

CHAPTER 5

PRODUCTION ENVIRONMENT IN THE STUDY SITE

In this chapter, the general information of the study site is presented in order to understand the general profile, economic structure, land utilization, and agricultural background of the study site. In addition, the sample households' characteristics, land ownership, farmer's occupation, and income of farm households are covered.

5.1 General information

5.1.1 General profile of the study site

This study was conducted in Hatay province, located in the Red River Delta. It is bordered with Hanoi capital in the East, Hungyen province in the Southeast, Hanam province in the South, Hoabinh province in the West, and Phutho, Vinhphuc province in the North. Its terrain varies from place to place. It has a total land area of 2,192.9 sp km and a total population of 2,420,936 people with the density of 1,105 people per sp km, in 2000.

Hatay province is located in the monsoon tropical climatic region and characterized by four seasons: spring, summer, autumn, and winter. The average annual temperature was 23.1^oC, 24.1^oC, and 23.6^o C in 1995, 1998, and 2000, respectively. The highest temperature was recorded in July at 28.9^oC, 30.0^oC and

29.6³C for the above years, respectively. The relative humidity was high and did not change so much among months, with average annual humidity of 85%. In addition, the average annual rainfall was found to increase in the recent years at 1,347.0 mm, 1,171.3 mm, and 1,690.6 mm in 1995, 1998, and 2000, respectively. The rainfall was dominant from May to October. An insignificant amount of rainfall was distributed for the rest of the period, from November to April. Every year, storms and typhoons occur often, from July to September, leading the heavy rain and flooding. Annually, there are 20-21 times of northeast monsoon and cold winds, occurring from November to January or February. The weather condition in those times is unfavorable for crop production. Annually, the number of sunshine was 1,299 hours, 1,487 hours and 1,376 hours in 1995, 1998 and 2000, respectively (Hatay Statistical Office, 2001). Overall, crop production in Hatay province gets many advantages in terms of natural characteristic.

5.1.2 Economic structure

As a sub-urban province, Hatay has many advantages in terms of the social-economic development. GDP of all economic sectors has increased by the time. GDP value achieved 603.6 billion VND in 1990 and up to 1,357.2 billion VND in 2000 (Table 5.1).

Table 5.1: Gross domestic product of Hatay province

Year	Total (billion VND)	Agriculture (%)	Industry (%)	Service (%)
1990	603.6	56.76	22.15	21.09
1991	595.8	52.37	22.42	25.21
1992	716.8	54.98	22.20	22.82

1993	787.5	54.16	23.10	22.74
1994	865.1	46.80	26.14	27.06
1995	954.3	48.66	25.51	25.83
1996	1,027.9	46.77	26.52	26.71
1997	1,109.3	43.57	28.20	28.23
1998	1,188.9	43.98	28.21	27.81
1999	1,268.6	43.39	28.84	27.76
2000	1,357.2	43.20	28.95	27.85

Source: Hatay Statistical Office, 2001

Note: Value is at constant price of 1998

Agriculture is the main sector in economic in the period 1990-2000. Annually, the agricultural products from Hatay province are would be supplied to Hanoi of the biggest domestic markets of Vietnam. However, the structure of all sectors has been oriented towards industry and service sectors. This change conforms to the economic orientation of the whole country. The GDP share of agricultural sector has been reduced, from 56.76 percent in 1990 to 43.20 percent in 2000, while GDP share of industrial and service sectors were gradually increased from 22.15 percent and 21.09 percent in 1990 to 28.95 percent and 27.85 percent in 2000, respectively.

Table 5.2: Land use in Hatay province

Land type	1998		1999		2000	
	Area (ha)	%	Area (ha)	%	Area (ha)	%
Total area	219,296	100.00	219,296	100.00	219,160	100.00
1. Agriculture	117,216	53.45	117,135	53.41	118,139	53.90
<i>Annual crop</i>	105,035	-	104,904	-	104,270	-
<i>Perennial crop</i>	2,883	-	3,140	-	3,491	-
<i>Pasture</i>	374	-	450	-	566	-
2. Fishery	5,268	2.40	5,145	2.34	5,260	2.40
3. Forestry	15,332	6.99	15,206	6.93	16,689	7.61
4. Utility land	52,178	23.79	52,704	24.03	52,073	2.37
6. Others	29,302	13.36	29,106	13.27	26,999	12.31
<i>Arable-used agriculture</i>	2,428	-	2,328	-	3,298	-
<i>Arable-used forestry</i>	3,083	-	2,987	-	3,849	-

Source: Hatay Statistical Office, 2001

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The land area is mainly devoted to agriculture. In 2000, the agricultural land area is about 118,139 hectares accounting for 53.9 percent of the total land use (Table 5.2). Agricultural land includes annual-crop land, perennial crop land and pasture land. Of the total agricultural land area, area devoted to annual crop is the largest, approximately 104,270 hectares in 2000. Land area of perennial crop has been gradually expanded and was 3,491 hectares in 2000. Hatay province has topography with combination of hills, mountain and delta zones, thus there is a part of land for

grass which provides the food for dairy cow. The dairy cown breeding has been expanded over the period 1998-2000. Therefore, grassland area also slightly have been larger (566 hectares in 2000).

