

## **Chapter II**

### **Present State of Agriculture in UNT: Its Technology and Marketing System**

#### **1. Introduction**

In the Upper Northern Thailand, the agriculture has been, and still is the most important sector of the economy in the region. We focus on the five Changwats, or Provinces where the agriculture is apparently prevailing all over the area, and fundamental to people's daily life. They are, Chiang Rai, Chiang Mai, Payao, Lampang, and Lamphoon Provinces.

In the Upper Northern Thailand, or UNT which includes Mae Hong Son, Nan, and Phrae, as well as five Provinces mentioned above, there has been, as is mentioned elsewhere, a lot of diversification of the agricultural products during the past thirty years of development.<sup>1</sup> However, there are still the main production sites for each variety. For example, the soy beans' largest producer is Chiang Mai Province, and the melon is most produced here. Lamphoon Province is the largest producer of lam-yai, a kind of longan.

The government office related with agriculture in the region are three-fold reflecting the importance of agriculture. There is an office for the Northern Region, which is usually located in Chiang Mai Province. There is an office for the Province as is mentioned above. And there is an office for the Chiang Mai Municipality. Because that agriculture is a very important economic sector in the region, there are offices diversified according to the works or roles as assigned. For example, there is an office for Agriculture as an activity of production. In Thai, it is named as "Department of Agricultural Science." This is separated from the offices of Agronomy, or Agricultural Economics, which is all under the Ministry of Agriculture and Agricultural Cooperatives (MOAC). There is an office of Agricultural Promotion (Extension), besides an office for Land Development for better utilization of land, an office for Forestry, for Fishery, and for Animal Husbandry under the same Ministry. It is hoped by

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<sup>1</sup> It is said that a vast variety of some 300 kind of fruit and vegetables are grown in the region, besides rice and other cereals, for domestic use and commercial purpose.

various people that there comes a reform of the government administration to reduce the number of offices and their "red-tape" bureaucracy, because that the slimmed government means quicker decision making and more efficient government. In the new Chavalit cabinet, administration reform is named as one of its targets. Chiang Mai Province is rather specific, and there is an office for Agriculture in a High Altitude Area, i.e., for a Cool Area. Imagine that these offices are three-fold for each. There are a quite number of government offices for agriculture for the region in Chiang Mai. People in Chiang Mai seems naturally welcome slimmer government and looking forward to the achievement of the new government.

The information on the agricultural production, marketing, and activity of agricultural organizations in Thailand should be obtained from these government offices. However, the data published from these government agencies are more or less concentrated in, or worse they are biased to, giving information on the volume of the grown area, volume of production, and for some kind of crops, the volume of sales in a year. For marketing, the data on the market price of commodities are also available at the Ministry of Commerce.

Production in agriculture has a peculiar characteristics compared to the production in other sectors of the economy. First of all, it much depends on the weather, land conditions, and natural climate. Water consists the most important factor defining the performance of the crops, besides the natural conditions mentioned above. When the Department of Agricultural Extension reported the agricultural development tendency in the Regions of Thailand,<sup>2</sup> one of the various purposes of making the report was to contribute to leading the agricultural technology to a higher level. It is to suit the goal of the Seventh National Economic and Social Development Plan (1992 - 1996) of the government.

As for marketing system, we must divide the marketing for export to other regions in the country or to overseas, and the marketing for domestic consumption in the local area. According to the Office of Agricultural Economics, the share of the products marketed for the whole

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2 For the Northern Region, the report was made in August 1992. *Directions of Agricultural Development in the Region Level: Northern Region*, Department of Agricultural Extension, MOAC, August 1992.

Kingdom was surveyed and the result was published the last year. It showed the distribution of marketing of the products over the months in the year. The Soy Beans<sup>3</sup> marketed during 1987/88 to 1991/92 on average varied the lowest from zero percent (0 %) in July to the highest 17 % in November. Because of the planting calendar, the first month is July and the last month is June of the next year. More than half were marketed in September to December. Some 28 % was distributed over March to May.

That figure for the Green Beans showed a different pattern. The share showed roughly an even distribution, with the highest peak of 24 % in April the next year. The figure for the Ground Peanut during 1989/90 to 1991/92 on average showed the highest peak of 24 % in April like the Green Beans, but the next peak came in August and September, not in November and December like in the case of the Green Beans.

