2018-19. The sown acreage was 127667 acres in 2006-2007 and 129369 acres in 2017-2018. Hinthada Township has the largest cultivated areas of Black gram among six townships in Hinthada District. Black gram is mainly cultivated in north-western administrative units of Hinthada Township. There is no change in cultivated areas of Black gram during last decade because the soils and climate conditions are suitable for Black gram cultivation. Although there is no change in cultivated area, there is some fluctuation in average production per acre and prices. In 2017-2018, the average price of is 16700 kyats for one basket and 20000 kyats for one basket in the end of 2018. At present Black gram is still ranked as the marketable crop according to political condition. To present the paper, secondary data such as pulses production, cultivated area, etc are applied and interviews and questioners, data analysis, maps and graph presentations are used.

Keywords: production, vital agricultural product, largest cultivated areas, marketable crop

Introduction

The total area of Myanmar is 67.71 million hectares and about 10 million hectares are cultivated for paddy and other crops (Maung Maung Naing, 2014). The agriculture sector contributes 43 percent of GDP; 41 percent of export earnings; and 63 percent of the labour force are employed in agriculture (Moh Moh Khing, 2018). Myanmar name is Matpe, English name is Black gram also called grain legumes and Botanical name is *Phaseolus mungo* L are extensively grown in tropical regions of the world for centuries as a major protein rich crop bringing considerable improvement in human diet (Das *et al.*, 2010). Black gram is used as sprouting beans and bean powder. Indian mainly used them for curry. But Myanmar people do not usually use them as curry. Hinthada Township is located between North latitudes 17° 26' and 17° 48' and also between East longitudes from 95° 11' to 95° 33'. Therefore, it is a tropical region.

The most common varieties of pulse are grown in the study area. They are Black gram (Matpe), Green Gram (Pedisein), Chick Pea (Kalape), Cow Pea (Bocate), Lab Lab Bean (Pegyi), Myehtauk Pea, Cow Pea (Pelun), Soy Bean (Peboke), Butter Bean (Htawpatpe), Krishna mung (Penauk), Sultani, and etc. The grown acreages of pulses were notably reduced after independence due to political instability. However the grown acreage gradually increased later 1988. Among the different pulses, Black gram is one of the essential nutrients of human diet and rich sources of protein as they contain about 20 to 30% protein. Black gram is more difficult to store than cereals as they suffer great damage during storage due to insect-pests and micro-organisms (Anonymous, 1978). The local farmers of the study area mainly depend on the Black gram cultivation because of the essential crops due to the soil condition. The profitability of Black gram was higher than that of rice, especially monsoon rice. Black gram requires much less labor than off-season rice (the World Bank, 2016). Therefore, most of the farmers cultivated Black gram widely in the area. Therefore, Black gram crop cultivation is selected to present from the geographical point of view.

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Research Questions

Research questions of this paper are as follows:

- What are the controlling factors for the spatial distribution of Black gram cultivation in Hinthada Township?
- How are the productivity and trade of Black gram in Hinthada Township?
- What are the future trend of production of Black gram and its benefit in Hinthada Township?

Aims and Objectives

The main aim of this paper is-

- to analyze the cultivation for Black gram and its benefit in Hinthada Township.

The objectives of the Paper are:

- to examine the controlling factor for the development of Black gram cultivation and benefit in Hinthada Township-

- to find out different productivity of Black gram in Hinthada Township

Sources of Data and Methodology

Large numbers of Literature were obtained from the libraries and internet websites. The exploration of data started with collecting secondary data on pulses production and surplus. The study was carried out by taking the data like annual Matpe production from 2006-2007 to 2017- 2018; monthly prices were obtained from Department of Trade Promotion and Consumer Affair in Hinthada Township. To collect primary data, field surveys were conducted to collect from wholesalers and brokers. Pulses related regional impacts were analyzed by using data derived from village circle level through field observation and structured interviews. Results were summarized in the form of tables and maps. Graphs and suitable charts were used to present the data graphically.

Geographical Background of Hinthada Township

Hinthada Township is located on the western bank of the Ayeyawady River, occupying the northern portion of the Ayeyawady Delta. The township comprises of 21 wards in the urban area, 10 village circles in the rural area. Ten Village circles consist of Ingayan, Danbi, Myogwin, Talokehtaw, Shagel, Nakeban, Kyaungwin, Myoma-West, Myoma-East and Duya. It has an area of about 980.82 square km (378.695 sq mile).

Being part of the Ayeyarwady Deltaic Region, the township has no salient topographic feature, manifested by the combination of Ayeyarwady River Valley, Ngawun River Valley and Daka Creek. People cultivate more Black gram than other pulses and beans in these places. The region has the mean monthly temperature of 27.8° C during the period from 2017-2018. The temperature on November and December is favorable for the cultivation of Black gram and other pulses. Study area has Tropical Monsoon Climate (Am). But in some years it has tropical Savanna (Aw). This climatic condition is suitable for Matpe cultivation.

