

ANALYSIS ON CULTIVATION OF SEASONAL CROPS IN MYINGYAN TOWNSHIP

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Abstract

This paper was to analyse on cultivation of seasonal crops in Myingyan Township. Myingyan Township is situated in the Dry Zone of Central Myanmar. A large number of cultivation of seasonal crops is practiced in this region to reduce the risk factor of crop failures due to drought. Physical features of Myingyan Township can be divided into three divisions as follows: (1) Seasonal crops on the western alluvial plains (elevation meter below 100), 35 village tracts are including in this area. According to the statistical data of 2016 -17, cool season crops were the largest sown crop group. In this reason, the soils were formed by the alluvial deposits of the Ayeyarwady River and soil moisture is sufficient for plant growth in cool season and crops can be cultivated with success; (2) Seasonal crops on the central lowland (elevation meter between 100 and 150), 24 village tracts are including in this area. According to the statistical data of 2016 -17, monsoon crops were the largest sown crop group. Because of water received from the dams as heavy rainfall in this region; and (3) seasonal crops on the eastern undulating and hilly area (elevation meter above 150), 7 village tracts are including in this area. According to the statistical data of 2016 -17, monsoon crops were the largest sown crop group. Therefore, this region received water as heavy rainfall in hilly region.

Finally, seasonal crops cultivation is needed for farmers wise and country wise. However, the major crops are nearly the same during the study period and the most noticeable changes are the application of the farmers on the improved seeds, modern agricultural inputs and machineries and the increased acreage yields and total production. Therefore, if required economic conditions can be provided to the farmers there is a bright future prospect for increased agricultural production and agricultural development in Myingyan Township.

Keywords: western alluvial plains, central lowland, eastern undulating and hilly area

Introduction

As the economy of Myingyan Township depends upon agriculture, the varieties of seasonal crops are cultivated in this region. The crop sector is the principal income generating source in agriculture of Myingyan Township. This paper attempted to examine the extent, nature and status of seasonal crops, to explore the effect of physical features on the pattern of seasonal crops. The spatial variations of seasonal crops are analyzed in this paper. The finding of this paper can help to give the suggestions for agricultural development in Myingyan Township.

Aim

The main aim of this research is to examine how physical factors influence on the pattern of seasonal crops.

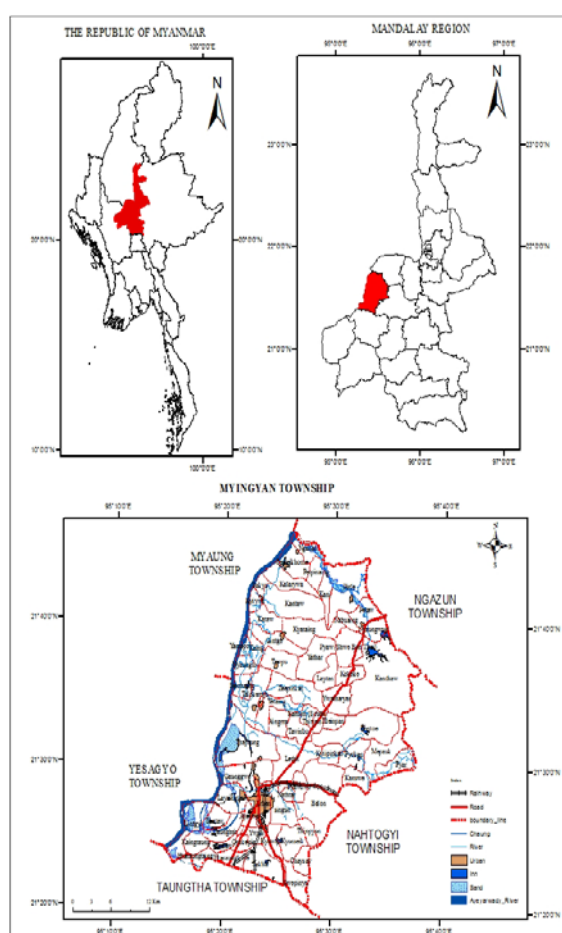
Objectives

- To find out the distribution of seasonal crop in Myingyan Township.
- To classify the regions in terms of degree of seasonal crops in Myingyan Township.

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Study Area

Myingyan Township is located in Myingyan District of Mandalay Region within the Dry Zone of Myanmar. It falls within North Latitudes $21^{\circ}20'$ and $21^{\circ}46'15''$, East Longitudes $95^{\circ}15'30''$ and $95^{\circ}37'30''$. It is situated on the east bank of Ayeyarwady River. The location of Myingyan Township is presented in figure (1). It is composed with generally irregular in shape. It's comprised of Myingyan town proper with 20 wards and 65 village tracts with 185 villages. The extent of the township is 374.23 square miles (239,544 acres and 96,940 ha). It is bounded on the north by Ngazun Township for 18.5 miles, on the east by Nahtogyi Township for 28.7 miles, on the south by Taungtha Township for 15.9 miles, and on the west by Yesagyo Township for 17 miles and Myaung Township for 15 miles respectively. As a natural boundary is Ayeyarwady River, between Myingyan Township on the east bank and Yesagyo and Myaung Townships on the west bank.



Source: WGS 1984, UTM Map

Figure 1 Location of Myingyan Township (2017)

The relief features of the study area are a level plain except few high terrains. The Myingyan area is less than 250 feet above sea level. It can be divided into three divisions as follows: (i) **The Western Alluvial Plains** are found along the river. The alluvial plains are the products of Ayeyarwady River and it deposits sand and silt especially during flood in the rainy season. These deposit fertile soils suitable for cultivation of crops. (ii) **The Central Lowlands** area lies between 250 feet and 500 feet above sea level. It is running from north to south

direction. In the central lowlands the agricultural land use and other land use are found owing to lesser variation in slope. (iii) **The Eastern Undulating and Hilly Areas** is located along the border of Nahtogyi and Ngazun Townships. The highest elevation is found near Kokeke village of northeastern part of Myingyan Township with a highest of 1,281 feet running from north to south. In this area, deep layers of soils are found and it is for this fact it becomes suitable for dry agriculture.

