CHAPTER III

CHARACTERISTICS OF THE STUDY AREAS

3.1 Description of the study areas

3.1.1 General characteristics of the RRD

Vietnam is located from 8.30° to 23.22° North and 102.10° to 110° East. It is bounded on the east by the South China Sea, to the north by the Peoples Republic of China, to the west by Laos Peoples Democratic Republic, and to the southwest by Cambodia. Vietnam has a land area of 330,000 km^2; nearly 80% of which is under hill and mountain. Most of the arable agricultural land is located in two large deltas: Red River Delta (16.8% of the total sown food area) and Mekong River Delta (45%) (Charlotte, 1997).

The RRD is a political, economic and cultural center of Vietnam. The natural area of the delta is about 12,500 km^2 accounting for 3.8% of the country's area. Among seven economic regions of Vietnam, the RRD has the smallest area but has second position in terms of population size. Currently, the region is suffering from big population pressures. Population density is nearly 5.6 - fold bigger than the average rate for the country. In some parts, the density has reached over 1,000 persons per km^2. Therefore, the assurance of food security and creation of employment opportunities are always essential issues of the region (Nha, 1998).

The RRD has alluvial soils generated from two important rivers, namely the Red River and Thaibinh River. Nearly 80% of cultivated rice land areas in the region

have access to irrigation systems. The farmers living in the region are said to be better off in terms of income, education, health care facilities and infrastructure than those of other rural zones in North Vietnam. According to current assessment, the RRD in 1997 shared 18,698 billion VND or 18.9% of the country's GDP. In comparison with 1995, its real GDP value had increased by 9.9% in 1997. Due to its contribution to the economy, the RRD was recognized as taking second position among seven economic regions of Vietnam (General Statistical Office. 1999).

Climate of the RRD region is characterized by four seasons, namely spring, summer, autumn, and winter. Average annual rainfall is about 1,400-1,700 mm. The rainfall is the highest during June, July, and August. Average annual air temperature is between 23-25 °c. According to Vang (1998), the climate conditions in Vietnam. particularly in the RRD are suitable for raising cows.

One of the important features of the climate, especially from an agricultural point of view is the fall and the increase in temperatures over the winter and summer months, respectively. From May to September the mean temperature varies from 27 to 29 °c, while it is below 20 °c between December and March, falling to 16°c in January. This feature influenced on structure of cow herd in the region. For example, kinds of cow breed having high percentage of Holstein - Friesian blood (over 75% of Holstein-Friesian blood) had difficulty adapting to the climate.

3.1.2 Some characteristics of study sites

Two provinces were chosen to study, namely Hanoi and Hatay, which are regarded as the main milk production areas. The general features of these provinces are summarized in Table 3.1.

Hanoi is the Capital of Vietnam. It is composed of 7 citadels and 5 suburb districts. Currently, cows are only being raised in 3 districts: Gialam, Donganh. and Thanhtri. Gialam was selected as the study site since it has the largest population of cows in the province. It also represents the general characteristics (weather, topography, infrastructure, etc.) of the province and the region.

Hatay province is located about 15 km from Hanoi capital. The province has topography with a combination of hills, mountain and delta zones. It can be divided into two distinct zones: the western mountainous-hilly zone and the eastern delta zone. Bavi, which is one of four districts located in the western mountainous-hill region, was chosen for the research.

Table 3.1: Some characteristics of the study sites

Items	Unit	Hanoi	Hatay
1. Population density	persons/km^2	2,767.0	1,062.0
2. Natural area	km^2	927.4	2,192.9
3. Agricultural population	'000 person	799.8	1,962.4
4. Agricultural households	'000 h.h	183.8	430.5
5. Agricultural land	ha	40,914.0	117,098.0
Of which: grassland	ha	91.0	270.0
6. Aver. agricultural land per agr. population	m^2	511.6	596.7
7. Populations of cattle*	'000 head	35.5	96.7
Of which: populations of dairy cows	'000 head	1.1	0.6

Source: Hung et al. (1998) and General Statistical Office (1999)

Note: Cattle breeds are classified as beef, dairy cow and dual-purpose.

The population of Hanoi does not differ significantly from that of Hatay (around 2.4 million persons). Due to having the smallest area, population density in Hanoi is very high, over 2,700 persons per km^2. Agriculture is the main sector of

Hatay. About 93% of the total Hatay population are earning from the agricultural sector, while only 31.4% of the total Hanoi population base on agriculture.