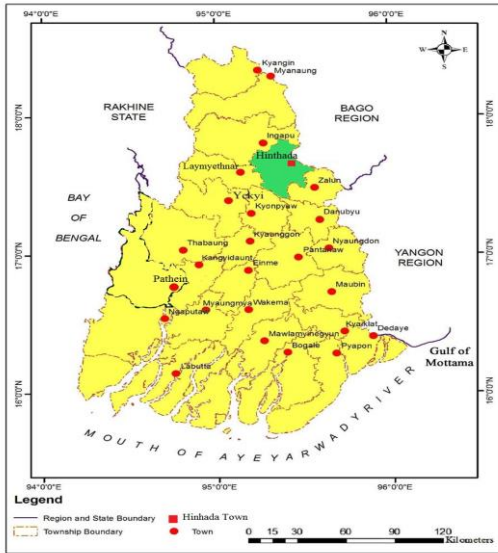


Figure (1) Location of Hinthada Township in Ayeyarwady Region

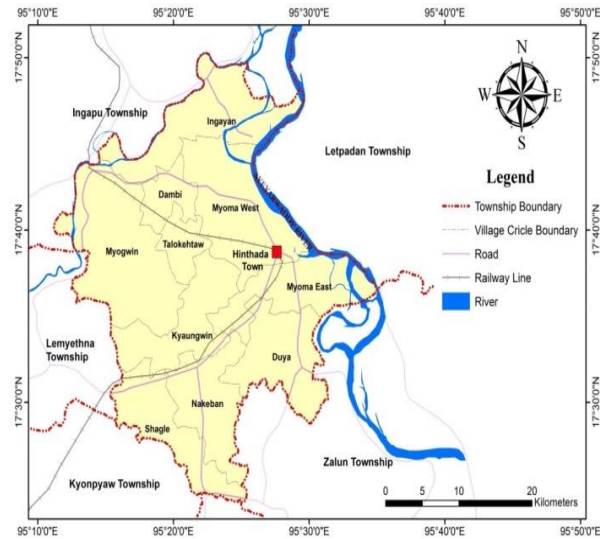


Figure (2) Location of Hinthada Township

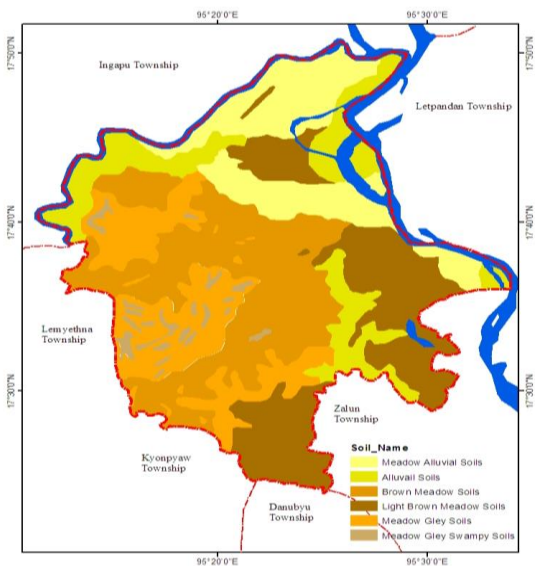


Figure (3) Soil of Hinthada Township

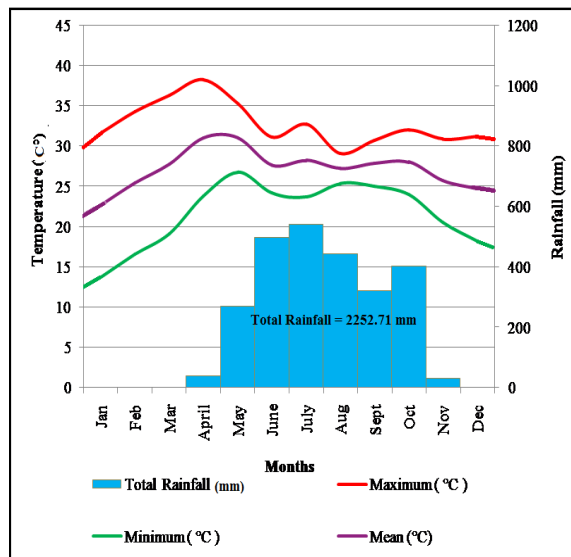


Figure (4) Climograph of Hinthada Township

Urban and Rural Population

The majority of the population in Hinthada Township is living in the rural area. The majority of the inhabitants relies heavily on the primary production sector particularly on agriculture and fishery, for their livelihood. The total urban population was 90115 persons and rural population was 254042 persons in 2017-2018. In 2018, urban population was 28 percent and rural population was 72 percent of total population. The higher proportion of rural population depends on agriculture and engaged in agriculture activities including pulses cultivation.

