

Agricultural Production in Transitional Economy of Myanmar :*

Case Study of Thee Chaung Village

Than Than Aung

The purpose of this study is to analyze the impact of reform policy measures on agrarian production and village income by the data of my field survey results from Thee Chaung village. It is recognized, that village under study has been changing from a planned economy in 1989 to a commercial agriculture economy in 2001 due to the market economy policy by the government and emerging opportunities for commercialized crops. The mechanization has also advanced along with this trend. The survey result finds that improvement in social and economic well being of Thee Chaung village has been the results of change in government's agricultural policy covering distribution, pricing, and supportive measures under economic transition. However, such institutional change as procurement, agricultural credit and land tenure system is small. Moreover, the study also confirms that the living conditions of poorest group, especially those of the landless laborer, are still unsatisfactory. Therefore, second phase of exerted efforts and effective agriculture and rural development policy measures is urgently necessary for achieving shared growth and sustainable development in village economy of Myanmar.

I. Introduction

In Myanmar, the rural sector accounted for 78.90 percent of the total labour force and about 60 percent of the GDP in 2000 (Central Statistical Organization, 2000, p. 40, 82). In 1988, the State Law and Order Restoration Council (SLORC) assumed the State's responsibilities and Myanmar's economy began to move towards a market-oriented economic system. At the same time, introduction of reform policy measures in the agriculture sector were made to align with the market-oriented economic system. The major policy objectives for the agriculture sector in its short-term

Four-Year-Plan (1992/93-1995/96) are : to achieve surplus in paddy production for export, to achieve self-sufficiency in edible oil for savings of foreign exchange through import substitution and to achieve increased production and export of industrial crops, pulses and other cash crops for foreign earnings (Ministry of Agriculture and Irrigation, 1996, p. 33). Rice and edible oil have been the most important items of Myanmar's food culture and cultivating of these crops has belonged to main historic economic activity of Myanmar.

To clarify the actual process of this policy implementation, this writer chose a typical rice production village, Thee

* Received for publication February 5, 2003. Revision accepted for publication November 5, 2003. (*Editor*)

Chaung, 140 miles far from Yangon, as a field, and tried to collect the primary data on the growth of agricultural crops, and tried to analyze the village income.

In order to obtain the reliable information and data, this study employed an appropriate questionnaire survey method as well as a free interview method. In phase one, a questionnaire survey, covering 166 households, was carried out in the village of Thee Chaung, Nattalin Township, Bago division, from July 2000 to February 2001. In phase two, a free interview was carried out in the same village during August and September in 2001.

This paper comprises four chapters. The introduction, chapter one explains objectives and methodology of the study. A comprehensive exploration on the outline of agricultural development in Myanmar is given in chapter two. The main chapter, chapter three, presents and examines the case study of the Thee Chaung village. The conclusive chapter presents the findings of this study and attempts to provide policy recommendations for future agricultural and rural development of Myanmar.

II. Outline of Agricultural Development in Myanmar

Before going into the field survey data analysis and interpretation, this chapter will briefly explore the general outline of agricultural production and policy after the Second World War in Myanmar.

Rice is the most important crop, not only as staple food but also for export, and it covers the largest portion of total cultivated areas. The post-war development of Myanmar's agriculture can be divided into three periods as shown in appendix table 1.

The first period covers from 1948, when Myanmar regained her independence to 1962. The government endeavoured to restore the pre-war rice crop level of 12 million acres during 1948/49 and 1951/52. However, the rice cultivated area still failed to reach the pre-war level due to the multicolour (ethnic group) insurgency and political instability. Myanmar came under the Eight-Year Pyidawtha Plan of Parliamentary government between 1952/53 and 1959/60. Under that plan, policies related to the agriculture sector were amended and formulated. In 1953, the State Agricultural Bank was set up to solve the problems of agricultural indebtedness. Thus, the rice cultivated area increased from 9.8 million acres to 11.4 million acres between 1948/49 and 1961/62, and paddy production increased from 5.2 million tons to 6.8 million tons during the same period, as shown in appendix table 1.

The second period, the period under the Burma Socialist Programme Party, covers the year from 1962 to 1988. In 1962, the Revolutionary Council took over power and emphasized the growth of rice production, the amendment of land use, the implementation of irrigation works, the subsidization of agricultural inputs, and the intro-

duction of new technologies and high yielding varieties for farmers. In 1966/67, high yielding varieties such as IR-8, IR-5, C4-63, etc. and others from the International Rice Research Institute (IRRI) were introduced to the whole country. The rice cultivated area of 12.6 million acres had already reached the pre-war level of 12.5 million acres in 1964/65. Moreover, the yield per acre also increased and the total output became 8.6 million tons in 1973/74, which was over the pre war production level.

In 1974/75 the government drew up a Twenty-Year Long-Term Plan for political, economic, and social development. The Burma Socialist Programme Party launched "the Whole Township High Yield Paddy Programme" in two townships in 1977/78. Then, it extended to 82 townships in 1982/83. As a result of this programme, yield per acre increased and total output 14.4 million tons could be produced. However, this programme became sluggish after 1984, especially due to the lack of fertilizer supply. Accordingly, during the period from 1974/75 to 1985/86, annual output increased from 8.6 million tons to 14.3 million tons. However, between 1985/86 and 1987/88, sown area decreased from 12.1 million acres to 11.5 million acres, and annual output also decreased from 14.3 million tons to 13.6 million tons. It was caused by the over-control policy of government, excessive implementation by the bureaucracy, and the closed isolation policy measures.

During the third period, from 1988 to present, Myanmar has been transforming its economy from a planned economy to a market-orientated economy. Rice, the staple food of Myanmar's populace, has continued to play an important role in agriculture and to be designated as the national crop.

Since 1988, the State Law and Order Restoration Council (SLORC), has been undertaking economic reforms, which include the agricultural and rural sectors. This is in line with the economic objectives focusing on the development of the agricultural sector, and making the all-round development of other sectors by it. This is to ensure surplus in paddy and edible oil production and, to substantially expand the cultivation of cotton and sugar cane. In order to assist in agricultural development, the following measures were adopted: 1) the development of new agricultural land, 2) an increased provision of irrigation, 3) the expansion of small-scale agricultural mechanization, 4) the transfer and application of new technologies and 5) an increased supply of agricultural inputs and quality seeds (Ministry of Agriculture and Irrigation, 1996, p. 33).