The main river is the Ayeyarwady River, which forms a natural boundary to the west of Myingyan. In the Myingyan Township, most of the streams are seasonal but a few are perennial streams. The most prominent streams are Pinle Chaung, Hngetpyawaing Chaung, Pyaungpyar Chaung and Sunlun Chaung. These streams enter into the Ayeyarwady River. The Ayeyarwady River flows from north to south direction. The Ayeyarwady enters the township area near Semeikhone village. It is a narrow channel with a width of a quarter of a mile. It is flowing in a southwesterly direction and at Gintge village it turns towards the southerly direction with channel cross-section of one mile and an alluvium island is developed in the river. Near Myingyan, the Ayeyarwady having a width of four miles turns west and flows through Sinte island. Sinte island is well-known for “Kaing-Kyun” agriculture.

Myingyan Township is being located within the Dry Zone of Central Myanmar, in addition to a great distance from the sea. During 30 years period (1988-2017) the average mean temperature 82.28°F the average maximum temperature is 93.89°F and the average minimum temperature is 70.73°F. According to Koppen's classification of climate, Myingyan receives BSh types of climate. (Tropical steppe climate types of climate)

In 2017, the total population was 282,040 persons. The urban population was 85,602 persons (30.35 %) and the rural population was 196,438 persons (69.65 %) in Myingyan Township.

Methodology

Primary and secondary data are collected by field survey, personal interview and structured questionnaires, acquired from respective offices and other sources. Data processing and analyzing are carried out by using appropriate statistical methods, application of remote sensing, computer mapping and G.I.S.

Types of Seasonal Crops

Types of seasonal crops are summer crops (paddy, cotton and sesame), monsoon crops (paddy, butter bean, red pea (suntapya), sunflower, chili, onion, vegetable, maize, fodder and others) and cool season crops (paddy, butter bean, red pea (suntapya), sunflower, chili, onion, vegetable, maize, fodder, tobacco and others). (See table 1)

According to the seasons and crop reports of Myingyan Township, crop grown during the period from February to April are classified as "Summer Crops". The crops grown during the period from May to the middle of November are classified as "Monsoon Crops". Crops grown during the period from the later part of November to January are classified as “Cool Season Crops”. The distribution of seasonal crops is one of the main important factors in Myingyan Township.

Table 1 Percentage of Seasonal Crops Acre (ha) in Myingyan Township (2016-2017)

No	Crops	Summer crops	%	Monsoon crops	%	Cool season crops	%
1	Paddy	1,780 (720)	14.8	3,429 (1,388)	4.4		
2	Green gram			5,420 (2,193)	7.0	397 (161)	0.3
3	Butter Bean			219 (89)	0.3	335 (135)	0.2
4	Red Pea (Suntapya)			778 (315)	1.0	1,687 (683)	1.2
5	Cow Pea			483 (196)	0.6	1,208 (489)	0.8
6	Limabean (Pegyi)			169 (68)	0.2	665 (269)	0.5
7	Pulses			3,788 (1,533)	4.9	12,911 (5,224)	9.1
8	Maize			2,408 (975)	3.1	10,868 (4,398)	7.6
9	Fodder			8,623 (3,490)	11.2	5,305 (2,147)	3.7
10	Water melon			1,516 (614)	1.9	164 (66)	0.1
11	Groundnut			21,308 (8,623)	27.6	7,226 (2,924)	5.1
12	Sesamum	1,958 (792)	16.2	18,415 (7,452)	23.9	3,646 (1,476)	2.6
13	Sunflower			344 (139)	0.4	1,044 (423)	0.7
14	Chilli			658 (266)	0.9	1,510 (611)	1.1
15	Onion			1,796 (727)	2.3	11,060 (4,476)	7.7
16	Gram			3,427 (1,387)	4.4	11,971 (4,845)	8.4
17	Cotton	8,321 (3,367)	69.0				
18	Vegetable			4,318 (1,747)	5.6	2,787 (1,128)	1.9
19	Tobacco					70,070 (28,356)	49.1
Total		1,2059 (4,880)		77,099 (31,200)		142,854 (57,811)	

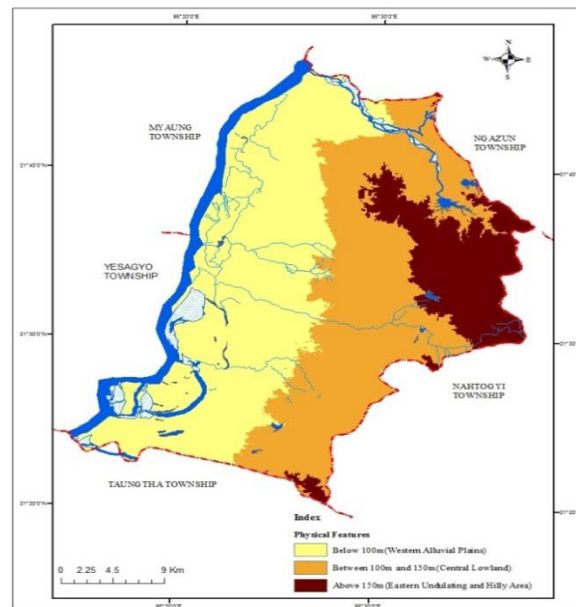
Source: Department of Agricultural Land Management and Statistics of Myingyan Township, ha = hectare

Analysis of Seasonal Crops

In studying the pattern of seasonal crops in Myingyan Township, like the basic physical features and the basic human factors, an important factor to be taken into account is the general agricultural conditions. In connection with the basic physical features of Myingyan Township, the agricultural conditions differ according to varied factors of location.

Therefore, physical features of the Myingyan Township can be divided into three divisions as follows:

- (1) Seasonal Crops on the Western Alluvial Plains (elevation meter below 100),
- (2) Seasonal Crops on the Central Lowland (elevation meter between 100 and 150) and
- (3) Seasonal Crops on the Eastern Undulating and Hilly Area (elevation meter above 150) described in figure (2).