As a province in the northern midland, Hatay has over 100,000 hectares of agricultural area, including 270 hectares of grassland. This gives an advantage for livestock development to the province. In 1997 there were 321,300 head of cattle and 3.9 million head of pig raised in the RRD. Of which, number of cattle and pigs reared in Hatay were the highest, covering 30.1% of the total cattle herd and 19.2% of the total pig herd of the region (General Statistical Office. 1999). However, the populations of dairy cows were still very small, about 500 head lower than that of Hanoi.

3.2 Background on the sampled households

3.2.1 Age

About 95% of the total household heads fell into one of four age groups between 24 and 60 years. None of them were below 24 years old. For both locations, common age groups of respondents were 31- 40 and 41-50 years old. Notably, 60% of the household heads in Hatay belonged to the 31-40 year old group.

Table 3.2: Age distribution of the household heads

(Unit: %)

Location	Age groups (years)				
	24-30	31-40	41-50	51-60	>60
Hanoi	12	26	38	20	4
Hatay	5	60	25	5	5

Source: Survey, 1999

As shown in Table 3.2, the higher percentage of young household heads was found in Hatay. For example, about 38% of the total household heads in Hanoi were at the groups of 24-40 years old, while this number was 65% with respect to Hatay.

3.2.2 Education level

Currently, education in rural areas has become one of the national concerns. To eliminate illiteracy, the national school system has expanded in sub-districts in most zones of Vietnam, from kindergarten to secondary school. The survey results showed that there was a difference in educational level of household heads between locations (Table 3.3). In general, the respondents in Hanoi had higher levels of education than those in Hatay. The number of household heads having education in high school were 32.5% in Hatay, whereas this indicator reached to 46% in the case of Hanoi farmers. It was also found that there was no respondent who was illiterate. Moreover, over 90% of the total interviewees had at least secondary education.

Table 3.3: Education level of the respondents

(Unit: %)

Criteria	Hanoi	Hatay
Primary school	6.0	7.5
Secondary school	44.0	57.5
High school	46.0	32.5
College and university	4.0	2.5

Source: Survey, 1999

The educational level of household heads rearing cows was found to be much higher than that of other types of farmers. For example, according to survey results of Nguyen (1998), most of the household heads producing paddy in the RRD had

secondary education. The percentages of the respondents obtaining primary, secondary, and high school educations were 24.3%, 65.0% and 10.5%, respectively. This can largely be explained by characteristics of the occupation. Differing from others, raising cows requires high level of investment in both capital and management. Therefore, most farmers who entered dairy farming belonged to high (or medium) income groups and/or had the higher level of education.

3.2.3 Dairy farm experience

Dairy cows have been raised in the RRD for 40 years. In the first period of its development process, cows were reared in concentration in state-own enterprises. After Vietnam changed to a market-oriented economy (1986), cow raising was expanded to farm households. This explains why a few household heads have over ten years of dairying experience (Table 3.4).

Table 3.4: Dairy farming experience of the respondents

(Unit: %)

Location	Dairy experience groups (years)			
	2-4	5-7	8-10	>10
Hanoi	34.0	46.0	18.0	2.0
Hatay	42.5	37.5	20.0	0.0
Average	37.8	42.2	18.9	1.1

Source: Survey, 1999

Most of the farmers in the region have reared cows for less than 7 years. On the average, about 37.8% and 42.2% of the total household heads in the region had undergone 2-4 years and 5-7 years of raising cows, respectively. The increase in demand for raw milk caused by formation of milk processing factories as well as the

improvement of the milk collection network in recent years may be the main reasons to justify the situation.

With respect to locations, Hanoi farmers have practiced raising cows for a longer time than Hatay farmers. About 66% of the total household heads in Hanoi had over 5 years of dairy experience, whereas this figure was 57.5% in the case of Hatay. Easier access to market obtained by the Hanoi farmers over five years ago may be the main explanation. Having the highest population density of Vietnam, Hanoi capital annually absorbs large amount of raw milk in order to server local consumption. Therefore, shortly after the economy was changed to a market-oriented one, Hanoi farmers reared dairy cows to meet this demand. Meantime, in Hatay there were only household heads who used to be workers of Bavi ranch, raising cow in the same period.

3.2.4 Household size and land holding

A common household in Hanoi and Hatay consisted of two or three generations with one to three children. The average household size of 4.5 persons was calculated for Hanoi, and 4.2 people for Hatay (Table 3.5). In which, half of the members in the family were main labourers (the labourers are of working age).