Factors Effecting on the Production of Black gram in Hinthada Township

Market Factor

Market for pulses and beans can be classed into two types, domestic market and foreign market. After practicing markets oriented economic system, pulses and beans become more important in foreign markets. The leading domestic markets are Yangon and Mandalay. In Yangon, purchase depots were in Lathar in the past and a purchase depot, was relocated at Bayintnaung since 1992. The higher foreign market demand has pushed the companies concerned and the production areas on Black gram cultivation. The purchase depot at Bayintnaung Market is controlled by the Merchants and Industrialists Association.

Local Trade and Foreign Trade

Production and distribution of Black gram for export are carried out by private traders. Two types of Black gram trading are found in Hinthada Township. One type is done by farmers to brokers. Another type is that farmers sold directly to the Companies from Hinthada. Black gram is transported by motor vehicles, bull-carts, and railways.

Some products are transported by railways in Ingayan and Danbi administrative units due to their nearest situation to railroad. Some are transported by waterway and it is found in Myoma East administrative unit. Finally, the collected Black Grams are transported by motor road to Yangon especially Bayintnaung Market (Fig. 5).

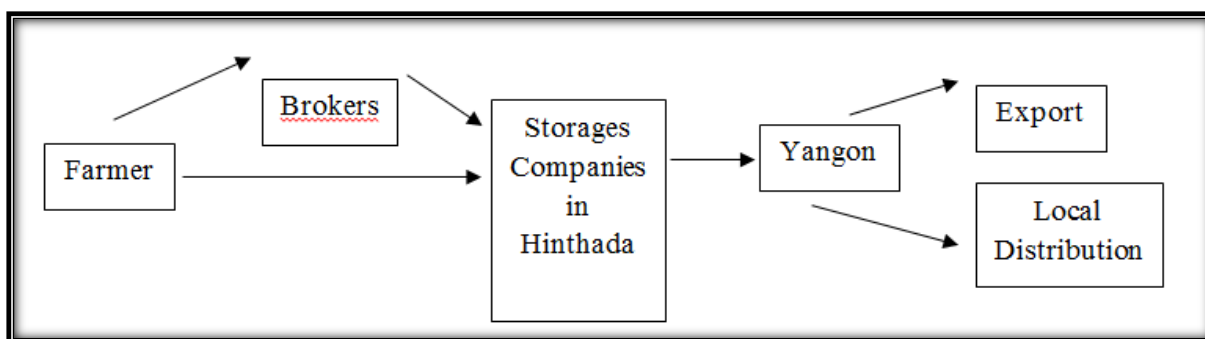


Figure (5) The Flow Diagram for Black gram Trade of Hinthada Township

There is no direct export of Black gram to the foreign market from Hinthada. Black Grams are directly exported to Yangon, especially Bayintnaung market. The dominant wholesalers are Shwe Kyar, Yarzar Min and Sein Thiha. They store a huge number of Black Grams in large storages and they are sent to Yangon.

Institutional Factors

In boosting the production of Black gram, adequate capital is one of the basic requirements for the growers. Agricultural loans are distributed by Myanmar Agricultural and Rural Development Bank. The agricultural loan discursion has begun since 1953. There are two types of loans. In the rainy season, the loan is disbursed at a rate of 20000 kyatss per acre. But in 2018 it was gained for monsoon paddy the rate of 100000 kyatss per acre and for winter crops 50000 kyatss per acre. Loans are given to the farmers only who own 10 acres of land and below. Monsoon loan is given in May and it must be paid back in December. The winter loan is available in October and the farmers have to pay it back in April.

Although loan is available for pulses cultivation, it is insufficient for pulses cultivation due to high labour cost and input cost due to the effect of climatic change and labour shortage.

Results and Findings

Black gram Cultivation in Hinthada Township

Land used for Cultivation

In 2017-2018, there are in the net sown area in Hinthada Township has 177152 acres. The net sown area includes Le Land, Kaing-Kyun Land and Garden Land. According to the data, the dominant landuse are Le land, Kaing-Kyun land and Garden land respectively. The percentage of Le Land is 75.67%, Kaing-Kyun is 14.38% and 9.94% is Garden land (Fig. 6). The area proportion of Le Land is the largest in Hinthada Township within Hinthada District. According to the Land Records Department, there is no fallow Land in Hinthada Township. In 2017-2018 the total net sown Black gram area was 129369 acres (Fig. 7).

Hinthada Township includes 10 Village circle. Among them Kaing-Kyun Lands found in Ingayan, Danbi, Myokwin, Myoma East, Myoma West and Taloketaw, Sharke, Duya and Nakeban do not practice Kaing- Kyun Land because of their inland location. Black gram is mostly cultivated in Le Land and small areas are found in Kaing-Kyun Land. Hinthada Township possesses the largest pulses cultivated areas with 66825 ha (165126 acres) among the townships located with Hinthada District. Among the pulses cultivated in Hinthada Township, Black gram (*Matpe*) ranks first in cultivated areas (Fig. 8).