Source: Calculated by Researcher

Figure 2 Physical Features of Myingyan Township (2016-2017)

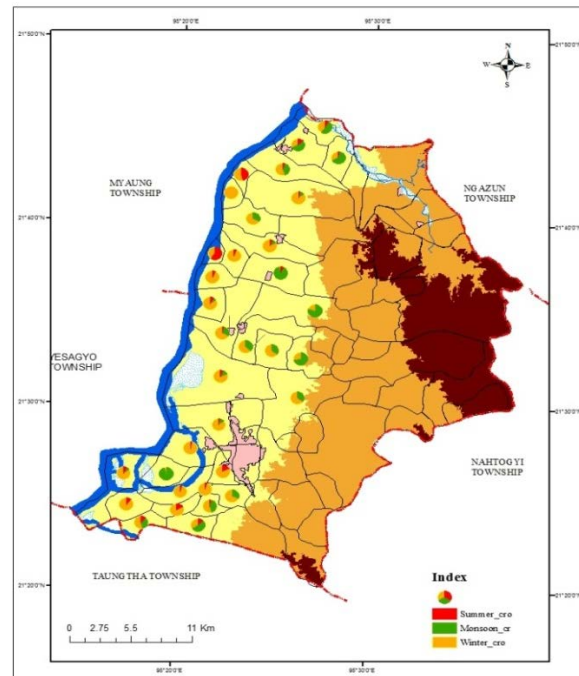
(1) Seasonal Crops on the Western Alluvial Plains (elevation meter below 100)

This region is drained by Ayeyarwady River. There are also many streams and streamlets township wise. There are 35 village tracts including in this area. According to the statistical data of 2016 -17 within Myingyan Township, the total cultivated areas was 43,870 ha (108,405 acres). Among the seasonal crops groups grown, cool season crops were the most cultivated crop group. Because of this region is situated in flooding area along the Ayeywaddy River. In addition to, receive the water and moisture content from the river and stream as heavy rainfall. The cultivated area of the cool season crops was 30,107 ha (74,396 acres), which amounted to 68.6 percent of the total cultivated area within Myingyan Township. The second largest crops group cultivated was monsoon crops occupying the cultivated area of 122 ha (30,174 acres) which amounted to 27.8 percent of the total cultivated area of Myingyan Township. The smallest crops group grown was summer crops group occupying the cultivated area of 1552 ha (3,835 acres) which amounted to 3.5 percent of the total cultivated area of Myingyan Township during 2016-17 are shown in table (2) and figure (3).

Table 2 Village Tracts of Seasonal Crops Cultivation in Elevation Meter Below 100 (The Western Alluvial Plains) 2016-2017

No	Village tracts	Summer Crops		Monsoon Crops		Cool season Crops	
		Acre (ha)	%	Acre (ha)	%	Acre (ha)	%
1	Semeikhome	345 (140)	12.3	1,526 (618)	54.6	923 (374)	33
2	Petpinaing	15 (6)	1.2	825 (334)	67.8	377 (153)	31
3	Nganan	194 (79)	8.1	1,230 (498)	51.2	977 (395)	40.7
4	Kalarya	155 (63)	3.9	1,587 (642)	39.5	2,279 (922)	56.7
5	Kantaw	40 (16)	2.6	177 (72)	11.4	1,337 (541)	86
6	Kyiywa	0	0	0	0	470 (190)	100
7	Kataw	30 (12)	0.5	1,890 (765)	32.5	3,896 (1,577)	67
8	Kaing	100 (41)	4.8	45 (18)	2.2	1,926 (779)	93
9	Tawpu	110 (45)	3.1	1,348 (546)	37.5	2,140 (866)	59.5
10	Yantapo	50 (20)	58.8	0	0	35 (14)	41.2
11	Zeepinkan	10 (4)	0.3	3,008 (1,217)	78.8	797 (323)	20.9
12	Myingyan Town Poper	0	0	0	0	0	0
13	Sinchaung	114 (46)	7.5	100 (40)	6.5	1,316 (533)	86
14	Aingma	25 (10)	0.7	1,254 (308)	35.7	2,236 (905)	63.6
15	Tawinbo	10 (4)	0.3	2,539 (1,027)	72.4	958 (388)	27.3
16	Thapaung	473 (191)	4	1,612 (652)	13.8	9,602 (3,886)	82.2
17	Lethit	20 (8)	0.2	4,259 (1,724)	36.2	7,501 (3,036)	63.7
18	Gaunggwe	217 (88)	2.7	948 (384)	11.8	6,853 (2,773)	85.5
19	Layaingtan	138 (56)	2.3	0	0	5,881 (2,380)	97.7
20	Nyaungto	94 (38)	5.2	52 (21)	2.9	1,664 (673)	91.9
21	Talokemyo	185 (75)	2.5	2,231 (903)	30.3	4,938 (1,998)	67.1
22	Shataw	0	0	177 (72)	94.7	10 (4)	5.3
23	Yetaing	25 (10)	0.6	1,653 (669)	37.3	2,759 (1,117)	62.2
24	Sakyu	250 (101)	45.8	0	0	296 (120)	54.2
25	Ayeywa	106 (43)	17.1	0	0	515 (208)	82.9
26	Lintgyi	148 (60)	7.8	107 (43)	5.6	1,646 (666)	86.6
27	Gyokepin	62 (25)	2.2	1,224 (475)	43	1,558 (631)	54.8
28	Zeetaw	126 (51)	16.3	17 (7)	2.2	629 (255)	81.5
29	Daungthit	93 (38)	3.2	2 (1)	0.1	2,843 (1,151)	96.8
30	Kaingtaung	49 (20)	10.9	0	0	400 (162)	89.1
31	Htanaungkone	115 (47)	12.6	482 (195)	52.7	317 (128)	34.7
32	Htanaungtaing	349 (141)	11.3	1,070 (433)	34.6	1,673 (677)	54.1
33	Gintge	98 (40)	5.7	208 (84)	12.2	1,399 (566)	82.1
34	Ywasi	6 (2)	0.3	603 (244)	30	1,404 (568)	69.7
35	Thapyuwa	83 (34)	2.8	0	0	2,841 (1,150)	97.2
	Total	3,835 (1,551)	3.5	30,174 (12,211)	27.8	74,396 (30,107)	68.6

Source: Department of Agricultural Land Management and Statistics of Myingyan Township



Source: Calculated by Researcher

Figure 3 Distribution of Seasonal Crops of Western Alluvial Plains in Myingyan Township (2016-17)

In analyzing the distribution of seasonal crops of Myingyan Township (Western Alluvial Plains), the largest cultivated acreage of cool season crops was found in Thapaung village tract grown on 3,886 ha (9,602 acres) and which amounted to 12.9 percent. The smallest cool season crop was Shataw village tract 4 ha (10 acres).