These supportive measures made rural people possible to enjoy the increase in sown area and output. For example, the sown area of paddy rapidly increased from 11.8 million acres to 15.5 million acres by 31.61 percent between 1988/89 and 1999/00. The total output also increased from 13.2

million tons to 19.8 million tons in the same period. This positive result was partly due to a renewed freedom of production, marketing and export. However, according to the FAO estimate, the productivity of rice per hectare in Myanmar is still low at 3,128 kg/ha compared to other rice-producing countries. For instance, the yield of rice per hectare in Egypt is about 8,878 kg/ha, South Korea 6,868 kg/ha, the United States 6,622 kg/ha, Japan 6,413 kg/ha, and China 6,321 kg/ha. However, it is still higher than in its neighboring Asian countries such as the Philippines 2,863 kg/ha, India 2,929 kg/ha, Pakistan 2,875 kg/ha, and Thailand 2,327 kg/ha (FAO, 2001, pp. 72-73).

As mentioned above, reform measures in Myanmar may be said to have taken off in September 1987 with the lifting of restrictions to the procurement and domestic trade of rice and eight other crops such as wheat, maize, pulses, cotton, rubber, and sugar cane. After the new government (SLORC) took over the reins of government in September 1988, reform measures including decontrol of prices were implemented. Moreover, official revocation of the 1965 law establishing a socialist economic system was undertaken, and restrictions on private investment were relaxed in 1989.

In order to achieve national economic development, the government has laid down four main economic objective: 1) development of agriculture as the base and all-round development of other sectors of

the economy as well, 2) proper evolution of the market-oriented economic system, 3) development of the economy inviting technical know-how and investments from sources domestic and abroad, and 4) the initiative to keep the national economy in the hands of the state and the national peoples (西沢, 2000, p. 79). The first priority has been identified as the development of the agricultural sector. To support agricultural development, the government has been implementing infrastructure projects such as, road, dam and bridge building.

To this writer's survey data, farmers are now able to cultivate double or multiple crops and, as a result of the increased output per acre, thereby increase their income two to threefold. Yet the poorer farmers still face many difficulties, such as capital shortage and lack of technical expertise.

III. Case Study of Thee Chaung Village

3.1 Village Profile

In general, Myanmar can be divided into fourteen regions or prefectures, covering seven 'states', which represent main national ethnic groups, and the seven 'divisions' or regions. The village, Thee Chaung, is located about 140 miles north of Yangon, the capital city of Myanmar, and is one of the villages of the Nattalin Township under the administration of Bago division, which governs the southern central

plains. Topologically, the southern part of Bago division has a tropical monsoon climate, while the northern part has a tropical Savannah climate. The average temperature of Bago ranges from 88°F in April to 75°F in January. The average rainfall is 45.49 inches.

After the independence, Bago Yoma had firstly been governed by the Burma communist powers. In 1980, this area became peaceful, but the government could not build any agricultural infrastructure instantly. In the later year of 1995/96 the government finally built "Taung Nyo" dam under the agricultural development project, which is located at 13 miles of east of village.

To the field survey data, the population of the Thee Chaung village is 755 persons or 166 households, and most of them are engaged in production of agricultural crops, especially in paddy and matpe (black gram).

3.2 Factors of Production

3.2.1 Land

Land is of greater importance for agriculture than the other economic sectors. Without suitable land, agriculture is impossible. According to this survey data, the total cultivated area of Thee Chaung village was 464 acres for a population of 755 and 166 households. In terms of land ownership, 87 households are landowners, while 79 households are landless. Thus, the average land-man ratio was 0.61 of an acre.

This was lower than that of the Thee Chaung village tract¹⁾ 1.1 acres and national average of 0.94 of an acre. There is no surplus land in this village, because all the cultivated land has already been used for crop production.

Regarding land ownership, peasants have the mere usage right to land. The law formally prohibits them from sale, mortgage or transfer of land. For example, the State Constitution (1948) declared all land is state owned. Moreover, the Land Nationalization Act (1953) section 11 (a) stated that, "he shall not mortgage, sell or otherwise transfer such agricultural land to any other person". However, the distribution pattern of the land usage right follows the Myanmar's traditional inheritance as well as informal market exchanges.

According to the Meier, the general pattern is that "with the growing pressure of people on the land, farms become smaller and smaller. What is more, farms are divided and subdivided into tiny strips and plots. Accordingly it seems to me that agricultural unemployment in densely populated peasant communities may be said to take at least two basic forms: (1) underemployment of peasant cultivators due to the small size of farms; (2) unemployment disguised through fragmentation of the individual holding" (Meier, 1995, p. 117). This pattern can be clearly seen in Thee Chaung village.

According to the interview of custom, parents distribute their wealth when their

son or daughter enters into marriage. Peasant families also distribute land for their son or daughter with more shares going to the son. However, the children receive an equal share of the land, when their parents pass away. This tradition of equal division would make the farm size smaller and smaller after the generations.

In Thee Chaung village, most of young couples groups (in the 20~30 age group) inherit their land share, when they get married (total 88 acres). Depending on their parents' ownership of land, some people become landowners, but some should start from the landless or agricultural labourers. By the twentieth and thirtieth years since marriage (in the 40~50 age group), the family can, in turn, purchase more land by their saving, and they can inherit again, when their parents pass away. This time is the maximum point of land in the family cycle (total 150.5 acres). After reaching a maximum point, the ownership scale of land becomes less, as land is again redistributed to their children. As

shown in figure (3.1), the ownership pattern of land becomes the lowest point at the age of above 60.

The private land tenure is prohibited, but the private usage right is permitted. Sometime, this usage right is exchanged by the informal market price of land. Under the present semi-free market system the usage right is gradually changing into the informal ownership.