The land utilized by farm households can be classified into some types. Homestead is the area used for construction of house, animal shed, pond, homegarden and so on. Paddy land is the lowland allocated to cultivate rice. In addition, alluvial land located outside of the Red River's dyke was provided to Hanoi households. Commonly, the alluvial land is used for growing corn, industrial plants like soybean,

peanut, etc., and fodder. Instead of alluvial land, Hatay farmers use hilly land on which cassava, fodder or fruit trees are usually grown.

Table 3.5: Household size and average land holding

Items	Unit	Hanoi		Hatay	
		Abs. amount	%	Abs. amount	%
1. Household size	persons	4.5		4.2	
2. Main labourers	persons	2.7	60.0	2.2	52.4
3. Total land	sao	11.6	100.0	28.1	100.0
3.1 Homestead land	sao	0.5	4.3	4.0	14.2
3.2 Paddy land	sao	4.2	36.2	6.4	22.8
3.3 Alluvial land	sao	6.9	59.5	-	-
- Land used for growing grass	*sao*	*1.9*	*27.5*	-	-
3.4 Hilly land	sao	-	-	14.7	52.3
- Land used for growing grass	*sao*	-	-	*5.7*	*38.8*
3.5 Planted forest land	sao	-	-	3.0	10.7

Note: 1 sao = 360 m^2, Abs. = Absolute

Source: Survey, 1999

In Vietnam, land was assigned to farmers for long-term use. The area allocated to each household differs from commune to commune, depending largely on the total area and the total people that the communes have. Bavi (Hatay) is a hilly zone, so average used land per household in the zone was much higher than that of Hanoi. Each household in Hatay hold 28.1 sao, while average land per Hanoi household was only 11.6 sao. This was the main reason behind the lower area allocated for growing fodder in Hanoi (1.9 sao per household). It was also found that the homestead area of Hatay households was eight times greater than that of Hanoi households. This indicated an obstacle in the process of cow herd development for Hanoi. The limitation of land availability could bring about several constraints and problems, i.e. availability of

fodder as well as air and water pollution if other measures like zoning and proper utilization of dairy farm waste, etc., are not appropriately implemented.

3.2.5 Farm equipment

The results of the survey showed that crops and livestock were two largely interdependent subsystems of the household farming system. Thus, most of the farms in the study areas possessed some kind of equipment used for both cultivating and rearing. Details of major investment per household are illustrated in Table 3.6.

Table 3.6: Major farm equipment of a household

Items	Unit	Hanoi		Hatay	
		Amount	Value ('000 VND)	Amount	Value ('000 VND)
1. Buffalo	head	0.14	234.6	0.53	797.5
2. Thresher	unit	0.24	84.2	0.58	271.3
3. Pump	unit	1.02	316.8	1.12	466.3
4. Shed	m^2	20.74	3,892.0	24.40	3,863.0

Source: Survey, 1999

The investment on farm equipment varied by location. The survey showed that Hatay farmers owned more means of production than Hanoi farmers, especially the means used for cultivating like buffalo (providing draft power) and thresher. On the average, each household in Hatay had 0.53 head and 0.58 unit of buffalo and thresher, respectively, while those numbers were 0.14 head and 0.24 unit for Hanoi farms. This may be explained by the better services of land preparation and threshing in Hanoi zone. Most of those activities were done by machines, which belonged to cooperatives or private individuals. The Hanoi farmers did not feel necessary to possess them. As for a pump, the tool has value of less than 500,000 VND but it plays an important role

in the production process. It is used not only for sanitizing the sheds and dairy cows, but also for irrigating the crops. In the survey area, 100% of the farmers had at least one pump. Because most of the interviewed farmers applied some form of confinement, the area allocated for rearing cows was quite small. Shed area ranged from 20 to 25 m^2 per household.

3.2.6 Structure of household income

Household income consisted of both on-farm and off-farm incomes (Table 3.7). However, the off-farm activities contributed a very small part to the total household income, i.e. it shared only 1.6% and 4.5% of the total income in Hatay and Hanoi, respectively. Despite being a hilly region, the average income of Hatay farmers did not differ from that of Hanoi farmers. This was largely because more land was used by the households in Hatay.