According to the distribution pattern of cool season crops in Myingyan Township, it can be divided into four groups. The first groups over 1214ha (3000 acres) are including 6 village tracts, there are Kataw, Thapaung, Lethit, Gaunggwe, Layaingtang, Talokemyo. Second groups between 809 and 1214 ha (2000 and 3000 acres) are including 6 village tracts, there are Daungthit, Thupyuwa, yeating, Kalarywa, Aingma, Tawpu. Third groups between 405 and 809 ha (1000 and 2000 acres) include 9 village tracts, these are kaing, Htanaungtaing, Nyaung to, Lintgyi, Gyokepin, Ywasi, Gintge, Kantaw, Sinchaung. The last groups under 405ha(1000 acre) are include 13 village tracts, these are Nganan, Tawinbo, Semeikhome, Zeepinkan, Zeetaw, Ayeywa, Kyiywa, Kaingtaung, petpinaing, Htanaungkong, Sakyu, Yantapo, Shataw. Myingyan Town Poper cannot be found seasonal crops cultivated area. (See table 3)

Table 3 Distribution of Cool Season Crops of Village Tracts of Western Alluvial Plains in Myingyan Township (2016-17)

No.	Village Tracts over 1214ha (3000 acres)	Village Tracts between 809 and 1214 ha (2000 and 3000 acres)	Village Tracts between 405 and 809 ha (1000 and 2000 acres)	Village Tracts under 405ha (1000 acres)
1.	Kataw	Doungthit	Kaing	Nganan
2.	Thapaung	Thapyuwa	Htanaungtaing	Tawinbo
3.	Lethit	Yetaing	Nyaungto	Semeikhome
4.	Gaunggwe	Kalarywa	Lintgyi	Zeepinkan
5.	Layaingtan	Aingma	Gyokepi	Zeetaw
6.	Talokemyo	Towpu	Ywasi	Ayeywa
7.			Gintge	Kyiywa
8.			Kantaw	Kaingtaung
9.			Sinchaung	Petpinaing
10.				Htanaungkone
11.				Sakyu
12.				Yantapo
13.				Shataw

Source: Based on table 2

In analyzing the distribution of seasonal crops of Myingyan Township (Western Alluvial Plains), the largest cultivated acreage of monsoon crops was found in Lethit village tracts grown on 1,724 ha (4,259 acres) and which amounted to 14.1 percent. The smallest monsoon crop was found in Daungthit village tract 0.8 ha (2 acres).

According to the distribution pattern of monsoon crops of western alluvial plains in Myingyan Township, the village tracts which are cultivated monsoon crops can be divided into three groups. The first group over 809ha (2000 acres) includes 4 village tracts. These are Lethit, Zeepinkan, Tawinbo and Talokemyo. Second group between 405 and 809 ha (1000 and 2000 acres) includes 10 village tracts. These are Kataw, yetaing, Thapaung, Kalarywa, Semeikhome, Tawpu, Aingma, Nganan, Gyokepin and Htanaungtaing. Third group under 405 ha (1000 acres) includes 13 village tracts which are Gaunggwe, Petpinaing, Ywasi, Htaungkone, Gintge, Kantaw, Shataw, Lintgyi, Sinchaung, Naungto, Kaing, Zeetaw and Daungthit. No cultivated monsoon crops village tracts are Kyiywa, yantapo, Myingyan Town Poper, Layaingtan, Sakyu, Ayeywa, kaingtaung and Thapyuwa. (See table 4)

Table 4 Distribution of Monsoon Crops of Village Tracts of Western Alluvial Plains in Myingyan Township (2016-17)

No.	Village Tracts over 809ha (2000 acres)	Village Tracts between 405 and 809 ha(1000 and 2000 acres)	Village Tracts under 405ha (1000 acres)	Village Tracts (uncultivated)
1.	Lethit	Kataw	Gaunggwe	Kyiywa
2.	Zeepinkan	Yetaing	Petpinaing	Yantapo
3.	Tawinbo	Thapaung	Ywasi	Myingyan Town Poper
4.	Talokemyo	Kalarywa	Htanaungkone	Layaingtang
5.		Semeikhome	Gintge	Sakyu
6.		Tawpu	Kantaw	Ayeywa
7.		Aingma	Shataw	Kaingtaung
8.		Nganan	Lintgyi	Thapyuwa
9.		Gyokepin	Sinchaung	
10.		Htanaungtaing	Nyaungto	
11.			Kaing	
12.			Zeetaw	
13.			Daungthit	

Source: Based on table 2

In analyzing the distribution of seasonal crops of Myingyan Township (Western Alluvial Plains), the largest cultivated acreage of the summer crops which was Thapaung village tract grown on 191 ha (473 acres) and which amounted to 12.3 percent. The smallest of summer crops was found in Ywasi village tract 2.43 ha (6 acres).