It can be found the production area is related to the crops price. The government procurement price of paddy did not change 1,700 Kyats per 100 baskets since 1980/81 to 1987/1988. Therefore, the rice sown area decreased 12.7 million acres to 11.53 million acres during the same period. However, under the impact of policy reform, the procurement price has been increased from 1,700 to 32,500 Kyats per 100 baskets between 1988 and 2000. Moreover, market price of paddy in harvest time has been increased from 6,500 Kyats to 40,000 Kyats per 100 baskets at the same period. The production area has increased

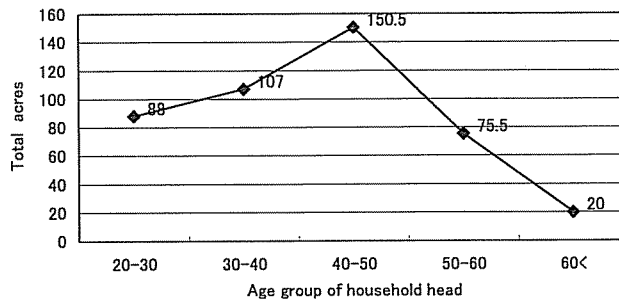


Figure (3.1) Land ownership pattern by household head age group

Source : Field survey August and September 2001.

Agricultural Production in Transitional Economy of Myanmar

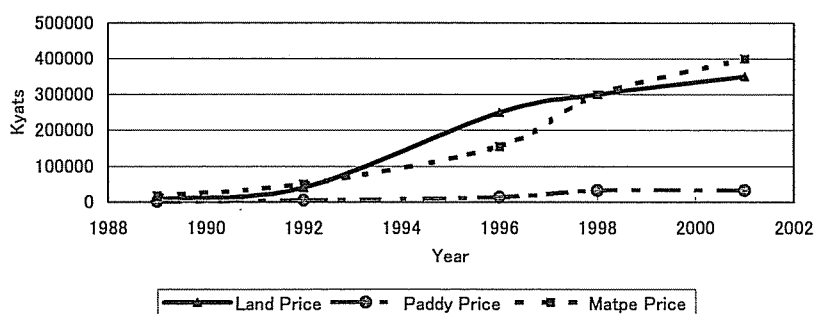


Fig (3.2) Relationship of Land price and crops price

Source : Field survey, August and September 2001.

from 11.8 million acres to 15.5 million acres in the same period, as shown in table (3.2) and appendix table 1. The land price seems to be related to the crop price. Crop price is an important factor for expanding the production area, and it will make the land price higher.

Figure (3.2) shows the relationship of land prices and procurement crop prices. According to the interview, land prices rose by five folds from 7,000 Kyats to 350,000 Kyats per acre, while paddy price increased from 1,700 Kyats to 32,500 Kyats per hundred baskets between 1989 and 2001. Matpe price also went up from 18,000 Kyats to 200,000 Kyats per 100 baskets during the same period²⁾.

The higher land price will increase the number of landless families. The restricted land resources have basically conditioned it, but it is presently prompted by the increasing crop price. Therefore, these factors effectively prevent the landless peasant from acquiring any land.

3.2.2 Agriculture Labour

Labour input into the agricultural sector in Myanmar basically takes the form of family labour and hired labour. Out of the 87 farmer households interviewed, 74 households used basically family labourers (66%) and partly hired labourers (34%). However, 9 households have no family labour for ploughing and harrowing, had to rely totally on hired labourers, and 3 households also had to use hired labourers due to the uneconomically small farm size, and one household cited other reasons.

The agricultural labour force can be measured mainly by full time labour and "seasonal labour"³⁾. In this paper a labourer working on-farm at least 3 months (8 hours per day) per year is classified as a full-time labour, and the others is seasonal labour or part-time farmer. According to the survey data, 493 people being aged 15 to 59 or 65.3 percent of the total population is working age group. Agriculture occupied 374 persons or about 76 percent of total labor force, of which 108 persons are full time labor and 266 persons

are seasonal labourer or part-time farmers. Most of the rich farmers work on the part-time farm and run ventures such as machine rental, rice milling, and lighting services. They also operate as middlemen in ongoing business deals.

Normally, they keep traditional division of labour in agricultural production in Myanmar villages. According to the interview results, most of the men work as full-time labourers and most of women do as seasonal or part-time labourers. Men are engaged in the activities of broadcasting, ploughing, harrowing and storing, while women are engaged in transplanting. Both carry out the activities of weeding, reaping and transporting

Table (3.1) shows the average agricultural labour hours for the monsoon paddy. Most of activities were done by manpower except winnowing. Three farmers used tractor in harrowing, hauling threshing and winnowing. According to the data, mon-

soon paddy of one acre needed the total 138 labour hours (297.4 hours/ha), and the production per acre was 75 baskets (1.54 ton/ha).

The system of agricultural wage also varied from season and sex as shown in table (3.2). During the rainy season, the wage was 30 to 40 baskets of paddy for ploughing and harrowing, cowboy was 15 to 20 baskets of paddy. There are 34 men and 15 cowboys were hired in these activities.

During the cold and dry season, it is paid in cash especially for reaping. However, the wage of hauling, beating, threshing, winnowing and storing were both in cash and paddy. The average wages of a man was 30 baskets of paddy or 5,000 Kyats to 10,000 Kyats in cash as shown in table (3.2). There are 40 men were hired about 20 days of this activities.

The transplanting for woman work is about one and half months. There are

Table (3.1) Average Labour hour per acre in monsoon paddy

Types of work	Hours
Ploughing & harrowing	28
Preparing for transplanting & look after the cattle	8
Transplanting	40
Weeding	16
Reaping	35
Hauling, threshing and winnowing	11
Total Labour hours	138
Total production	75 baskets
Average hour per paddy basket	1.84 hours

Source : Field survey, August and September 2001.

Agricultural Production in Transitional Economy of Myanmar

Table (3.2) Labour Wage

	Rainy season, rice growing period (June to October)				Cold and dry season, harvest period (November to February)	
	Ploughing & harrowing	Cowboy	Transplanting	Weeding	Reaping	Hauling, threshing, winnowing and storing
	one season paddy (baskets)		daily (Kyats)		acre (Kyats)	one season (paddy and cash)
Man	30-40	15-20		80	1800	30 baskets 5,000~10,000 Kyats
Woman			270 with breakfast and lunch	80	1800	

Source ; Field survey, August and September 2001.

totally 128 women engaged for transplanting and average working days were 20 days in 2001. Moreover, labour exchange system was also used in transplanting period. The whole 44 men and 63 women were hired for about 20 days of weeding during August in 2001. The wage was 80 Kyats per day. The whole 63 men and 49 women were hired for 25 days of reaping during November to December in 2001. The wage was 1,800 Kyats per acre without food.