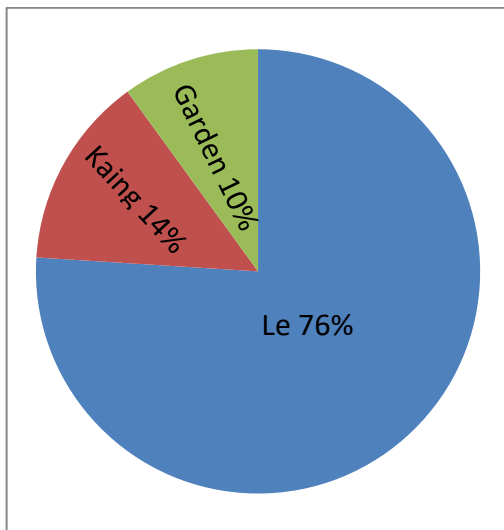


Figure (6) Pulses cultivation in Hinthada Township, (Source: According to data)

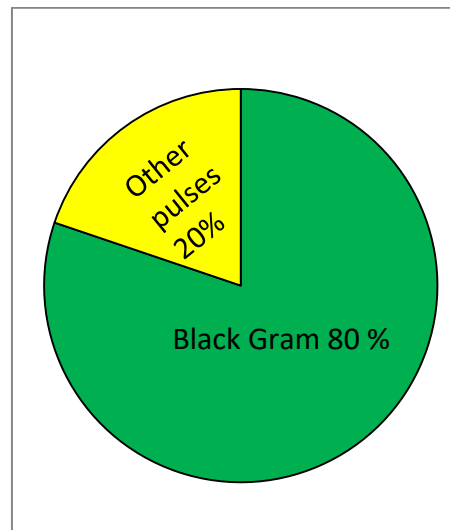
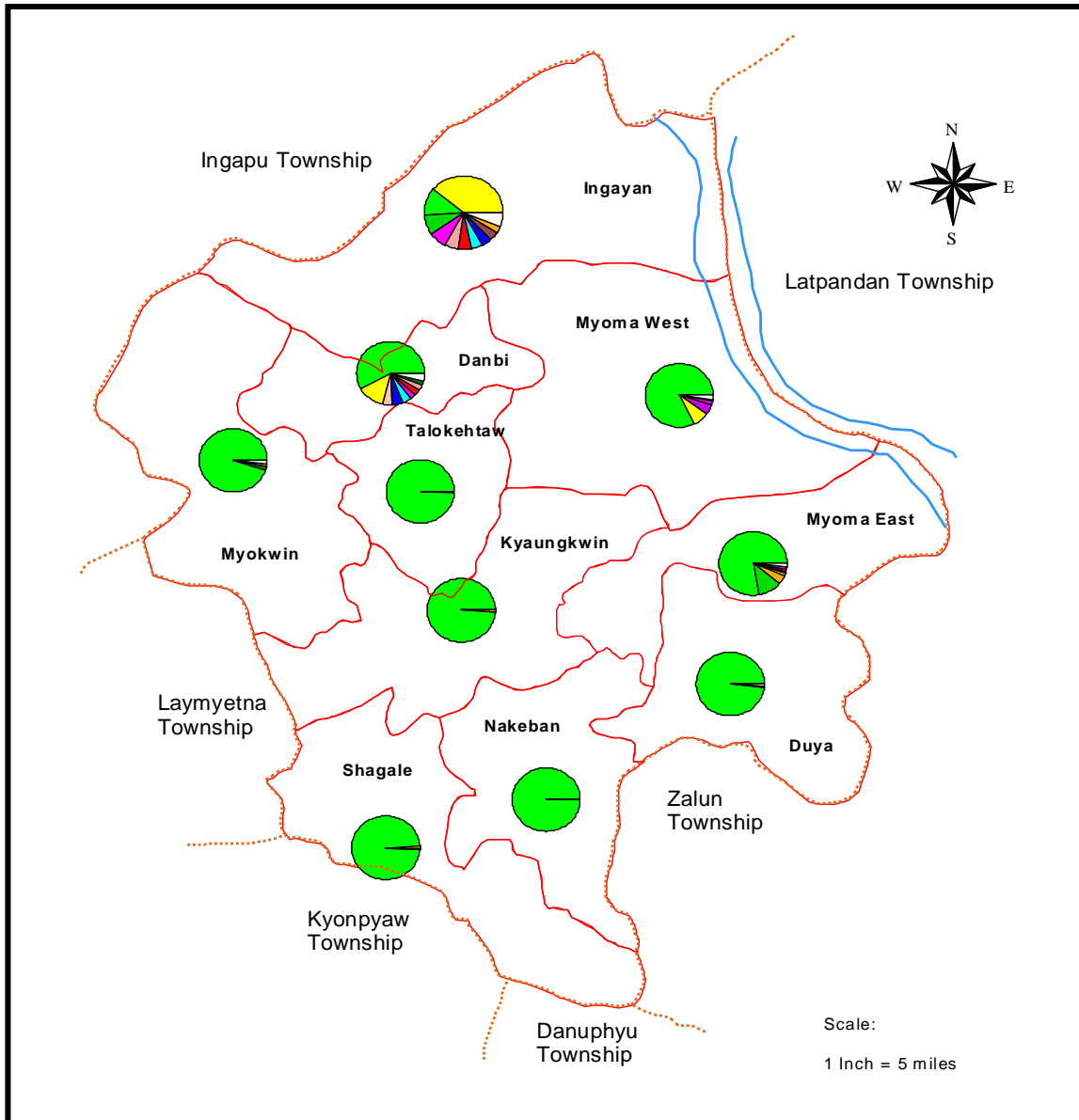