The export market of these main crops is mainly the advanced countries in Europe or neighboring countries like Myanmar, Laos, and Vietnam. Which market is more stable as the source of income of the growing farmers ? Generally the domestic (local) market is more stable. It is true that the consumers in the cities in Thailand are quite similar to those in any one of the cities in the world. They eat diversified kind of food, as a result of changing the traditional eating custom. That means the consumption of each item of food may have changed its relative share in the whole consumption. But most varieties of the vegetables and fruit have become staple food for the Thai people for a long time, and nowadays these changes in the relative share seldom occur. Therefore the consumption pattern in the domestic market is comparatively more stable.

On the other hand, the export market has a number of factors to become unstable. The export is mainly for industrial use. The export market is stable in the sense that the demand for crop consumption could be estimated by the level of the industrial activity and the usage of the

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3 The Soy Bean and the following Green Bean and Ground Peanut are grown twice a year, for the rainy season and the dry season. The Soy Bean here does not include the Black Bean. (Source) *The Monthly Distribution of the Marketing Share of the Product :Soy Beans, Green Beans, and Ground Peanut*, Agricultural Statistics Center, Office of Agricultural Economics, MOAC, August 1995 (Agricultural Statistics Document No. 11/2538, Roi la karn khai phol phalit rai duan : thuwa luang, thuwa khiew, thuwa lisong).

crops at the unit level of activity. This usage is determined to realize the activity in the most efficient way economically or technologically. It means production at the lowest cost. The export market is unstable in the sense that it receives impact from the factors which cannot be controlled by the producers. Therefore it causes unstable income on the producers (farmers) side.

Our foremost aim in this Chapter is to see the potentials for further agricultural development in the region. It is very clear that each variety of crops has not been much diversified. Most of the crops, those we are eating today are not much different from those consumed one hundred years ago. Of course the improvement in variety to ensure a higher yield or to make fit to the consumers taste has been continuously realized. In this effort to improve the variety, we can see the source of diversification, and of competitiveness in the region. At the same time, the abundance of the variety of the crops from a simple natural mango to an artificially developed melon, or from a garden-grown Tamroon (a kind of gourd) to Guangdong green without application of chemicals, proves the high potential of the agriculture in the region.

In the past, the agricultural products and agro-based processed goods were the main item for Thailand export in the 1960s and 1970s. Even in the 1980s, for the most of the period, the share of these goods were keeping as high level as more than 50%.<sup>4</sup>

The really drastic changes in the agricultural structure of production in terms of value added of the sub-sector or more in detail, of the species or varieties of the product took place only recently. One of the characteristic changes in the production structure in the agricultural sector in the region recently is observed in spreading of the "contract farming." Since the contractors are sometimes the foreign large scale firms, it ascertain the income and working opportunities for the contracted farmers. Besides, the contract farming system will hopefully raise the competitive power of the agricultural product. The government offices all support the system if it is to increase the farmers income. Even such a competitiveness promoter of the Thai economy like BOI (Office of the

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4 Suehiro, Akira, "Tai Shin-kougyouka to Nichi-Bei Keizai" (New Industrialization in Thailand and the Japanese-US Economies), in Nakagawa, Nobuyoshi (ed.), *Ajia Shin-Kougyouka to Nichi-Bei Keizai*, University of Tokyo Press, 1990.

Board of Investment) supports the system. It promotes the system, however, with cautions that attentions should be paid to the culture in the villages for example, to the role of the village leaders (Chao Po Thong Thin in Thai words), and they should be made best use of in the system.<sup>5</sup>

In this Chapter, we will focus on two points: the changes of inter-industry relationship centering on agriculture, and how agriculture should change in order to cope with development in the economic sectors other than agriculture. The next Section deals with the present state of the agriculture in the Upper Northern Thailand, the 3rd Section will evaluate the productivity of agriculture and its changes, the 4th Section focuses on the relationship with the other sectors including agricultural product processing, and the last 5th Section is on the economic development and future of the agriculture in the region.

## **2. Present State of Agriculture in the UNT Region**

The economy in the UNT region has changed its structure much. But it still heavily depends on the agriculture in the region. It is seen from the share of the each sector's VA in the Gross Regional Product (GRP). The agriculture's share in 1989 is as high as 30.9% in the whole North region, whereas the manufacture only keeps 7.5%. The sectors with higher shares are, the services (social and personal) with 12.6%, the wholesale and retail trade 17.5%, the mining 5.5%, and the construction 5.8%. These figures for the whole North include also those for the Changwats in the Lower Northern region, and not suitable to see the conditions in the Upper Northern region only.

In the UNT region, the area planted with rice (in the field) in 1989 is about 3,415 thousand rai (one rai is about 1600m<sup>2</sup>). It consists of about one fourth of the whole North. Production capacity of the region has expanded mainly due to a higher usage of fertilizer and agricultural chemicals, and introduction of higher yielding varieties.