3.2.3 Agricultural Capital

Agricultural credit

Agricultural credit is an important factor in farm productivity in Myanmar. Generally speaking, there are two main sources of credit : private and government. The government sources of capital are the loans made by the local branch of the township Myanmar Agricultural Bank. However, government credit is only a small part of the total loan requirements, and the amount of credit from private sources is

much higher. There are four common forms of borrowing from private sources : 1) the unsecured cash loan, 2) the secured cash loan, 3) borrowing cash with repayment in paddy called "sabapay", 4) borrowing rice with repayment in paddy.

In Thee Chaung village, the richer peasants are becoming richer by the profit from their own production, as well as the interest of loans to other poor peasants and agricultural labourers. There are 43 farmer households of self-financing and 44 farmer households of debt in this village. Most of the rich farmers used government agricultural credit for other business. The Government's agricultural loan depends directly on the size of owned land and kinds of crops. Most of farmers in Thee Chaung village tended to borrow at the beginning of the monsoon paddy season, which start in June. The loans taken out at this time are usually repaid at the harvest time, so that interest accrues normally over a period of seven to eight months.

The Myanmar Agricultural Bank (MAB) provides agricultural credit for monsoon paddy production, at an interest rate of 18 percent per year. However there is no agricultural credit in summer paddy of dry season. All of Thee Chaung village cultivators receive agricultural loans from the Nattalin township branch of Myanmar Agriculture Bank. The principle for loan rates is 1,500 Kyats per acre in paddy and 2,000 Kyats per acre in matpe (black gram). In this village, the total amount of government loans of monsoon paddy production was 66,150 Kyats, which represented 464 acres or 34,624 baskets, and loan to the production of matpe were 79,600 Kyats, for a total area of 398 acres or 4,776 baskets in 2000/01.

The Government agricultural credit repayment is usually made between November and April, when the farmer sells their paddy to procurement centre. According to the government's rule, a farmer has to sell 12 baskets per acre (quota sale) to the procurement centre at the fixed price of 325 Kyats per basket in 2000/01. The government procurement centre deducted the repay of the agricultural credit with interest, when the farmer has sold the paddy. In the case of matpe, the government procures 3 baskets per acre at the fixed price of 2,000 Kyats per basket. However, the government procurement price has got nearer to the market price, as shown in table (3.3). After the quota sale, farmer can deal with the remained crops

Table (3.3) Crop prices in harvest time.

Year	Paddy Govt. price	Paddy Market price	Ratio	Matpe Gov. price	Matpe market price	Ratio
1988/89	1700	6500	3.82	18000	18000	1.00
1989/90	2500	9000	3.60	20000	20000	1.00
1990/91	4700	5000	1.06	38000	40000	1.05
1991/92	4700	8500	1.81	43000	43000	1.00
1992/93	4700	18000	3.83	46000	50000	1.09
1993/94	7000	25000	3.57	68000	75000	1.10
1994/95	7000	22000	3.14	90000	120000	1.33
1995/96	8000	33000	4.13	140000	150000	1.09
1996/97	14000	41000	2.93	140000	155000	1.11
1997/98	32500	45000	1.38	200000	250000	1.32
1998/99	32500	40000	1.23	200000	300000	1.50
1999/2000	32500	38000	1.17	200000	400000	2.00
2000/2001	32500	40000	1.23	200000	400000	2.00

Source ; Field survey, August and September 2001, Statistical Yearbook, Ministry of National Planning and Economic Development, Union of Myanmar, p. 40, 82.

freely anywhere. According to the data, the gap ratio of government price and market price has got narrow from 3.82 to 1.23 of paddy production between 1988 and 2001.

According to the survey data, the estimated cost of production for one acre is about 16,000-17,000 Kyats for paddy. Therefore, the government loans covered only around 10 percent of the total production costs. Some farmers need loans to pay for hired labour and even to purchase food for their family during the food shortage-farming season. According to the interviews of 87 peasant households, the average loan requires approximately 5,000 Kyats per acre for paddy production due to transplanting and reaping costs, which are very high at 1,350 Kyats and 1,400 Kyats respectively. Other financial pressure for farmers during this season comes in the form of donations to religious groups, such as local monasteries, and also such religious events as funereal celebrations, the festivities of Buddha's birthday, and the welcome ceremony of a priest ordination trainee.

Therefore, most of Thee Chaung farmers should borrow from informal moneylenders, such as rich farmers or from Gold shops in Nattalin Township at the rate of 5 percent per month with a security of gold jewellery, or at 8 percent per month without any security.

Moreover, there is no income for farmers from the beginning of the plough-

ing period to the onset of the reaping period. In some cases farmers have to borrow rice or paddy called "Tinsapay" at high rates of interest in order to survive. It is difficult to decide whether such loans should be considered as a production expense or as consumption expense. The "Tinsapay" system works as follows: If you borrow one basket of paddy in need, you repay two baskets of paddy in harvest time. If you borrow one basket of rice in need, you repay five baskets of paddy in harvest time.

Another system of borrowing in Myanmar village is "sabapay". The "sabapay" means the repayment system is paid only by paddy, but not by cash. The money-lender fixes the price based on the harvest price, but it is always less than harvest price. According to the survey data, the harvest price of paddy was 400 Kyats per basket in Thee Chaung village. Figure (3.3) shows the "sabapay" prices. When the price of paddy was 600 Kyats per basket in ploughing period, the borrower can get only 300 Kyats per basket of paddy in the same period. When the price of paddy was 800 Kyats per basket in transplanting period, the borrower can get only 320 Kyats in the same period, and when the price of paddy was 700 Kyats per basket in reaping period, the borrower can get 350 Kyats in the same period.