Table 3.7: Sources of the household income

(Unit: '000 VND)

Source of income	Hanoi		Hatay	
	Value	Percent	Value	Percent
Total hh income	35,572.4	100.0	35,822.9	100.0
1. Crops cultivation	7,883.8	22.2	10,655.5	29.7
2. Animal production	26,078.6	73.3	24,407.4	68.1
- Cow production	*23,977.9*	*91.9*	*21,343.2*	*87.4*
3. Off-farm activities	1,610.0	4.5	560.0	1.6
4. Planted forest	-	-	200.0	0.6

Note: Exchange rate of VND per dollar in 1998 was 12,500 VND

Source: Survey, 1999

Livestock raising was the main source of farm income, accounting for 73.3% and 68.1% of household income in Hanoi and Hatay, respectively. In Hanoi, more than 91% of the value of the livestock sector came from rearing cows. The same tendency was found in Hatay. Apart from livestock raising, 100% of the interviewed dairy farmers also had crop cultivation activities. Those crops included paddy, corn, cassava, grass, and soybean, which generated from 22% to 30% of the total household income.

3.3 Farming system of the study areas

The farming system in the survey region was characterized by the integration of crops, cultivated grass, livestock, trees, and off-farm activities. Differing from others, grass production was also considered to be an important activity in the system. A farm household maneuvers those farming components with his/her management skill in order to extract output that can be generated from components. The interrelationship among them is expressed in Figure 3.1.

In the interactive relationship, the crop and grass components provided concentrates and green feed to livestock, which in turn provided cash, manure and draft power. Unlike other systems, cow raising dominated the agricultural activities, and contributed the major part of cash income to the farmers. Crop production was considered as a main source of input for feeding and home consumption. Manure, which is a by-product of the livestock sector, was the main fertilizer source utilized for crop and fodder production. The survey indicated that the farmers in the study area mainly applied manure for cultivating crops and grass, chemical fertilizer being used only as a complement to manure.