According to the distribution pattern of summer crops of western alluvial plains in Myingyan Township, the village tracts which summer crops cultivation can be divided into three groups. The first group over 809 ha (2000 acres) includes 5 village tracts. These are Thapaung, Htanaungtaing, Semeikome, Sakyu and Gaunggwe. Second group between 405 and 809 ha (1000 and 2000 acres) includes 11 village tracts. These are Nganan, Talokemyo, Kalarywa, Lintgyi, Layaingtang, Zeetaw, Htanaungkone, Sinchaung, Tawepu, Ayeywa and Kaing. Third group (under 100 acres) includes 16 village tracts are Gintge, Nyaungto, Daungthit, Thapyuwa, Gyokepin, Yantapo, Kaingtaung, Kantaw, Kataw, Aingma, yetaing, Lethit, Petpinaing, Zeepinkan Tawinbo, Ywasi. No cultivated summer crops village tracts are Kyiywa, Yantapo, Myingyan Town Poper and Shataw. (See table 5)

Table 5 Distribution of Summer Crops of Village Tracts of Western Alluvial Plains in Myingyan Township (2016-17)

No.	Village Tracts over 80.9ha (200 acres)	Village Tracts between 40.5 and 80.9 ha (100 and 200 acres)	Village Tracts under 40.5ha (100 acres)	Village Tracts (uncultivated)
1.	Thapaung	Nganan	Gintge	Kyiwa
2.	Htanaungtaing	Talokemyo	Nyaungto	Myingyan Town Poper
3.	Semelikhhome	Kalarywa	Daungthit	Shataw
4.	Sakyu	Litgyi	Thapyuwa	
5.	Gaunggwe	Layaingtang	Gyokepin	
6.		Zeetaw	Yantapo	
7.		Htanaungkone	Kaingtaung	
8.		Sinchaung	Kantaw	
9.		Tawpu	Kataw	
10.		Ayeywa	Aingma	
11.		Kaing	Yetaing	
12.			Lethit	
13.			Petpinaing	
14.			Zeepinkan	
15.			Tawinbo	
16.			Ywasi	

Source: Based on table 2

(2) Seasonal Crops on the Central Lowland (elevation meter between 100 and 150)

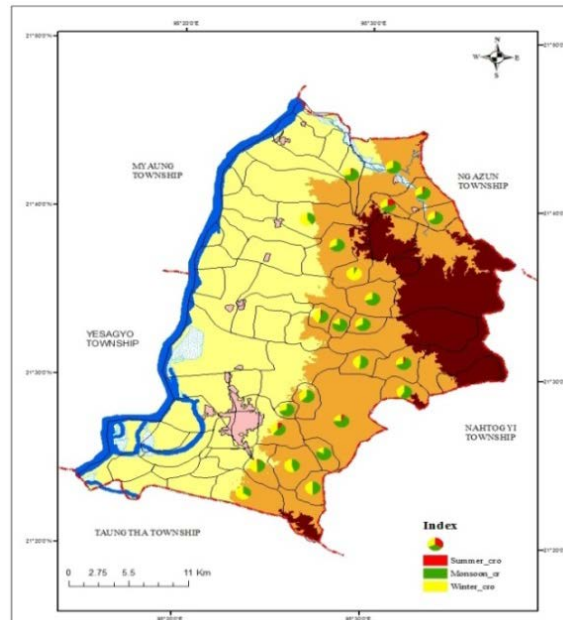
This region is central lowland and nearest eastern undulating and hilly area. There are 24 village tracts including in this area. According to the statistical data of 2016 -17 within Myingyan Township, the total cultivated areas was 28,127 ha (69,504 acres). Among the seasonal crops groups grown, monsoon crops were the most cultivated crops group. Because of received the water from the dams as heavy rainfall in this region. The cultivated area of the monsoon crops was 17,170 ha (42,427 acres), which amounted to 60.0 percent of the total cultivated area within Myingyan Township. The second largest crops group cultivated was cool season crops occupying the cultivated area of 10,450 ha (25,822 acres) which amounted to 37.2 percent of the total cultivated area of Myingyan Township. The smallest crops group grown was summer crops acreage occupying the cultivated area of 508 ha (1,255 acres) which amounted to 1.8 percent of the total cultivated area of Myingyan Township during 2016-17 are shown in table (6) and figure (4).

Table 6 Village Tracts of Seasonal Crops Cultivation in Elevation Meter between 100 and 150 ((The Central Lowlands) 2016-2017

No	Village tracts	Summer Crops		Monsoon Crops		Cool season Crops	
		Acre (ha)	%	Acre (ha)	%	Acre (ha)	%
1	Thinpyun	10 (4)	0.2	4,055 (1,641)	82.4	859 (348)	17.4
2	Petaw	45 (18)	3.6	794 (321)	63.1	420 (170)	33.4
3	Pinle	10 (4)	0.2	3,790 (1,534)	65.3	2,001 (810)	34.5
4	Laytan	0	0	1,670 (676)	62	1,025 (415)	38
5	Yathar	0	0	1,967 (796)	68.9	887 (359)	31.1

No	Village tracts	Summer Crops		Monsoon Crops		Cool season Crops	
		Acre (ha)	%	Acre (ha)	%	Acre (ha)	%
6	Hteinpan	5 (2)	0.2	1,553 (629)	68.1	722 (292)	31.7
7	Kanswe	0	0	1,161 (470)	58.8	812 (329)	41.2
8	Pyokan	100 (41)	3	2,238 (906)	67.5	979 (396)	29.5
9	Chaysay	12 (5)	0.3	1,766 (715)	50.6	1,709 (692)	49
10	Kyipinkan	0	0	1,328 (537)	53.1	1,175 (476)	46.9
11	Singuit	250 (101)	9.6	1,288 (521)	49.5	1,063 (430)	40.9
12	Pyawbwe	0	0	1,347 (545)	61.9	830 (336)	38.1
13	Nathar	0	0	625 (253)	71.5	249 (101)	28.5
14	Thityon	5 (2)	0.1	2,801 (1,134)	79.9	701 (284)	20
15	Kyuwa	58 (24)	2.7	1,031 (417)	47.5	1,081 (438)	49.8
16	Nyaungwun	16 (7)	2.4	432 (175)	64.4	223 (90)	33.2
17	Kansint	24 (10)	1.1	1,168 (473)	54.7	943 (382)	44.2
18	Nabuaing	388 (157)	20.4	863 (349)	45.3	652 (264)	34.3
19	Balon	300 (121)	4.8	4,372 (1,769)	70.6	1,518 (614)	24.5
20	Kwunseik	7 (3)	0.3	1,189 (481)	45.5	1,415 (573)	54.2
21	Sakhar	0	0	1,728 (699)	35.6	3,132 (1,268)	64.4
22	Yawatharywa	0	0	2,705 (1,095)	70.7	1,122 (454)	29.3
23	Kani	25 (10)	1.3	1,319 (534)	70.3	532 (215)	28.4
24	Kyataing	0	0	1,237 (501)	41.1	1,772 (717)	58.9
	Total	1,255 (508)	1.8	42,427 (17,170)	61.0	25,822 (10,449)	37.2

Source: Department of Agricultural Land Management and Statistics of Myingyan Township



Source: Calculated by Researcher

Figure 4 Distribution of Seasonal Crops of Central Lowlands in Myingyan Township

In analyzing the distribution of seasonal crops of Myingyan Township (Central Lowlands), the largest cultivated acreage was the monsoon crops which found in Balon village

tract grown on 1,769 ha (4,372 acres) and which amounted to 10.3 percent. The smallest of monsoon crops was found in Nyaungwun village tract 175 ha (432 acres).