This system has been seen since the colonial period. It can be found among agricultural labourers more than land-

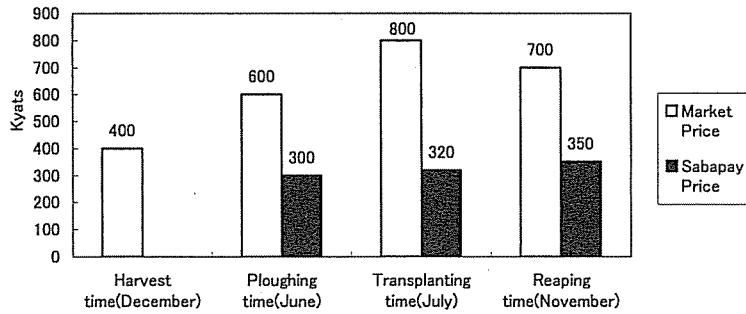


Figure (3.3) Market price and Sabapay price
Source ; Field survey, August and September 2001.

owners. This system is very dangerous for the borrower who is often unable to repay, which is then carried over to the following harvest period. According to the interview, there are four households using this system. agricultural equipments

Although all farmers have continued using traditional agricultural equipments and draught cattle, some farmers use tractors for ploughing and harrowing. However, most of farmers use winnowing machines for winnowing. There are 3 tractors and 7 winnowing machines in 2001. Draught cattle carry out the tasks of ploughing, harrowing and transportation in this sector. There are 217 draught cattle and 89 carts in Thee Chaung village. However,

3.3 Types of Crop Patterns and Production Costs

3.3.1 Agricultural Calendar

Since 1997, paddy has been cultivated twice a year, which is called, monsoon paddy, and summer paddy respectively.

Monsoon paddy is cultivated on all over the area, but the cultivated area of summer paddy was 25 percent of the total area in 2000/01. Monsoon paddy starts in the middle of June and finishes at the beginning of January. Summer paddy season is between March and the end of June. Matpe production is from December to March.

In the middle of April, most of farmers, the mono-cropping rice producers, burn over fields and spread natural fertilizer to prepare monsoon paddy, while some farmers of intensive summer paddy production frequently visit fields, weed the fields, block off water channels and build up embankments. In late May and June, the ploughing and harrowing of the monsoon paddy overlap the harvesting, threshing and winnowing of the summer paddy. It is a very busy time for the double rice producers in this village.

Generally, Monsoon paddy is transplanted from July to August. At the end of November, they start reaping and hauling the monsoon paddy and plough the fields

Agricultural Production in Transitional Economy of Myanmar

for matpe production. It is the second busiest time in this village. Then they thresh and winnow the paddy from December to the beginning of January.

3.3.2 The Crop Pattern

The type of agricultural crop production in Thee Chaung village is given in table (3.4). In 2000/01, 87 peasant households grew paddy on a total 545 acres, (monsoon paddy 441 acres and summer paddy 104 acres). The total harvest in this year was 42,206 baskets or an average of 74.31 baskets per acre.

The impact of the summer paddy programme of 1996/97, which was triggered by the construction of the dam, cannot be underestimated. There is now sufficient water supply for cultivation in Thee

Chaung village. The cultivated areas of monsoon paddy increased from 423 acres to 464 acres between 1988/89 and 2000/01. The cultivated area of summer paddy also jumped by threefold from 32 acres to 104 acres between 1996/97 and 2000/01.

As a water supply is essential for paddy production, water shortage can cause the decrease of paddy productivity. In former days, Thee Chaung village had been usually faced with water shortages every two to three years. However, the construction of the dam has ensured the water for agricultural production.

The second important crop was black gram (matpe). Its cultivated area suddenly rose from 10 acres to 398 acres between 1988/89 and 2000/01 due to the increase in the price for the export demands. Before

Table (3.4) Crop pattern in Thee Chaung village

Year	Monsoon paddy		Summer paddy		Matpe (Black Gram)		Chana Beans		Groundnut		Sesame	
	Acre	Basket	Acre	Basket	Acre	Basket	Acre	Basket	Acre	Basket	Acre	Basket
1988/89	423	31150	0	0	10	120	108	972	27	1323	40	320
1989/90	423	31814	0	0	10	110	110	990	25	1125	37	370
1990/91	423	31234	0	0	10	100	105	945	25	1150	39	468
1991/92	423	32660	0	0	12	156	97	873	20	980	27	351
1992/93	433	33090	0	0	76	912	91	819	5	255	1	5
1993/94	433	31735	0	0	130	1560	9	81	0	0	0	0
1994/95	451	33469	0	0	240	2880	10	90	0	0	0	0
1995/96	451	27231	0	0	310	3720	7	59.5	0	0	0	0
1996/97	451	31358	32	2246.7	345	4140	5	40	0	0	0	0
1997/98	458	30494	29	2015.8	380	4560	0	0	0	0	0	0
1998/99	463	32567	97	6400.1	392	4704	0	0	0	0	0	0
1999/00	464	36814	36	2635.6	398	4776	0	0	0	0	0	0
2000/01	*464	34624	104	7583.7	398	4776	0	0	0	0	0	0

Note: *Including other villagers owned 23 acres.

Source: Nattalin Township Agriculture Service.

1992/93 chana bean was the second most important crop in this village, but the cultivated area of chana bean fell down from 108 acres to 5 acres between 1988/89 and 1992/93. After 1992/93 there was no cultivation in chana bean due to the cheaper price than that of black gram (matpe).

Maize is produced only for local consumption and the cultivated area was small, around 1 acres. Groundnuts and sesame used to be very important for oil production in Myanmar. However, their cultivated area became smaller between 1988/89 and 1992/93, and there was no production after 1992/93. The decline in the cultivated areas of groundnut and sesame were mainly due to the import of cheaper palm oil from Malaysia.

3.3.3 Cost and Benefit of Production

Production cost differs by farm sizes and the degree of participation of family labour. According to the interview, the wage system was based on the season and the type of work. In 2000/01, the wage of monsoon paddy production are as following: the wage rate of transplanting was 1,350 Kyats per acre or 270 Kyats per day with meals (about 400 Kyats), and that of reaping was 1,800 Kyats per acre without meals. The wage of weeding was 80 Kyats per half day and that of winnowing was 2 Kyats per basket.

After the construction of the dam in 1996/97, there has been no shortage of water. The cost of irrigation was 500

Kyats per acre in Thee Chaung village. The average costs of monsoon paddy, summer paddy and matpe productions are shown in table (3.5).