5.1.4 Agricultural structure

As shown in Table 5.3, cultivation was predominant of agricultural sector and its share in the total value of agricultural production achieved 73.92 %, 60.12,% and 59.55% in 1990, 1995, and 2000, in turn.

Table 5.3: Agricultural structure in Hatay province

Year	Crop		Livestock breeding		Service	
	Value	%	Value	%	Value	%
	(million VND)		(million VND)		(million VND)	
1990	336,159	73.92	118,578	26.08	0.00	0.00
1991	275,595	71.42	110,273	28.58	0.00	0.00
1992	255,195	64.88	138,169	35.12	0.00	0.00
1993	399,685	66.93	197,452	33.07	0.00	0.00
1994	353,731	60.59	214,566	36.75	15,497	2.65
1995	376,699	60.12	236,828	37.80	13,057	2.08
1996	409,296	60.26	255,730	37.65	14,147	2.08
1997	395,340	57.88	273,602	40.06	14,081	2.06
1998	434,170	59.47	281,935	38.62	13,944	1.91
1999	472,393	59.79	303,576	38.42	14,094	1.78
2000	497,042	59.55	322,431	38.63	154,190	1.82

Source: Hatay Statistical Office, 2001

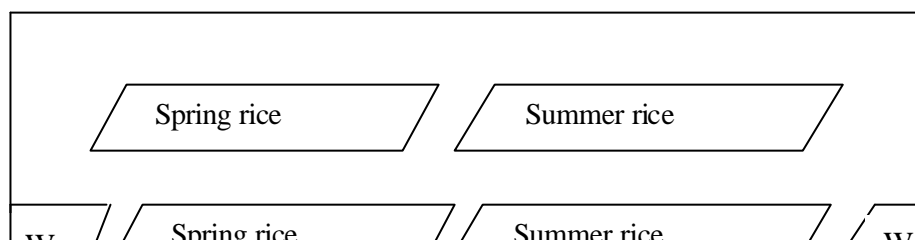
Note: Value is at constant price of 1989

Hatay province enjoys many advantages of sub-urban provinces, where agricultural products are highly demanded by city people. Since, the demand on meat of city consumers has been increasing, the value of animal husbandry sector increased from 26.08% in 1990 to 38.63% in 2000. However, the contribution of agricultural services to the total of agricultural production value decreased from 2.65% in 1994 to 1.82% in 2000.

5.1.5 Cropping pattern and annual sown area

Major cropping pattern of annual crop in the study site are illustrated as follows:

- 1.Spring rice - Summer rice
- 2.Spring rice - Summer rice - Winter crops
- 3.Spring corn - Summer corn
- 4.Cassava
- 5.Sugar cane





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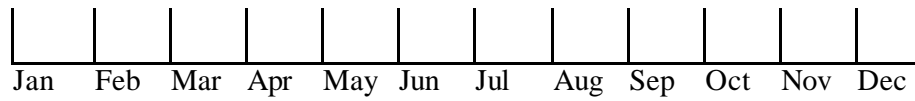


Figure 5.1: Cropping pattern in the study site

Note: W = Winter crops

In the past, the centrally planned production prevailed by using a “top and down” approach, which operated through the cooperative system. This approach had encountered many problems in terms of organizing production and consumption was under the cooperative leaders. The farmers, as cooperative members, did not have the right to make their own decisions about which crops to plant, where and when to sell the products. As with the advent of the new economic policies, farmers are motivated to grow winter crop. A mono-cropping pattern based on two rice crops no longer appropriate for increasing farmer’s income in the densely populated areas of the Red River Delta, leading to diversification of cropping patterns.