According to the distribution pattern of monsoon crops of Myingyan Township (Central Lowlands), the village tracts which monsoon crops cultivation can be divided into three groups. The first group over 809ha (2000 acres) includes 6 village tracts. These are Balon, Thinpyun, Pinle, Thityon, Yawatharywa and Pyokan. Second group between 405 and 809 ha (1000 and 2000 acres) includes 14 village tracts. These are Yathar, Chaysay, Sakhar, Laytan, Hteinpan, Pyawbwe, Kyipinkan, Kani, Singuit, Kyataing, Kyunseik, Kansint, Kanswe and Kyuwa. Third group under 405ha (1000 acres) includes 4 village tracts. These are found in Nabuaing, Petaw, Nathar and Nyaungwun village tracts. (See table 7)

Table 7 Distribution of Monsoon Crops of Village Tracts of Central Lowlands in Myingyan Township (2016-17)

No.	Village Tracts over 809ha(2000 acres)	Village Tracts between 405 and 809 ha(1000 and 2000 acres)	Village Tracts under 405ha(1000 acres)
1.	Balon	Yathar	Nabuaing
2.	Thinpyum	Chaysay	Petaw
3.	Pinle	Sakhar	Nathar
4.	Thityon	Laytan	Nyaungwun
5.	Yawatharywa	Hteinpan	
6.	Pyokan	Pyawbwe	
7.		Kyipinkan	
8.		Kani	
9.		Singuit	
10.		Kyatainm	
11.		Kwunseik	
12.		Kansint	
13.		Kanswe	
14.		Kyuwa	

Source: Based on table 6

In analyzing the distribution of seasonal crops of Myingyan Township (Central Lowlands), the largest cultivated acreage of cool season crops which was found in Sakhar village tract grown on 1268 ha (3,132 acres) and which amounted to 12.12 percent. The smallest of cool season crops was found in Nyaungwun village tract 90 ha (223 acres).

According to the distribution pattern of cool season crops of Myingyan Township (Central Lowlands), the village tracts of cool season crops cultivation can be divided into three groups. The first group over 809ha (2000 acres) includes 2 village tracts. These are Sakhar, Pinle. Second group between 405 and 809 ha (1000 and 2000 acres) includes 9 village tracts. These are Kyataing, Chaysay, Balon, Kyunseik, Kyipinkan, Yawatharywa, Kyuwa, Singult and Laytan. Third group under 405ha (1,000 acres) includes 13 village tracts. These are Pyokan, Kansint, Yathar, Thinpyun, Pyawbwe, Kanswe, Hteinpan, Thityon, Nabuaing, Kani, Petaw, Nathar and Nyaungwun. (See table 8)

Table 8 Distribution of Cool Season Crops of Village Tracts of Central Lowlands in Myingyan Township (2016-17)

No.	Village Tracts over 809ha (2000 acres)	Village Tracts between 405 and 809 ha(1000 and 2000 acres)	Village Tracts under 405 ha (1000 acres)
1.	Sakhar	Kyataing	Pyokan
2.	Pinle	Chaysay	Kansint
3.		Balon	Yathar
4.		Kwunseik	Thinpyun
5.		Kyipinkan	Pyawbwe
6.		Yawatharywa	Kanswe
7.		Kyuwa	Hteinpan
8.		Singuit	Thityon
9.		Laytan	Nabuaing
10.			Kani
11.			Petaw
12.			Nathar
13.			Nyaungwun

Source: Based on table 6

In analyzing the distribution of seasonal crops of Myingyan Township (Central Lowlands), the largest cultivated acreage of summer crops which was found in Nabuaing village tract grown on 157 ha (388 acres) and which amounted to 30.9 percent. The smallest of summer crops acreage were found in Hteinpan and Thityon village tracts 2 ha (5 acres) and 0.2 percent of the total cultivated area of summer crops in central lowlands of Myingyan Township.

According to the distribution pattern of summer crops of Myingyan Township (Central Lowlands), the village tracts of summer crops cultivation can be divided into two groups. The first group over 40.5ha (100 acres) includes 4 village tracts. These are Nabuaing, Balon, Singuit and Pyokan. Second group under 40.5ha (100 acres) includes 11 village tracts. These are Kyuwa, Petaw, Kani, Kansint, Nyaungwun, Chaysay, Thinpyun, Pinle, Kyunseik, Hteinpan, and Thityon. No cultivated summer crops village tracts are found in Laytan, Yathar, Kanswe, Kyipinkan, Pyawbwe, Nathar, Sakhar, Yawatharywa and Kyataing. (See table 9)

Table 9 Distribution of Summer Crops of Village Tracts of Central Lowlands in Myingyan Township (2016-17)

No.	Village Tracts over 40.5ha (100 acres)	Village Tracts under 40.5ha (100 acres)	Village Tracts (uncultivated)
1.	Nabuaing	Kyuwa	Laytan
2.	Balon	Petaw	Yathar
3.	Singuit	Kani	Kanswe
4.	Pyokan	Kansint	Kyipinkan
5.		Nyaungwun	Pyawbwe
6.		Chaysay	Nathar
7.		Thinpyun	Sakhar
8.		Pinle	Yawatharywa
9.		Kyunseik	Kyataing
10.		Hteinpan	
11.		Thityon	