Figure (7) Pulses cultivation in Hinthada Township, (Source: According to data)



Index

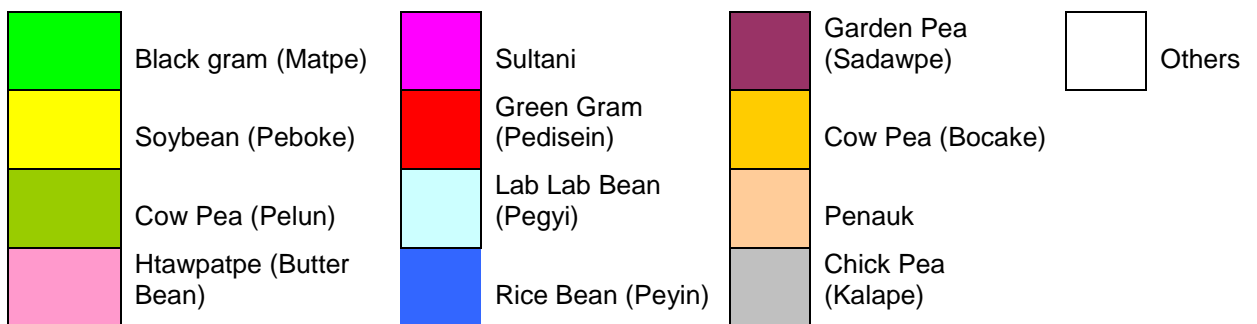


Figure (8) Cultivated Areas of Matpe, Pulses and Beans in Hinthada Township (2017-2018).

Table (1) Varieties of Pulses and Beans and Growing period (2012-2013)

No	Name	Cultivated Area (Acres)	Percentage %	Growing Period Month
1	Matpe	129369	78.83	Winter (From Nov to Dec)
2	Pedesein	2639	1.36	Winter (From Nov to Dec)
3	Peboke	11973	7.27	Rainy (From Oct to Nov)
4	Penauk	231	0.14	Winter (From Nov to Dec)
5	Kalape	210	0.13	Winter (From Nov to Dec)
6	Peyi	2269	1.43	Rainy (From Oct to Nov)
7	Peyin	1946	1.18	Winter (From Nov to Dec)
8	Pelun	4877	2.72	Rainy (From Oct to Nov)
9	Sultarni	1914	1.16	Winter (From Nov to Dec)
10	Pehtawpet	2346	1.42	Winter (From Nov to Dec)
11	Bocake	3735	2.15	Winter (From Dec to Jan)
12	Sadawpe	923	0.56	Winter (From Nov to Dec)
13	Other	2694	1.63	Rainy and Winter (From Oct to Dec)
Total		165126	100	

Table (2) Foreign quality of Black gram

Specification of Myanmar Black gram (Matpe) (Fair Average Quality)		
(1) Foreign matters	1.00%	Max
(2) Weevil Led seed	1.50%	Max
(3) Damaged otherwise	4.00%	Max
(4) Brown seed	3.00%	Max
(5) Sister beans	3.00%	Max



Figure (9) Cultivation ways of Blackgram.

Spatial Distribution of Black gram Cultivation

Hinthada Township includes 10 administrative units, which compose of 103 village tracts and 820 villages. All administrative units cultivate Black gram. In some areas those located close to Ayeyarwady River, Ngawun River such as Ingayan, Danbi, Myogwin, Myoma East, Myoma West, people cultivate a variety of Pulses and beans. Black gram occupied about three-fourth of total pulses and beans is cultivated within area. Due to large amount of income, small labor and reasonable cost, farmers mainly practice Black gram after paddy cultivation.

In 2006-2007, the area of Black gram in Hinthada Township was 127667 acres and raised in 2017-2018 and so the total net sown Black gram area was 129369 acres (Fig. 10). Myokwin occupied the largest area with 18694 acres (14.4%) of total Black gram area of the township. The second largest was Nakeban village circle, it possessed 17255 acres, (13.3%) of total cultivated area. Duya stands as the third place with 15846 acres (12.2%).

Figure (11) show, the production of Black gram is obviously decreasing compared with the 2007 and 2018. Therefore, farmers are not interested in Black gram cultivation. That's why, the current situation of Black gram cultivation is worrying for the government and the township income especially GNI for local people. So, the government should do good management for Black gram price and market conditions.