The wage rate of summer paddy transplanting was 1,500 Kyats per acre without meals. It is less than the transplanting costs of monsoon paddy. The average cost of production in monsoon paddy (222.7 Kyats per basket) was less than the summer paddy production cost (297.9 Kyats per basket) in 2000/01. The reasons for higher cost of production in summer paddy were high costs of hauling, beating, and threshing than those of monsoon paddy production. The benefit of summer paddy per basket 302.1 Kyats in harvest time is greater than that of monsoon paddy per basket 177.3 Kyats. If counted by harvest price, summer paddy production gives more benefit than monsoon paddy. If counted by the highest price in the year, monsoon paddy production gives more benefit than summer paddy. However, most of farmers sell instantly in the harvest time, the real benefit of monsoon paddy is lower than that of summer paddy. Although summer paddy production gives more benefit than monsoon paddy in harvest time, the cultivated area do not expand due to transportation access constraint by shortage of roads and canals.

Another reason is the cultivation of matpe is more benefitable than paddy cultivation. The benefit of matpe cultivation ranges from minimum about 29,000 Kyats

Agricultural Production in Transitional Economy of Myanmar

Table (3.5) Average cost and benefit of paddy and matpe production (Kyats)

	Kinds of costs	Monsoon paddy	Summer paddy	Matpe
1	Preparation (ploughing & harrowing etc.)	6200	6700	4500
2	Seed and Fertilizer	1000	1200	8000
3	Transplanting ¹	1750	1500	—
4	Reaping	1800	1400	2000
5	Hauling, Beating, Threshing, Winnowing and storing	4650	9050	4000
6	Depreciation of equipment, Land tax, interest on loan	1300	1300	250
7	Production cost per acre	16,700	20,850	18750
8	Total output of Paddy (basket)	75	70	12
9	Production cost per basket of paddy	222.7	297.9	1562.5
10	Harvested Price (2000/01) per basket	400	600	4000
11	Maximum Price (2000/01) per basket	800	800	7500
12	Benefit (Harvested time) per basket (10-9)	177.3	302.1	2437.5
13	Benefit (Maximum) per basket (11-9)	577.3	502.1	5937.5
14	Benefit per acre (minimum) ²	12337.5	21147.0	28593.7
15	Benefit per acre (Maximum) ³	42337.5	35147.0	62343.8

Note: 1) Monsoon paddy transplanting costs including the cost of breakfast and lunch.

2) The benefit of monsoon paddy includes government price, 320 Kyats per basket, 12 baskets and the benefit of summer paddy was calculated market price. The minimum benefit of matpe per acre include 1.5 baskets was calculated government price 2,000 Kyats per basket.

3) The benefit of monsoon paddy includes government price, 320 Kyats per basket, 12 baskets and the benefit of summer paddy was calculated market price. The maximum benefit of matpe per acre include 1.5 baskets was calculated government price 2,000 Kyats per basket.

Source: Field survey, August and September 2001.

per acre to maximum about 62,000 Kyats per acre, but the benefit of monsoon paddy cultivation ranges from 12,000 Kyats per acre to 40,000 Kyats per acre. Therefore, the total acreage of matpe has rapidly increased from 1995/96, and it has become 86 percent of the monsoon paddy in 2000/01.

According to survey data, the price of draught cattle varied between 70,000 Kyats to 100,000 Kyats in 2001. The price of a small tractor was 380,000 Kyats to 550,000

Kyats. A Myanmar harrow, "Htun" was 2000 Kyats and a plough "Bhama hte" was 1500 Kyats in 2001. An acre of ploughing cost was 3000 Kyats in case of hiring tractor and 2700 Kyats in case of hiring draught cattle with plough and harrow. Winnowing machines, made in Myanmar, can winnow 250 baskets to 300 baskets of paddy per day, and the hiring charge was 20 Kyats per basket. The price of this machine without a motor was 150,000 Kyats, and with a Chinese engine were

250,000 Kyats. Peasants usually hire the winnowing machine because of this expensiveness.

3.4 Households income and expenditure

The village income bases on three main sources, namely: 1) farm income, 2) off-farm income, and 3) non-farm income. According to Ellis, "farm income refers to income generated from own-account farming, whether on owner-occupied land, or on land accessed through cash or share tenancy. Moreover, farm income includes livestock as well as crop income, and comprises both consumption-in-kind of own-farm output as well as the cash income obtained from output sold. Family labour inputs are not deducted in this way when the objective is to describe the net contribution of farming to household real cash income" (Ellis, 2000, p. 11).

According to the survey data, farm income includes income from paddy and matpe production, flower planting, betel leave and vegetable growing, and livestock. In 2001 farm income stood at 30.8 million Kyats, or 72.54 percent of the total village income, of which the share of paddy income was 11 million Kyats, or 25.96 percent, while the share of matpe income was 17 million Kyats, or 40.82 percent as shown in table (3.6).

After the dam construction in 1996, water-using betel leaves and flowers growing became a popular economic activity due to the transportation and market demand. Betel leave growing can generate income twice a month and the cost production is small. There are 8 households growing betel leave and 5 households just started in 2001.

"Off-farm income typically refers to

Table (3.6) Type of Village Income

	Kyats	Percent		Kyats	Percent
1) Farm income			3) Non-farm income		
a. Matpe	17,332,000	40.82%	a. Trader	1,810,000	4.26%
b. Paddy	11,020,660	25.96%	b. Sidecar plying	1,547,350	3.64%
c. Livestock	1,450,740	3.42%	c. Income from home industry	869,000	2.05%
d. Vegetable	682,550	1.61%	d. Lottery selling	760,000	1.79%
e. Flowers	186,100	0.44%	e. Shopkeeper	394,950	0.93%
f. Fishing	129,000	0.30%	f. Hawkers	345,000	0.81%
	30,801,050	72.54%	g. Gov. Servant	311,700	0.73%
2) Off-farm income			h. Carpenter	275,000	0.65%
a. Agricultural wages ¹	4,949,270	11.66%	i. Sewing	125,000	0.29%
b. Firewood	50,000	0.12%	j. Bicycle Repairing	81,000	0.19%
	4,999,270	11.77%	k. Others	140,500	0.33%
				6,659,500	15.68%
Total village income				42,459,820	100.00%

Note: 1) 4,581,070 Kyats are real cash and 368,200 Kyats are 923 baskets of paddy, calculated harvest time price 400 Kyats per basket.

Source: Field survey, August and September 2001.