Crop diversification is defined as the improvement in present cropping pattern, in which new and valuable crops are introduced. In the spring crop season, seed is sown in December, transplanted in January or February, and harvested in late May or June. The cultivation of summer crop starts with seedbed preparation and sowing in

May to early June. Transplanting is operated in late June or July and harvesting during October to early November. After harvesting of summer crop, lands are available to grow winter crops such as potato, peanut, beans, corn, sweet potatoes, and vegetables. For a long-time, winter crop production in the Red River Delta has been come a strategy for planting higher value crops. The expansion of winter crop production is seen as one of the solutions for increasing farmer's income (Linh, 2001)s. Most of the farmers in Hatay province, who get a long experience in cultivating winter crops, have benefited from planting winter crops, despite the small agricultural land area. According to farmers, the major constraint of winter crop production is the marketing of their products. In addition, on the rice-based fields, the development of winter crops as the source of income must be incorporated within the intensification of rice production. In most cases, the farmers responded that the stability of their rice crop production was the first priority for ensuring household food security.

Getting the natural characteristic of the Red River Delta production, where is the second largest rice area in Vietnam, Hattay province has rice as a dominant crop. Table 5.4 shows that the annual sown area of rice was 79.73, 79.78, and 78.86 percent in 1995, 1998, and 2000, respectively. Corn was the second important crop after rice with the annual sown area of about 8.3, 9.2, and 9.5 percent in the same period, respectively, and the remaining area was devoted to other crops such as cassava, vegetable, bean, peanut, and sugar cane.

Table 5.4: Annual sown area in Hatay province

Crop	1995		1998		2000	
	Area (ha)	%	Area (ha)	%	Area (ha)	%
Rice	168,264	79.73	167,745	79.78	168,810	78.86
Corn	17,545	8.30	19,359	9.20	20,471	9.56
Sweet potato	12,878	6.10	11,744	5.58	12,387	5.78

Cassava	2,828	1.34	2,951	1.40	3,116	1.45
Vegetable	2,316	1.01	1,889	0.90	2,230	1.04
Bean	1,843	0.87	1,750	0.83	2,406	1.12
Peanut	4,493	2.10	4,408	2.10	4,222	1.97
Sugar cane	871	0.40	402	0.18	421	0.19
Total	211,038	100	210,248	100	214,050	100

Source: Hatay Statistical Office, 2001

5.1.6 Rice production system

Generally, rice production system consists of three cropping patterns as shown in Table 5.5. The classification of rice system into these cropping patterns was based on the actual use of rice varieties of farm households in various villages, belonging to Hatay province.

In the spring season, farmers follow three types of cropping pattern: only conventional rice; conventional rice and hybrid rice; and only hybrid rice, whereas in the summer season, farmers follow only conventional rice cropping pattern because of the unfavorable weather condition for hybrid rice production. It was found that growing of conventional rice is the most common of the three patterns.

Table 5.5: Rice system performance system

Rice pattern	Spring season	Summer season	Level
1	Conventional rice	Conventional rice	Most common
2	Conventional & Hybrid rice	Conventional rice	Not very common
3	Hybrid rice	Conventional rice	Least common

Source: Revid from Hatay Statistic Office, 2001

5.2 Information on the sample households

5.2.1 Characteristics of the sample households

On the average, the of farm household had 5 people and the household head was and was about 46 year old. Currently, education in rural area has become one of the national concerns. Although, Hatay province is one of sub-urban province, which has more advantage interm of accessing to education than other remote regions, the average of household head just only obtained 7 years. There was no respondent who was illiterate. The survey shown edthat the proportion of farmers' educational level at the primary school, secondary school, and high school was 25.5, 65.3, and 9.2 percent, respectively.

Table 5.6: Information on the sample households

Criteria	Mean	Min.	Max.	SD
Household size (people)	4.83	3	7	0.97
Age of household head (year)	46.43	27	73	8.98
Edu. level of household head (year)	7.56	3.0	12.0	2.40

Exp. in conventional rice cultivation (year)	6.93	5	8	0.76
Exp. in hybrid rice cultivation (year)	3.81	2	5	0.88

Source: Survey, 2002

Note: Edu (educational) and Exp (experience)

With respect to the experience of rice cultivation of Khang Dan variety (conventional rice) and Bui Tap Son Thanh variety (hybrid rice), farmers in Hatay had as longer experience in conventional rice cultivation (6.9 years) than hybrid rice cultivation (3.8 years). Commonly, local extension workers introduced rice varieties to farmers. Hence, the growing experience of variety was likely affected by the time of transfer new rice varieties.