The last year (1996) the agricultural sector experienced a decline

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<sup>5</sup> An opinion expressed in an interview at the Northern Center of Economics and Investment, September 11, 1996.

of export as most of the sectors did. Some commodities showed increase of export in the first half of the year, but many others showed decrease. Among those showed expansion of export, there were five main commodity groups. They were, Dairy products, Fruit and nuts, Cocoa and chocolates, Instant beverages, sauces, soups, and Tobacco.<sup>6</sup> The UNT is well known by its affluence of fruit. Besides, in Thailand, tobacco is mixed and processed mostly in UNT. In Thailand, cocoa is most planted in the Southern region, but its quantity is rather small. Some coffee are also produced in UNT. This coffee is mainly for domestic consumption, but it can substitute for the imported coffee or cocoa.

The annual demand for soy beans in Thailand is about 580 thousand ton of seed, and 900 thousand ton of husk. The production of the soy beans in Thailand recently is about 500 thousand ton per year, and after squeezing the soy bean oil, the husks left will be only 440 thousand ton. About a half of the domestic demand for the husk must be imported annually. The soy beans harvested in UNT in 1992 was about 120 thousand ton, or 24% of national total.

Chiang Mai Province is the largest producer of soy beans in UNT, and the area under soy beans in Chiang Mai was about 172,000 rai (about 27,520 ha) in the wet season of 1994, and 116,000 rai (about 18,560 ha) in the dry season of 1995. According to an NESDB figure, or the original source of the Office of Agricultural Economics, the area under rice cultivation is slightly less than 3 million rai, and under soy beans 568,000 rai in UNT in 1992. Only soy beans showed an increase of the planted area, and so did fruits. Other traditional varieties like rice, mung bean, and ground peanut, were all declined during the 1980s. The second largest product in the field in Chiang Mai Province is maize. The area under it is about 27,000 rai in 1996. Kenaf also is planted about the same area, 26,000 rai in UNT.

The future potentials of agricultural in UNT is a very important basis for the future of the agro-industry in the region. For the sound development of the regional economy in the future, the relationship between agriculture and the other sectors of the economy seems to play a

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6 A report by Errol de Silva, *The Bangkok Post*, September 3, 1996, page 4. See also the report by the same author in the same paper on the next day.

very important role at present and in the future. It is well recognized that some of the factors supporting agriculture so far will not be existent right now and in the future. For example, the soy beans for making animal feeds has been and still at present, is a hopeful potential crop of its cultivation. The Thai government wants to have the soy bean cultivation as an important subsection of agriculture, and set forth a quantity limitation of import of the soy bean. Then can we continue keeping or agriculture, or soy bean cultivation in the future ? I don't think so. It only makes the cost of manufacturing of the animal feeds higher and the industry less competitive. Some of the import of the animal feeds made of fish meal from Vietnam are less in their prices and are keeping more competitive power. One of the ways to keep the agriculture in the future, it seems, lies in the de-regulation and making agriculture more competitive industry.

Technology used in the agriculture in UNT is different a little from that used widely in the Central region, as the varieties produced in these regions differ. There are some differences of type of equipment, or chemicals due to the varieties produced in these regions. The climatic difference may also explain to some extent. It is reported in the *Directions of Agricultural Development in the Region Level: Northern Region*, that the hand-plows equipped with motored scrapers were in use about 320 thousand units in 1990 in the Northern region as a whole. Some 280 thousand units of water pumps and some tractors, harvesters, and powered-sprayers. According to the Directions, the number of the hand-plows in use showed as high rate of increase as 17.4% annually at the end of the 1980s. Then it is expected that more than 700 thousand units of it are in use in 1996 in the Northern region as a whole, and more than 350 thousand unit may be used in the UNT region.