Table (3) Cultivation and Production of Black gram in 2006-2007 and 2017-2018

Village	Cultivated Area (Acres)		Production (basket)	
	2006-2007	2017-2018	2006-2007	2017-2018
Ingayan	2655	2633	53100	31596
Danbi	11325	11244	126500	134928
Myokwin	18478	18694	369560	224328
Talokehtaw	14763	14832	295260	178128
Kaungkwin	14810	15337	296200	184044
Sharke	12854	13075	257080	156900
Nakeban	16730	17200	334600	207060
Myoma East	11975	11896	239500	143880
Myoma West	8477	8812	169540	106944
Duya	15600	15646	212000	190152
Total	127667	129369	2353340	1557960

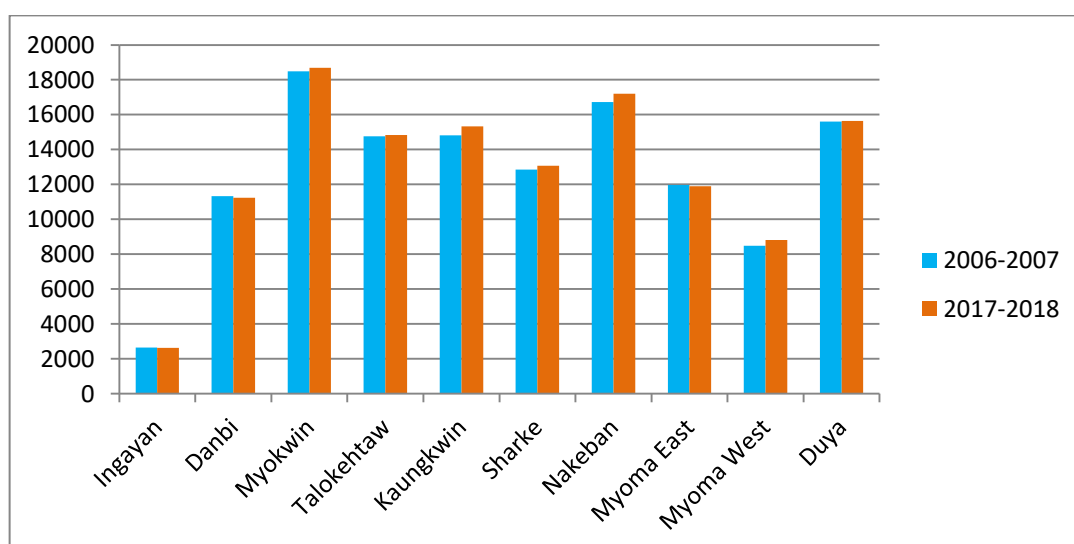


Figure (10) Spatial Distribution of Black gram Cultivation

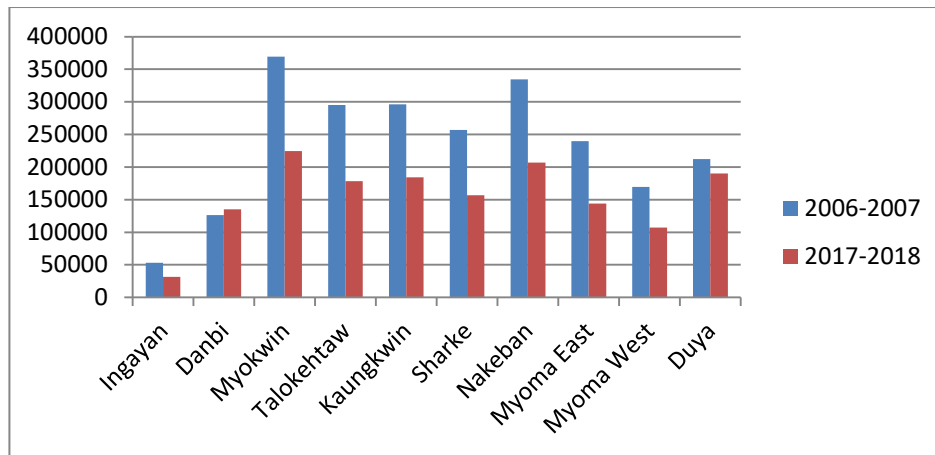


Figure (11) Spatial Distribution of Black gram Production

Price of Blackgram

Price is one of the factors affecting crop cultivation. Farmers want to cultivate the crop which price is high price and give high return. In Hinthada Township, pulses particularly Black gram are dominant although many crops are grown. Therefore, price of Black gram is presented. According to the interview, farmers said that productivity is high in some years because of the climatic suitability and free from pests. But, farmers get low return due to low price. But according to the graph, although market price is increased in current economic conditions, production cost is also increased. Black gram is widely cultivated in the area as the second crop because of higher demand. Generally price of Black gram increased and it affects return of the Black gram cultivation.

Moreover, price is changed monthly and yearly. Price of Black gram is low in the harvesting period and gradually increases due to low supply (Figs. 12 & 13). Black gram is widely cultivated in the area because of higher demand and price. Generally price of Black gram increases and it affects return of the Black gram cultivation. Moreover, price is changed in a year seasonally. Price of Black gram is low in the harvesting period and gradually increases during the low supply period. Therefore farmers ever alarm upon the market price from the radio, television, newspapers and journals. Because the Government is ever announcing price of Black gram and other pulses and paddy.