5.2.2 Land ownership

Land rights are an important issue in developing countries where land is a major asset of farmers and the product of agriculture accounts for a large share of national income. There is a certain amount of consensus among economists that better land rights lead to better outcomes Quy and Iyer, 2002. Since 1986, Vietnam has progressively moved toward a market economy. As far as land rights were concerned, the regulatory environment witnessed two major changes. In 1988, the collective system was abandoned in favor of private ownership. While land still remained the property of the State (Land Law 1993-Article 1), rights to use the land were assigned to individuals over a period of up to fifteen years. However, such rights were not tradable. In 1993, a new land law was enacted in addition to an increased lease term,

land-use rights could now be inherited, transferred, exchanged, leased and mortgaged. Therefore, the law of 1993 has been seen as setting the foundations of a formal market for land. The additional land rights conferred by the 1993 law might induce farmers to undertake more long-term investments on their land.

Table 5.7: Land holding of the sample households

Land holding	Mean	SD	Min.	Max.
Rice land (ha)	0.18	0.04	0.10	0.31
Other annual crop land (ha)	0.09	0.05	0.018	0.25
Total plot of rice land (plot)	3.85	1.07	2.0	6.0
Rice land area per plot (ha/plot)	0.048	0.009	0.03	0.08

Source: Survey, 2002

Hatay province is attributed by the Red River Delta, where the population density is the highest and the agricultural land per household is the lowest among all region of Vietnam. The agricultural has been reduced, because of influence of the urbanization process. It can be seen the comparison of land size among regions was in more detail in Chapter 2. There were no landless respondents, but the average farm size of respondents was very small, which was 0.18 hectares of rice land and 0.09 hectares of other annual-crop land area per household (Table 5.7). As shown in Table 5.8, the proportion of household owning rice land ranging from 3.6 to 5.5 sao was the highest. Moreover, each household owned about 3 to 5 plots of rice land with 0.048 hectares per plot. Owing many plot of rice land with small land area is one of common characteristics of land ownership in the Red River Delta and Hatay province as well. This also reflects the small-scale production in densely populated country like Vietnam. Given the present scenario, farmers need to spend more time on rice production in small-scattered plots than the bigger plots or consolidated land.

Table 5.8: Rice land size distribution of the sampling households

Land area (sao)	Proportion of household (%)
2-3.5	16
3.6-5.5	57
5.6-7.5	24
7.6-9.5	3
Total	100