There is a typical example showing the way, means, and the budget allocation of the Thai government to introduce and to promote a certain kind of product to the farmers through the Department of Agricultural Extension. In this case, the flower tree and decoration tree were to be promoted. The title of the Project is Project of Flower Tree and Decoration Tree Village. The village is the word to replace Moo Ban in Thai words, whose meaning is given below. In the explanation of the Promotion Project, it says as follows: As for the Fundamentals, there are four items. 1. growth of income and confirmation of income, 2. decrease in the production loss, 3. convenience of collection of the product for

marketing, and 4. making an important production site for the future. As for Directions, it says that 1. Choose the moo bans and the farmers who are interested in the Specifics of the Project. A moo in Thai generally means a gathering, a set, or a collection. Here the moo is the smallest unit of local administration, often naturally formed, and moo ban is a set of moos forming the next and official unit of administration or a general way of calling a groupings of these moos. 2. Promote groupings of farmers, 3. Support keeping flower trees and decoration trees area 30 to 100 square wa (1 wa is 2 meters) to each, 4. Allocate 5 rai to each moo ban, and 5. Let the farmers repeatedly work on the land for 3 years. As for Methodology, it says that 1. **Limit the variety following the farmers needs**, (Bold type by the author) 2. Manage of Training, 3. Manage to give the variety seeds, and 4. Manage to give the factors of production to the farmers. As for the points to be emphasized there are four points listed as follows. 1. Farmers should be willing to accept promotion and understanding group farming especially in Methodology 1, namely, limiting the variety. 2. Responsible Officers should be nearby and attentive, in the case of management of training, 3. Factors of production must be given as capital asset of the grouping and let the group manage by itself, as for Methodology 4, and 4. Variety of trees should be selected emphasizing on selling in the locality as the basis.

In this explanation of the Project, there is not anything peculiar to it, except the phrase written in a bold type. The Project is very much similar to any one of such an agricultural promotion or development project proliferating in the developing economies today. The only thing specific or characteristic to the Project is it starts with the farmers initiative of selection of the variety to be promoted. Do the farmers really have enough knowledge of the future demand for the decoration trees or flower trees in the domestic market or in the international market? Certainly not. Their knowledge may be as high as the middlemen approaching the farmers to buy their product in order to sell out in the next stage of marketing or to export them. But usually the merchants have better access to the market information than the farmers, and otherwise there is no *raison d'être* for the merchants. Even the large trading house, or Sogo Shosha in case of Japanese companies, can not keep the condition of the market, or can not follow the changes in consumers taste fast enough. The fruit juice made in Thailand are various and every one is tasty, reflecting the affluence in the tropical fruit. At the very beginning,



the Lynchee juice, was of strange taste to an ordinary Japanese consumer. Some fructose derivatives contained in the fruit gives the fruit and its juice a characteristic fragrance. For a Japanese it is exotic, and there are those who dislike them as well as who like them. A large Japanese trading house people were very cautious about importing this juice at the beginning, fearing that for the Japanese it is not familiar or foreign too much. Besides there are a vast variety of juice or fruit available in Japan. It seems it is very difficult to penetrate in the Japanese beverage market at that time. But it was not long after to start importing of them than the Lynchee juice became popular in Japan. Nowadays you can see one can of it shown at an automatic vending machine placed at the train stations compound or at the road corners. Do the large trading houses catch up the market conditions and getting business of it ? No. The import was initiated by a personal import, an individual importer's break through. If the farmers are not better informed than the large trading houses, how can they select the varieties to be promoted ? The government should take more practical roles in the promotion processes of agricultural products.

### **3. Productivity of Agriculture**

The agricultural productivity in Thailand should be interpreted in various terms. Generally it is rather low, especially when compared to that of developed country's. When compared domestically, Thailand has a higher agricultural productivity, when you see it as the land productivity, including climate conditions. But it will be lower when you talk in terms of labor productivity. In fact, the labor productivity has been low for a long time, reflecting the abundant labor in the agriculture. Recently plentiful usage of agricultural inputs leading to higher yield became prevalent also in UNT. Usually fertilizers, insecticides, weed treatment chemicals and new high yielding varieties contributing to such high yields are used, and raising labor productivity.

The UNT has a higher per capita income than the Northern region as a whole. It reflects that UNT contains those Provinces having higher Gross Provincial Product (GPP) such as Chiang Mai or Lamphoon. The figure for the year 1993 showed that the per capita income of the whole Kingdom of Thailand was 53, 357 baht. In the same year, the Northern region (17 Provinces) showed 24, 283 baht, but UNT could enjoy 26,176-

baht. Does this per capita income lower than the national average come out of lower agricultural productivity in UNT or the Northern region ? It seems that it is not the case.

When the agricultural cost of production is compared, the Northern region shows slightly lower cost of production (See *Directions of Agricultural Development, ibid.*, Table 63) than the national average for most of the agricultural crops at a unit of the planted area. When the cost is compared on a unit of production base, the Northern region still shows similarly a little lower cost for a many variety of products. It is safely said that the Northern region shows the land productivity which is close to that of the national level. The factors contributing to the income gap among the regions are not the agricultural productivity, but the income obtained from off-farm activities. It is also observed in Table 65 of *Directions*, which proves the above statement.