Agricultural Production in Transitional Economy of Myanmar

wage or exchange labour on other farms (i. e. within agriculture). It includes labour payments in kind, such as the harvest share system. It may also include local environmental resources such as firewood, charcoal, housing building materials, wild plants, and so on” (Ellis, 2000, p. 11). Off-farm income occupied about 5 million Kyats or 11.77 percent of the total village income. It includes cash for agricultural wages, and kinds such as paddy for tenants.

Non-farm income refers to non-agricultural income sources. In this paper non-farm income includes lighting servicing, bicycle repairing, sewing, sidecar plying, and lottery selling among others. Income from trading is a major source of non-farm income providing about 1.8 million Kyats or 4.26 percent of the total village income. As a new non-farm economic activity, lottery selling has become an important source of income, which contributes about 0.76 million Kyats or 1.79 percent of the total village income.

The distribution of income in Thee

Chaung village is related to land ownership pattern. Among the 166 households, 79 households are landless. According to figure (3.4), the average annual income of landless 51 households was under 0.1 million Kyats, while 4 households income was above 1.0 million Kyats. If we see the landownership pattern in terms of income, the former with under 0.1 million Kyats owned average area of 1.8 acre, while the latter with above 1.0 million Kyats owned average area of 12 acres.

Concerning the pattern of household expenditure in Thee Chaung village, food occupied 71 percent of total expenditure of 21.7 million Kyats. However, most of food consumption was made by self-production such as rice, vegetables, fish, chicken and eggs. According to the survey data, real cash expenditure of food was 28.08 percent and non-cash one was 42.11 percent. The second largest expenditure was social and religion expenditure which accounted for 8 percent of total expenditure and it is followed by medicine 5.42 percent, education

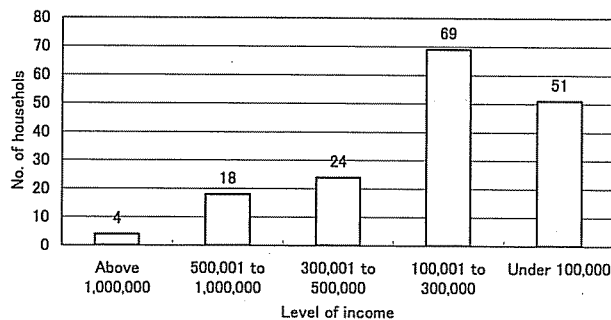


Figure (3.4) Distribution of Household income
Source: Field survey, August and September 2001.

Table (3.7) Household expenditure

Kinds of costs	Kyats			Percent		
	Cash	Non-cash	Total	Cash	Non-cash	Total
Food	8,670,950	13,006,400	21,677,350	28.08	42.11	70.19
Social & Religious	2,641,500	—	2,641,500	8.56	—	8.55
Medicine	1,789,100	—	1,789,100	5.79	—	5.79
Education	1,591,350	—	1,591,350	5.15	—	5.10
Cloths	1,360,200	—	1,360,200	4.40	—	4.40
Lighting	766,825	—	766,825	2.48	—	2.48
Living Cost	342,00	400,300	742,300	1.11	1.30	2.40
Firewood	56,200	260,000	316,200	0.18	0.84	1.02
Total cost	17,218,125	13,666,700	30,884,825	55.75	44.25	100.00

Source ; Field survey, August and September 2001.

4.82 percent and clothing 4.12 percent etc., shown in table (3.7).

IV. Conclusion

Transitional economy has been starting in Myanmar since 1988, when the military government took the state power from the former socialist government. Accordingly, Myanmar agricultural economy has changed from a traditional to a commercial economy especially in terms of modern techniques. However, it has not so much changed in terms of such state led institution as land reform, loan system and paddy procurement system. Still the quota price has changed to nearly market price of harvest time.

This writer's survey results find that the agricultural production pattern of Thee Chaung village has changed from mono crop to double or multiple crops. The

introduction of machinery and modern agricultural equipment was just started in 1999. In this period, the production of paddy rapidly increased and matpe also becomes an important cash crop due to the export demand. At the same time, the prices of paddy, matpe and other crops have also increased rapidly.

Consequently, an increase in farm income and non-farm income has improved the quality of life of the rural people. A market economy creates emerging new business such as flower and betel leaf selling. Also non-agricultural activities and informal sectors as lottery selling, become important sources of rural income. In addition, this village can easily access to the private electricity and safety transportation.

The Thee Chaung village has benefited the fruits of economic reforms. It can be concluded that effective government policy

of deregulation of production and market and such supportive measures of infrastructure as the construction of dam, road, introduction of new technique of cultivation etc. have directly contributed to better agricultural production and living condition of the rural people.

Thanks to the introduction of market economy in Myanmar, Thee Chaung village have change from backward village to modern one. It can be said that the development of Thee Chaung village is the outcome of government policy, which gives the first priority to the growth of agricultural sector.

However, some rural people, especially landless labourers, are still facing with poverty due to debt cycle and lack of effective policy such as land reform and micro credit program. In this village, a half of farmers are still insufficient in capital. In order to sustain the development of commercial agriculture sector, the provision of required capital, the land reform, technology, skill labour and other supportive measures are necessary.

Uneven distribution of income makes the big income gap of villagers in Thee Chaung village. For example, 51 household received under 100,000 Kyats while 4 households received more than one million Kyats of income. It can be concluded that a small number of rich farmers, who own large farms, benefited much more than most of poor farmers, who own small farms.

Therefore, it would be appropriate to

suggest the following policy measures under the market economy. It will make the benefit and income share more equally between the rich and poor class, and the sustainable development of rural sector: 1) land reform should be implemented for small farmers and landless people by reviewing current laws and regulations; 2) agricultural loan should be amended with the real need of farmers; 3) a long lasted compulsory procurement system should be completely abolished; 4) appropriate agricultural machinery and equipment should be introduced with reasonable price; and 5) other supportive measures (should also be improved), including distribution of agricultural inputs such as fertilizer, pesticides, seeds, information of agricultural prices, introduction of new seeds or new crops.

Note :

1 basket (paddy=rice in husk)=46 lb

1 basket of rice=75 lb

100 Kyats=16 ¥ (Market price, August 2001)

1 acre=0.405 hectares

1) Village tract means administration villages group.