Table (4) Monthly Price of Black gram (2017-2018) (Source: According to data).

Monthly	Price per basket (Kyat)
January	18900
February	16500
March	15000
April	13200
May	16500
June	14600
July	14800
August	15900
September	18000
October	23700
November	33500
December	28000

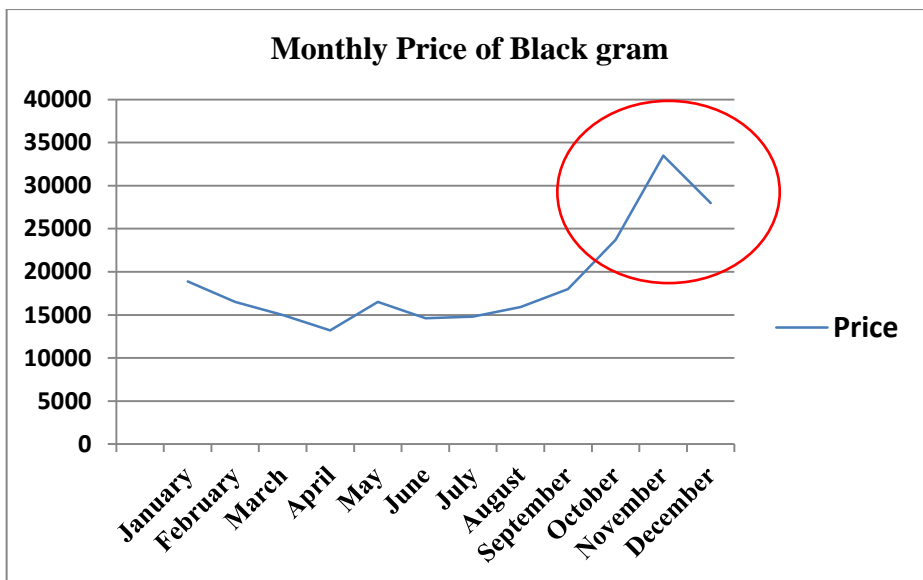


Figure (12) Monthly Price of Black gram (2017-2018)

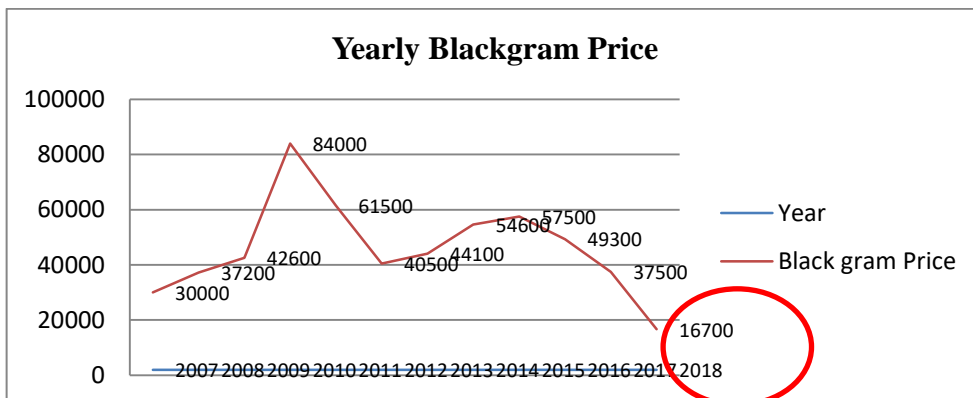


Figure (13) Yearly Changing Price of Black gram (2017-2018) (Source: according to data)

Cost and Benefit analysis on Black gram Cultivation

In le and Kaing cultivation system, farmers cultivate Black gram in the cold season. Land preparation is done by using agriculture machinery because of draught, animal shortage and other intention is to save the time in the land preparation to cultivate second crops. The cost for one acre cultivation of Black gram is about 82000 kyats, generally. It includes the costs for seeds, labour, pesticides and fertilizers (Figs. 14 & 15). In 2017-2018 one acre of Black gram cultivated land produced about 12 baskets and earned 222000 kyats. So, the profit may be 172000 kyats per acre. Due to its profitable condition, people from other townships in Ayeyarwady Region also cultivate Black gram recently.

According to table (3), the benefit of Black gram is small. Socioeconomic condition of most farmers in the township largely depends on the cultivation of black gram. Therefore, some of the farmers migrate from the township to the foreign countries and urban areas for survival especially for education of sons and daughters.

Table (5) Cost and benefit in Black gram Cultivation Compare with (2007 and 2018).