#### **4. Inter-Industry Relationships of Agriculture in UNT<sup>7</sup>**

The sector which receives the largest potential increase in the production value by the initial increase of production in agriculture<sup>8</sup> is the Agriculture, especially farming of crops, followed by vegetables and fruits. Other sectors which receive high potential increase effect are, Forestry, Storage, Public Administration, Wholesale and Retail Trade, Education, and so forth. The so-called Backward Linkage Effect<sup>9</sup> and Forward Linkage Effect<sup>10</sup> are given in Table 7. The sectors which receive a large effect for employment increase are, Paddy, Other major crops, Storage, Vegetables and fruits, and Forestry. The sectors such as, Education, and

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7 This part owes to the information in the following unpublished MA thesis. Sombat Singkhraj, "Identification of Key Economic Sectors for Upper-Northern Development : A Regional Input-Output Analysis," a MA Thesis Submitted to Graduate School, Chiang Mai University, October 1995.

8 Here the Agriculture means the cultivation of crops, excluding forestry, fishery, animal husbandry, agricultural services, or simple agricultural processed product. It also should be noted that the inter-industry relationships is based on that of estimated for the whole Kingdom. It seems that the production effect on some sectors are biased in this regard.

9 It is the production increase in the input sectors for the designated sector (in this case, agriculture) after accounting both direct and indirect effect of increase.

10 It is the production increase in the sectors using the product of the designated sector as input after taking both direct and indirect effect into account.

Public administration come in the group receiving the next largest effect of employment increase.<sup>11</sup> Recently more people goes out of agriculture changing their occupations. As far as the state of labor market of the other sectors remains its excess demand conditions at the usual level, then it will be easier for these potential effect for employment increase to become realized.

The financial aspect of the economy in UNT also related to the agricultural sector. The commercial banks increase their deposit after the crops are harvested and sold out to the middlemen trading their products. When it comes near the time of important event of the year, the people withdraw their deposit from the bank. Throughout a year a bank has both timing of deposit shortage (or excess of loan out) and timing of loan shortage (or excess of deposit). This seasonality occurs because that agriculture is the main sector of the economy in the region.

A remarkable characteristics of the inter-industry relationship among the economic sectors in the UNT lies in the following fact. As the report<sup>12</sup> on the tourism industry in the Northern region reveals it, the workers in the tourism industry, especially in the hotel business, are not the migrants from the other regions of the country or the foreign countries. It suggests that the inter-industry relationship among the economic sectors also may concentrates in those activities transacting within the region. Usually the transactions within the region are far more higher in value and keeping a higher weight in input coefficient. Even though, the peculiar traits of the transactions in the Northern region might be more concentrated than a usual case, accounting on the less migration of the workers. If it is the case, then we can safely say that the inter-regional transactions have a lesser importance, and the Northern region, or UNT also on a similar consideration, may have their own unity or solidarity.

## 5. Summary and Conclusion

Agriculture in the UNT region has developed much in the past three decades. Agriculture has kept many roles in the daily life of the people. The share of the agriculture in the GRP or total value added

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11 Sombat Singkharaj, *op.cit.*, Appendix (Ko) Table, p. 109.

12 See Chapter III The Impact of Tourism on Labor Market.

produced has been declining. However still there are families living mainly on agriculture. The life style of the family may have changed, though, placing more emphasis on new type of agricultural activities. One example is a raising of special variety of animals, sold with a high price at the market. But it can not become the main way of income earning. More and more off-farm activity also is prevalent. It makes the family tie of the people to change to become new. This may be a cause which degrade the solidarity or people's unity mentioned above. But up to present moment, it did not occur.

When you consider the rice cultivation of water-field type, the water acts also as a cover preventing the chemical substances under the ground beneath the rice field to have less effect from the sunshine. The sunshine stimulates the chemicals to change into another substance. Often the chemical reactions produce some harmful substances for cultivation. It leads the soil to become less fertile.<sup>13</sup> The other side of the coin of the agriculture is well known and sometimes it is warned that the agriculture means invasion to the earth. If the agriculture is not allowed, then there must be a different way of getting the necessary food for the mankind. The people in UNT have been free from these concerns. But in the future we are not certain.

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13 It is commonly observed especially in the Northeast region of Thailand that this type of chemical procedure, occurring whenever let the sun beams touch the ground, and no shade is made. It makes the land to keep more and more of the Alkhalides, or forcing the land to become a land with lower pH degree to the extent which is not suitable for crops