2) In order to confirm the relationship between the land price and crop price, regression analysis was carried out during 1988~2001 period. As the writer assumed that land price is mainly dependent on crop price and cultivated area, other independent variables were ignored. Regression results also confirm that there is a positive relation between land price and crop

price. Table (A) presents the regression result for paddy land price.

Equation (1) shows that land price for paddy is dependent on crop price. As the coefficient of government paddy price is higher than that of market paddy price, the response of government crop price mainly affects on land price. Their t values are statistically significant and adjusted R^2 is also high.

Equation (2) shows that land price is dependent on government paddy price and paddy sown area. This equation also shows the positive relation between dependent variable and independent variables. Their t values are statistically significant and adjusted R^2 is also high.

Equation (3) presents the relationship between land price and market paddy price and paddy sown area. Although the t value of paddy price is small, there is a positive relationship between dependent variable and independent variables.

Table (B) also gives the regression result for matpe price and land price. Equation (1) explains

the positive relationship between land price and market matpe price. This equation give the better regression result (adjusted $R^2=0.89$) and t value is statistically significant. As the government price for matpe remains unchanged since 1997, the writer does not run the regression. Equation (2) expression the dependent variable of matpe land price is mainly dependent on market land price and shown area. The coefficient of determination (adjusted $R^2=0.94$) gives a good result and their t values are statistically significant.

3) Some people works in transplanting period (rainy season) or reaping period (cold and dry season), called seasonal labour in a Myanmar village.

Table (A) Regression result for paddy and land price

Dependent variable : Land price (LP) Sample period : 1988~2001			
Equation 1	-42626 (-2.28) Adjusted $R^2=0.954$	+6.21GPP (4.89)	+3.71MPP (3.34)
Equation 2	-1504888 (-3.17) Adjusted $R^2=0.95$	+5.73GPP (3.94)	+3528.85SOWN (3.17)
Equation 3	-2053138 (-2.20) Adjusted $R^2=0.89$	+3.17MPP (1.24)	+4767.26SOWN (2.13)

Note: The figures within parentheses are t-statistic.

Method of estimation: Ordinary Least Square (OLS).

Definition of variables:

LP=Land price (Kyat)

GPP=Government procurement paddy price (Kyat)

MPP=Market paddy price at harvest time (Kyat)

SOWN=Sown area of paddy (acre)

Agricultural Production in Transitional Economy of Myanmar

Table (B) Regression result for matpe price and land price

Dependent variable : Land price (LP)			
Sample period : 1988~2001			
Equation 1	-2103.81 (-0.11) Adjusted R ² =0.89	+0.914MMP (9.77)	
Equation 2	-16946.2 (-1.08) Adjusted R ² =0.94	+0.49MMP (3.04)	+384.96SOWN (2.90)

Note : The figures within parentheses are t-statistic.

Method of estimation : Ordinary Least Square (OLS).

Definition of variables :

LP=Land price (Kyat)

GMP=Government procurement Matpe price (Kyat)

MMP=Market matpe price at harvest time (Kyat)

SOWN=Sown area of matpe (acre)

Reference :

(English)

Central Statistical Organization, (2000) *Statistical Yearbook*, Ministry of National Planning and Economic Development, Union of Myanmar, p. 40, 82.

Ellis, Frank, (2000) *Rural Livelihoods and Diversity in Developing Countries*, Oxford University Press, pp. 3-14.

FAO, (2001) *Yearbook production*, Vol. 53, Food and Agricultural Organization of the United Nations Rome, pp. 72-73.

Kitahara, Atsushi, (1999) "Sustainable Part-time Farming Beyond the Crisis of Asian Agriculture", The Asian Rural Sociological Association Conference on Globalization and rural

Social Change, Paper No. 5, p. 4.

Meier, Gerald M, (1995) *Leading Issues in Economic Development*, Oxford University Press, pp. 117-118.

Ministry of agriculture and Irrigation, (1996) *Agricultural Development in Myanmar*, Ministry of agriculture and Irrigation, Union of Myanmar, p. 33. Mya Than and Joseph L. H. Tan (Edit) (1990), *Myanmar Dilemmas and Options*, Institute of Southeast Asian Studies (Singapore) Press, pp. 89-115.

(Japanese)

西沢信善(2000)『ミャンマーの経済改革と開発政策』勁草書房, pp. 78-82.

(Graduate Student, Graduate School of Economics, Nagoya University)

Appendix Table 1. Rice Production in Myanmar

Parliamentary Government (1948-1961)				Burma Socialist Government (1962-1987)				SLORC/SPDC (1988-2000)			
Year	Sown acreage	Output ('000) basket	Output million ton	Year	Sown acreage	Output ('000) basket	Output million ton	Year	Sown acreage	Output ('000) basket	Output million ton
1940/41*	12.518	385	8.033	1962/63	11.953	367	7.657	1973/74	12.575	412	8.596
1948/49	9.796	247	5.153	1963/64	12.475	373	7.782	1974/75	12.793	411	8.575
1949/50	9.017	219	4.569	1964/65	12.624	408	8.513	1975/76	12.858	441	9.201
1950/51	9.15	258	5.383	1965/66	12.39	386	8.054	1976/77	12.547	447	9.326
1951/52	9.458	268	5.592	1966/67	12.328	318	6.635	1977/78	12.69	453	9.452
1952/53	9.924	279	5.821	1967/68	12.193	372	7.762	1978/79	12.957	505	10.536
1953/54	9.969	267	5.571	1968/69	12.402	384	8.012	1979/80	12.42	501	10.453
1954/55	9.821	270	5.633	1969/70	12.243	383	7.991	1980/81	12.668	638	13.311
1955/56	10.009	273	5.696	1970/71	12.294	391	8.158	1981/82	12.61	678	14.146
1956/57	10.074	300	6.259	1971/72	12.3	392	8.179	1982/83	12.064	689	14.375
1957/58	9.849	244	5.091	1972/73	12.014	353	7.365	1983/84	11.938	685	14.292
1958/59	11.1	315	6.572					1984/85	12.151	683	14.25
1959/60	10.377	330	6.885					1985/86	12.114	686	14.313
1960/61	10.419	327	6.823					1986/87	11.968	677	14.125
1961/62	11.359	328	6.843					1987/88	11.531	654	13.645

Note : *Pre-war period.
Source : Myanmar Agriculture Service.