Source: Based on table 6

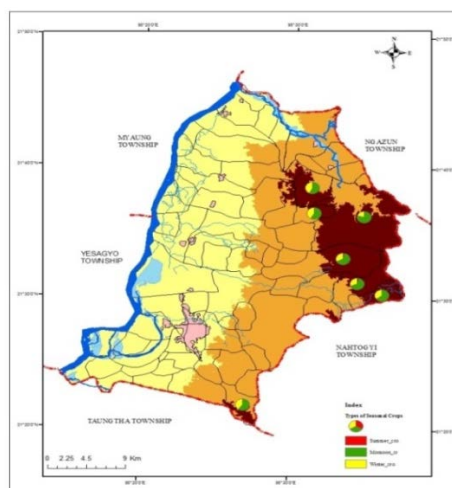
(3) Seasonal Crops on the Eastern Undulating and Hilly Areas (elevation meter above 150)

This region is eastern part of the Myingyan Township and it is situated in elevation meter over 150. There are 7 village tracts including in this area. According to the statistical data of 2016 -17 within Myingyan Township, the total cultivated areas was 9,166 ha (22,650 acres). Among the seasonal crops was grown acreage, monsoon crops were the most cultivated crops. Because of received the water as heavy rainfall in hilly region. The cultivated area of the monsoon crops was 6,449 ha (15,935 acres), which amounted to 67.97 percent of the total cultivated area within Myingyan Township. The second largest crops acreage was cool season crops occupying the cultivated area of 2,814 ha (6,954 acres) which amounted to 30.7 percent of the total cultivated area of Myingyan Township. The smallest crops acreage was summer crops occupying the cultivated area of 122 ha (301 acres) which amounted to 1.3 percent of the total cultivated area of Myingyan Township during 2016-17 are shown in table (10) and figure (5).

Table 10 Village Tracts of Seasonal Crops Cultivation in Elevation Meter above 150(The Eastern Undulating and Hilly Areas) 2016-2017

No	Village tracts	Summer Crops		Monsoon Crops		Winter Crops	
		Acre (ha)	%	Acre (ha)	%	Acre (ha)	%
1	Pyaw	10 (4)	0.7	871 (353)	57.5	635 (257)	41.9
2	Kokeke	0	0.0	1,000 (405)	58.9	697 (282)	41.1
3	Kanchaw	71 (29)	1.0	5,521 (2,234)	78.7	1,426 (577)	20.3
4	Yontoe	100 (41)	2.4	2,716 (1,099)	66.0	1,300 (526)	31.6
5	Gwepinyo	0	0.0	1,586 (642)	58.7	1,114 (451)	41.3
6	Mepauk	110 (45)	2.9	2,558 (1,035)	66.7	1,167 (472)	30.4
7	Pyar	10 (4)	0.6	1,143 (463)	64.6	615 (249)	34.8
	Total	301 (122)	1.33	15,395 (6,230)	67.97	6,954 (2,814)	30.70

Source: Department of Agricultural Land Management and Statistics of Myingyan Township



Source: Calculated by Researcher

Figure 5 Distribution of Seasonal Crops of Eastern Undulating and Hilly Area in Myingyan Township (2016-17)

In analyzing the distribution of seasonal crops of Myingyan Township (Eastern Undulating and Hilly Areas), the largest cultivated acreage of monsoon crops which was found in Kanchaw village tract grown on 2,234 ha (5521 acres) and which amounted to 35.9 percent of the

total cultivated area. The smallest monsoon crops cultivated acreage was found in Pyaw 353 ha (871 acres) and (5.7) percent of Myingyan Township (Eastern Undulating and Hilly Areas). According to the distribution pattern of monsoon crops of Myingyan Township (Eastern Undulating and Hilly Areas), the village tracts of monsoon crops cultivation can be divided into two groups. The first group over 809ha (2000 acres) includes 3 village tracts. These are Kanchaw, Yontoe and Mepauk village tracts. Second group between 405 and 809 ha (1000 and 2000 acres) includes 3 village tracts. These are Gwepinyo, Pyar and Kokeke village tracts. Third groups under 405ha (1000 acres) are found in Pyaw village tract. (See table 11).

Table 11 Distribution of Monsoon Crops of Village Tracts of Eastern Undulating and Hilly Areas in Myingyan Township (2016-17)

No.	Village Tracts over 809ha(2000 acres)	Village Tracts between 405 and 809 ha (1000 and 2000 acres)	Village Tracts under405ha(1000 acres)
1.	Kanchaw	Gwepinyo	Pyaw
2.	Yontoe	Pyar	
3.	Mepauk	Kokeke	

Source: Based on table (10)

In analyzing the distribution of seasonal crops of Myingyan Township (Eastern Undulating and Hilly Areas), the largest cultivated acreage of cool season crops which was found in Kanchaw village tract 1,426 acres (577 ha) and 20.5 percent. The smallest cool season crops acreage was found in Pyar village tract 615 acres (249 ha) and 8.8 percent of the total cultivated area of monsoon crops in Myingyan Township (Eastern Undulating and Hilly Areas). According to the distribution pattern of cool season crops of Myingyan Township (Eastern Undulating and Hilly Areas), the village tracts of cool season crops cultivation can be divided into two groups. The first group (over 1000 acres) includes 4 village tracts. These are Kanchaw, Yontoe, Mepauk and Gwepinyo. Second group under 405ha (1000 acres) includes 3 village tracts are found in Kokeke, Pyaw and Pyar village tracts. (See table 12).