2007		
Items	Cost (Ks)/ acre	Net Return
Tillage	9000	12 x 300000 =360000
Seed	32000	82000
Pesticide, weedicide	6000	
Harvesting	15000	
labour cost (tilling, pesticide spraying)	20000	
Total Cost	82000	
		278000

Source: Field observation (Sep, 2018)

2018		
Items	Cost (Ks)/ acre	Return
Tillage	10000	12 x16700= 200400
Seed	20000	83000
Pesticide, weedicide	8000	
Harvesting	15000	
labour cost (tilling, pesticide spraying)	30000	
Total Cost	83000	
		117400

Source: Field observation (Sep, 2018)

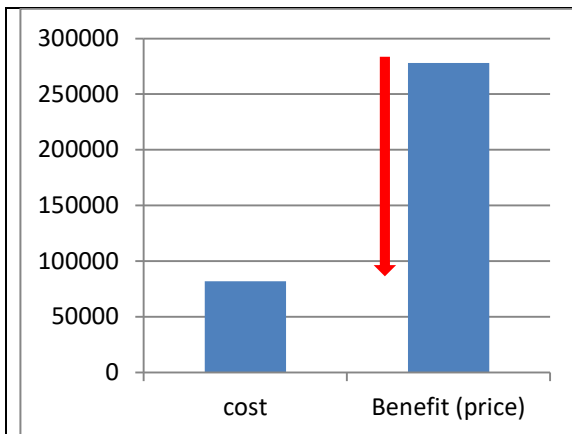


Figure (14) Cost and benefit in Black gram Cultivation (2007)

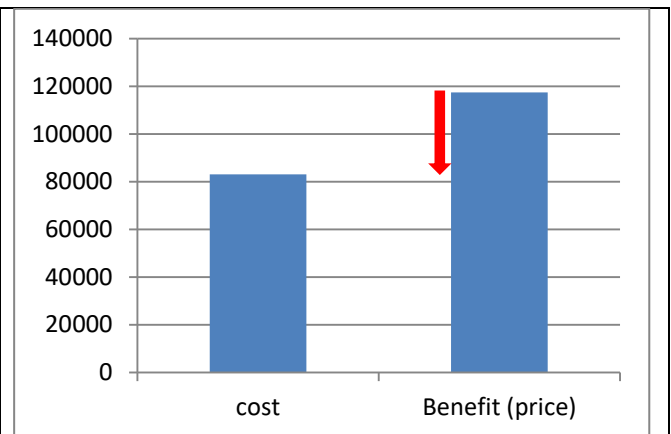


Figure (15) Cost and benefit in Black gram Cultivation (2018)

Findings and Suggestions

In Hinthada Township, there are existing physical factors such as relief, climate and soil, support the Black gram cultivation. Area of Land uses, Local Trade and Foreign Trade, Urban and Rural Population, market Factor and Institutional Factors also affect the Black gram cultivation. Black gram is the most suitable in le land. The year round high temperature and seasonal rainfall, vast tract of meadow and alluvial soil are suitable for Black gram cultivation. Due to high foreign market demand, most farmers take effort on intensive cultivation of black gram.

The sown area of the Black gram was somewhat restricted by policy factors as the summer paddy is grown as a plan crop. Summer paddy needs a large amount of water. The existing irrigation of Duya Inn cannot satisfy the need and the farmers have to pump water from near Inn and Creek. It is increasing the cost of production as the price of diesel oil is high and hence there is low profit or loss to the growers. Therefore, farmers are choosing more cultivation of Black gram than paddy cultivation. To boost the production of black

gram, special companies including farmers, traders and company staff have been formed and the loading companies provide quality seeds and loans to the farmers at low interest rate. Such specialized companies will be formed in Hinthada Township.

According to production analysis, the administrative units with the highest production are Talokehtaw, Nakeban, Myoma West, Myoma East, Sharke and Duya. A lot of the summer paddy lands are used for growing Black gram but the remaining parts of the land for the extension have certain physical restraints.

Although the government loan for winter crop cultivation, it is insufficient to cultivate Black gram systematically. The small farmers may not be able to extend the sown area and so, it is necessary for them to lend the loan with the least interest by company or entrepreneur. It is necessary to have sufficient agricultural implements, fertilizers, pesticides, and high-yield quality strains. Hinthada Township needs to produce a large amount of exportable quality pulses because it possesses location advantage for being located on deltaic area and most suitable for Black gram cultivation.

Conclusion

Hinthada Township is located between North latitudes 17° 26' and 17° 48' and also between East longitudes from 95° 11' to 95° 33'. Hinthada Township is located on the western bank of Ayeyarwady River. Hinthada Township comprises 10 administrative units and composes of 21 wards, 103 village tracts and 820 villages. Generally, the study area experiences Tropical savanna Climate (Aw). The climatic conditions and Physical feature of Hinthada Township is favorable for growing Black gram.

The productivity potential of Black gram in Hinthada Township is high and the amount available for export in the near future is likely to increase. The market demand will be and held well new markets such as foreign export will be extended if people the crops want high in quality. To be able to do so, quality strains and farming techniques with suited to the existing physical conditions of the study area must be improved well. The future development of Black gram production depends on the availability of high quality strains, adequate pesticides and chemical fertilizers with reasonable prices, stable market condition and price, cheap and effective transportation.

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