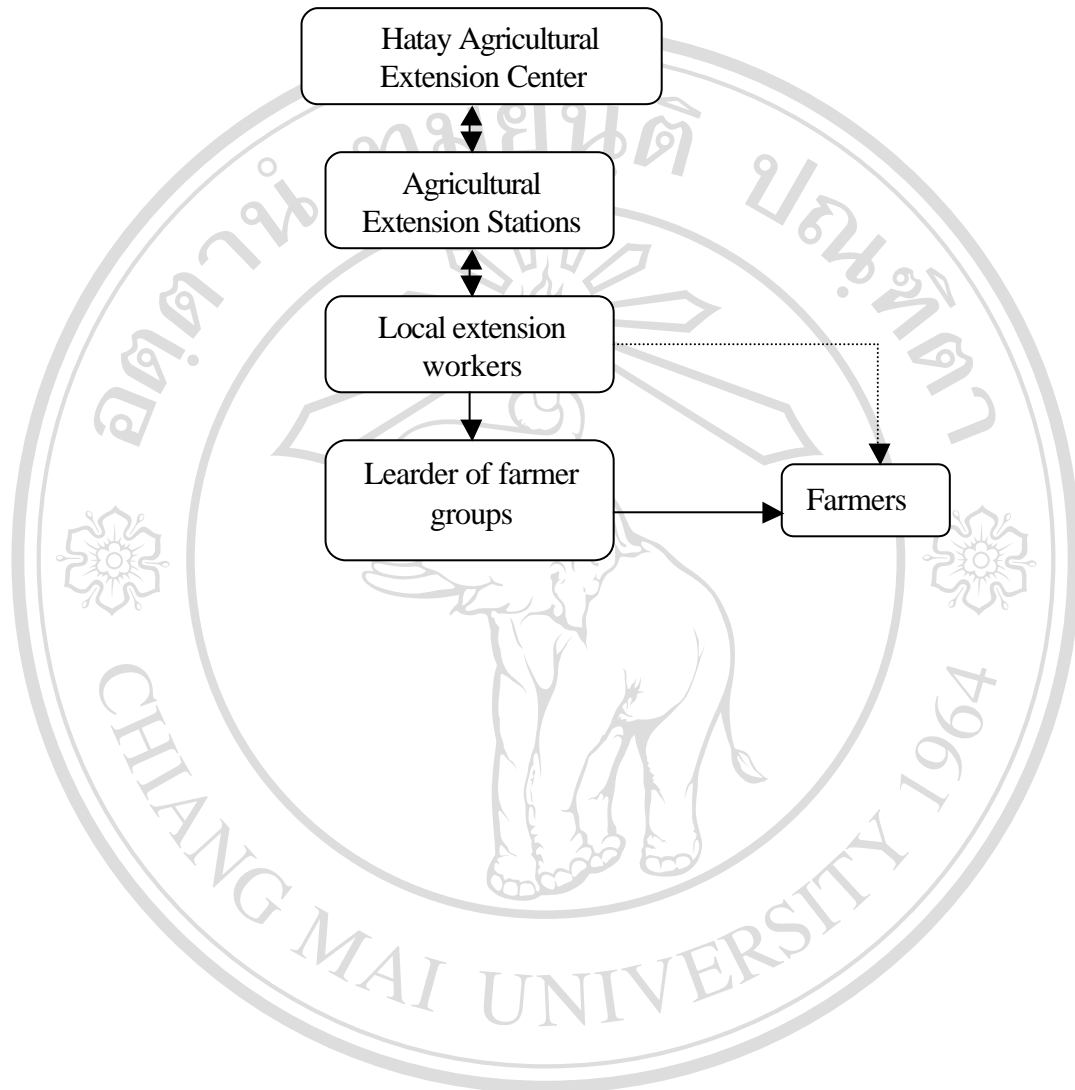
Source: Survey, 2002

Note: 1 sao=360m²

5.2.3 Farmer's access to technical information on rice production

The survey showed that agricultural extension network, local mass media, radio, television, and neighbors were common sources of information for farmers concerning on rice production technology. Of which, extension was the most important source. The extension network in Hatay province have operated by top-down approach to disseminate technique of rice production to farmers. Figure 5.2 describes the hierarchy of extension network in Hatay province.

At provincial level, the Agricultural Extension Center has been established to implement government programs and to administer extension stations at district level. There is an Agricultural Extension Station in each district that maintains contact with the cooperatives and communes. The extension worker is key person in they transfer information. In the study site, the dissemination of technical information of rice production differs from cooperatives to cooperatives and villages to villages. It depended on the management capable of cooperative leaders and village leaders.



Strong ← Medium → Weak

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It was reported that most of the sample farms were directly received the information from leader groups. However, in some villages farms not only got the information from leaders, of groups but also from extension workers, because

annually they organize by themselves the seminar and invite extension workers participate. It was found that the linkage between the leaders group and farmers was medium, because the capability and responsibility of leaders group were not very high due to low incentive and support. The linkage between extension workers and farmers was weak, because of limited funding and low quality of management.

Basing on the survey results, sampling households were evaluated their participation on extension training, their understanding on rice production technique by giving score. The method and result is presented in Chapter

5.2.4 Farmer's occupation and source of income

Major occupations were classified into three categories: crop production; crop production and livestock breeding; and crop production, livestock breeding and off-farm activities.

Table 5.9: Category of occupation of the sample households

Occupation	Proportion (%)
Crop production	10
Crop production & Livestock breeding	25
Crop production, Livestock breeding & Off-farm activities	65

Source: Survey, 2002

Most of the sample household (65 percent) earned livelihood from crop production, livestock breeding and off-farm activities. This indicates one characteristic of Hatay farmers. According to Tran (1997), land area of farm household was very small and dispersed in the Red River Delta. Therefore, the farmers in the region used land intensively. Nevertheless, income generated from crop production was not enough to support their expenditure, thus most of the farm households raise livestock such as: pig, chicken, and duck. Moreover, when opportunities allowed, they became engaged in off-farm jobs. Off-farm activities were quite diverse, including: rice milling, wine making, handicraft, small trading, construction, service. The study site's characteristics were consistent with the above situation.

Table 5.10: Income of the sample households in 2001

Source of income	Unit	Quantity
Household income	'000 VND	9,227
On-farm income	%	67.95
Income from rice	%	38.57
Income from other crops	%	12.90
Income from livestock breeding	%	16.48
Off-farm income	%	32.50

Source: Survey, 2002

It is revealed in Table 5.10, household income consisted of two main components, on-farm income and off-farm income. On-farm income accounted for 67.95 %, of which income from rice was highest. Farmers indicated that their own income were higher as compared with those in the past and have been increasing overtime. Nevertheless, average income of sample household was much lower than this of other households located in hilly district of Hatay province such as Bavi district, where farmers could generated income not only from crop production, off-farm activities but also by also from cow production. They earned about 35,000 thousand VND per year (Loan, 2000). It was threefold time higher in relation to the average income of sample households in the study site.

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