Table 12 Distribution of Cool Season Crops of Village Tracts of Eastern Undulating and Hilly Areas in Myingyan Township (2016-17)

No.	Village Tracts over405ha(1000 acres)	Village Tracts under405ha(1000 acres)
1.	Kancahw	Kokeke
2.	Yontoe	Pyaw
3.	Mepauk	Pyar
4.	Gwepinyo	

Source: Based on table (10)

In analyzing the distribution of seasonal crops of Myingyan Township (Eastern Undulating and Hilly Areas), the largest cultivated acreage of summer crops was found in Mepauk village tract grown on 45 ha (110 acres) and 36.6 percent and the smallest of summer crops acreage was found in Pyaw and Pyar village tracts 4 ha (10 acres) 0.7 percent of the total cultivated area of summer crops in Myingyan Township (Eastern Undulating and Hilly Areas). According to the distribution pattern of summer crops of Myingyan Township (Eastern

Undulating and Hilly Areas), the village tracts which summer crops cultivation can be divided into two groups. The first group over 40.5ha (100 acres) includes 2 village tracts. These are found in Yontoe and Mepauk village tracts. Second group under 40.5ha (100 acres) includes 3 village tracts. These are found in Kanchaw, Pyaw and Pyar village tracts. No cultivated summer crops area are found in Kokeke and Gwepinyo village tracts. (See table 13)

Table 13 Distribution of Summer Crops of Village Tracts of Eastern Undulating and Hilly Areas in Myingyan Township (2016-17)

No.	Village Tracts over 40.5ha (100 acres)	Village Tracts under 40.5ha (100 acres)	Village Tracts (uncultivated)
1.	Mepauk	Kanchaw	Kokeke
2.	Yontoe	Pyaw	Gwepinyo
3.		Pyar	

Source: Based on table (10)

Finding and Results

If the research on those seasonal crops is summarized, the following results and findings come out.

1. In examining the cultivation of summer crops, long staple cotton is the highest ratio (69.0) percent of the total summer crop cultivated area. The cultivation of sesamum ranked second place and it occupied (16.2) percent and the smallest cultivated crop was summer rice which was (14.8) percent of the cultivated area of summer crops.
2. Monsoon crops are most cultivated in central lowland of Myingyan Township. In examining the important role of monsoon crops, groundnut is the highest ratio (27.6) percent of the total monsoon crops cultivated area. The cultivation of sesamum ranked second place and it occupied (23.9) percent and the smallest cultivated crop was fodder which was (11.2) percent of the cultivated area of monsoon crops.
3. Cool season crops are mostly found in the along Ayeyawaddy river in flooding area. In examining the condition of the cultivation of winter crops, Tobacco is the highest ratio (49.1%) of the total cool season crops cultivated area. Within the township, the cultivation of pluses ranked second place (9.1%) and the smallest cultivated crop was gram (8.4%) of the cultivated area of cool season crops.
4. The physical features of the Myingyan Township can be divided into three divisions as follows: (I) the seasonal crops on the Western Alluvial plains (elevation meter below 100) are found with 35 village tracts in this area. (II) The seasonal crops on the central lowland (elevation between 100 and 150) are found with 24 village tracts in this area. (III) The seasonal crops on the Eastern Undulating and Hilly Area (Elevation meter above 150) are mostly found in 7 village tracts.

Conclusion

This paper emphasizes the three of seasonal crops which are found in Myingyan Township. According to 2017 data, in examining the cultivation of summer crops, long staple cotton is the highest ratio (69.0) percent of the total summer crop cultivated area. In monsoon crops, groundnut (27.6) percent is the highest ratio of the total summer crop cultivated area. In cool season crops, tobacco is the highest ration (49.1) percent of the total cool season crops cultivated area.

Physical features of the Myingyan Township can be divided into three divisions. In study of seasonal crops on the western Alluvial plains (elevation meter below 100), cool season crops (68.6) percent of the total cultivated area within Myingyan Township were the largest cultivated crop group. In reason, this part is situated in lands which received water and moisture content from the late rain period and on lands which received water and moisture content from the rivers and streams. But summer crops cultivation are also found in some village tracts, especially it is found in close to Ayeyarwady River. Moreover as they have good fertile soil and as they have flat an even land surface which is favorable condition for irrigated cultivation they have higher ratios of summer crop cultivation than other village tracts.

In examining the part of seasonal crops on the central lowland (elevation meter between 100 and 150), monsoon crops (60.0) percent of the total cultivated area within Myingyan Township were the largest cultivated crop group. In reason, the decision for the cultivation of crops is made by the farmers upon the occurrence of early rain. If early rain period occurs early during the rainy season, cultivation of paddy will be successful and the acreage of paddy cultivated area will be large. If the early rain period occurs late, Groundnut and Sesamum can be grown successfully and the acreages of the two crops will be large. During the mid-rain period Paddy, late Sesamum, Groundnut (erect type) Groundnut (broad-type), Green Gram, long staple Cotton and Maize (corn) are grown. During the late-rain period, Sunflower, Pulses and Beans, Chili, Onion and late long-staple cotton are grown.

In analyze the part of seasonal crops on the Eastern undulating and Hilly Area (Elevation meter above 150), monsoon crops (67.97) percent of the total cultivated area within Myingyan Township, were the most common crops group. In reason, this part is lying as far from the river and then is located in the hilly region, receiving the large amount of rainfall.

Suggestions

Agricultural production of Myingyan Township is largely favored by its physical conditions and all human settlements are found in the present agricultural land area. In western alluvial portion, the soils were formed by the alluvial deposits of the Ayeyarwady River, the newer alluviums in the recent flood plain area and the older alluviums in the central and east central portion of the township. As most of the area in the western plain area is annually flooded soil moisture is sufficient for plant growth in winter season and cool season crops can be cultivated with success. In central lowland and eastern undulating (hilly) area, monsoon crops were cultivated during the rainy season.

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ကျမ်းကိုးစာရင်း

- ကြင်ဌေး၊ မ (၂၀၁၁)။ လူမှုရေးပထဝီဝင်အဘိဓာန် (အင်္ဂလိပ်-မြန်မာ) နန်းဒေဝီစာပေ၊ တိုက် ၂၀၀၊ ဒုတိယထပ်၊ ၃၆လမ်း (အထက်)၊ ကျောက်တံတားမြို့နယ်၊ ရန်ကုန်မြို့။
- လယ်ယာစိုက်ပျိုးရေးနှင့် ဆည်မြောင်းဝန်ကြီးဌာန (၂၀၁၇)။ မြင်းခြံမြို့နယ် သီးနှံစိုက်ပျိုးထုတ်လုပ်မှု ဆိုင်ရာအခြေခံ အချက်အလက်များ။