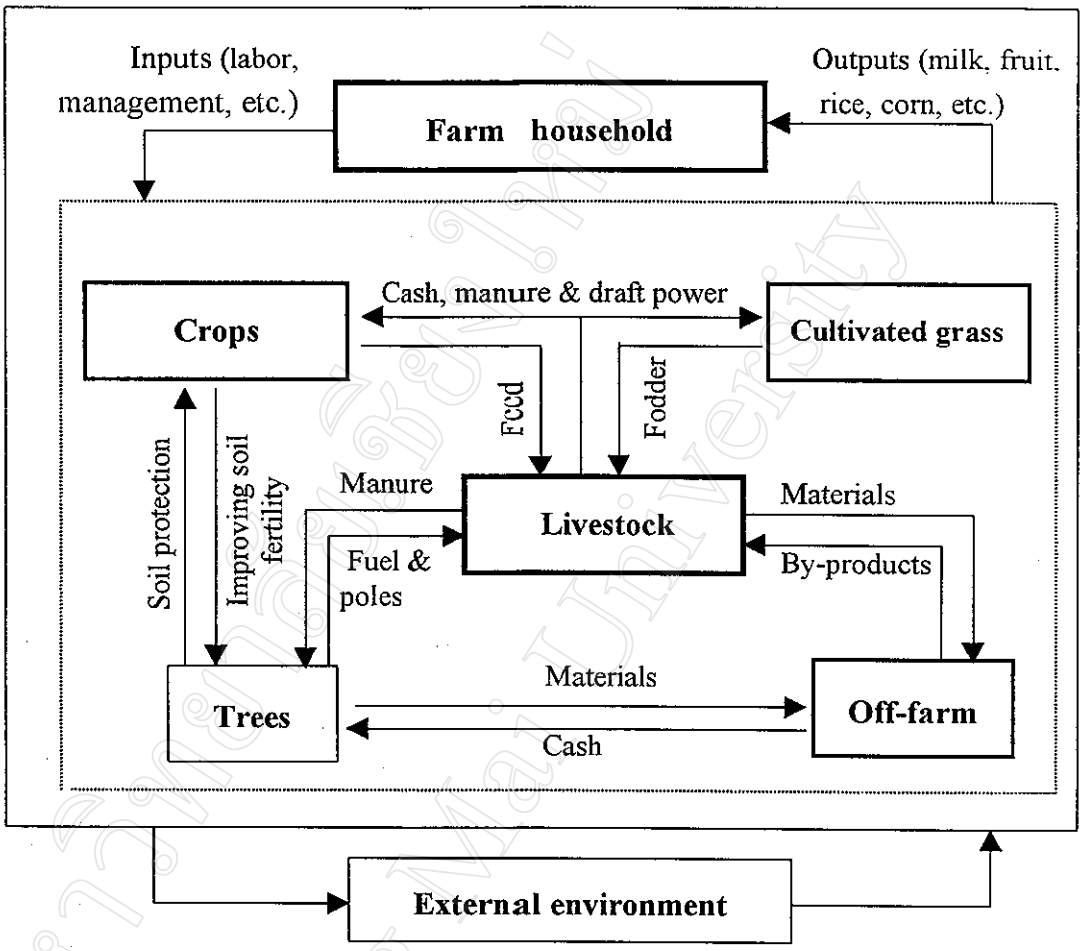

Figure 3.1: Farming system of the study areas

Besides the relationship to crop and grass production, the livestock component was also linked with the trees sub-system. The trees component (including planted forest and fruit trees) showed influence on livestock production by providing wood and poles, and in return got manure. In addition, trees which usually were located on higher slopes, could act as safeguard to cropland against soil loss through erosion and landslide. The crops also gave benefits to the tree component. The farm households in the study area grew baby corn, and soybean between young tree rows. These crops provided control of weeds and improvement of soil fertility, which are important

factors to increase survival rate and growth of young trees in the first few years after planting.

Off-farm activities were also a component of the system having a relationship to the other components. Some by-products of off-farm activities such as wine making, rice processing, etc. were utilized for feeding cows and pigs. Off-farm activities partly supported cash for the others, and in return they received materials. Some outputs of other components such as raw milk, fruit, rice, and timber were necessary materials used in a small family business (i.e. service, processing, carpentry, etc).

3.3.1 Crop and grass components

Cropping components in the study were found to be subsistence oriented. Almost all output of crops was used for feeding and home consumption. Therefore, food crops such as rice, corn, cassava, and fodder were main plants in the cropping systems.

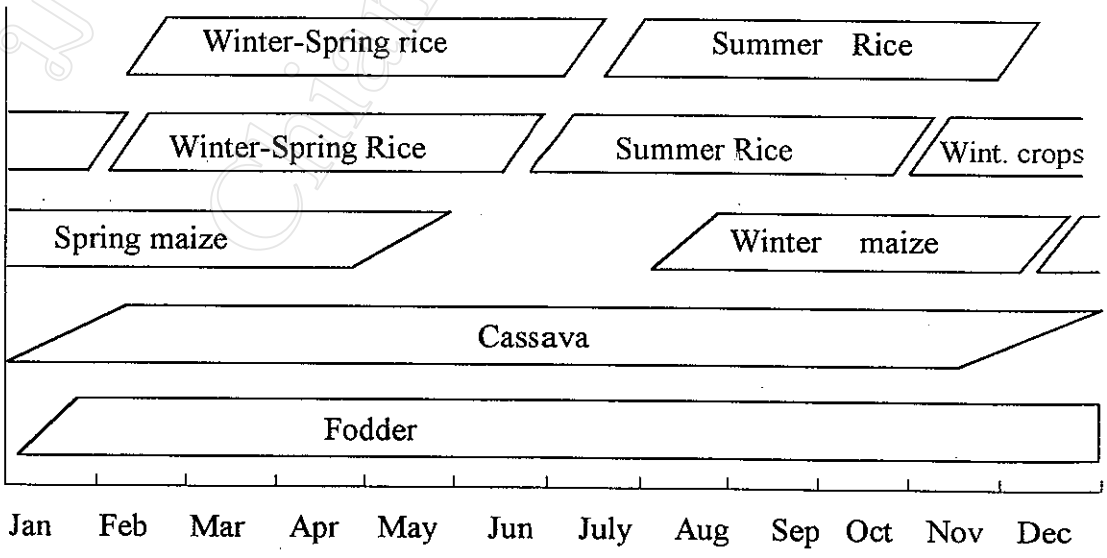

Figure 3.2: Cropping pattern in the study areas

Rice was grown in an irrigated area. The cropping patterns were very simple, mainly there were two rice seasons, namely winter-spring rice and summer rice (Figure 3.2). Some households used short-period rice varieties so that they could cultivate winter crops between the two rice seasons. After harvesting early summer rice, from October to January, land was available for the farmers to grow winter crops like vegetable, soybean, etc. Yield of rice was usually different between the two seasons, normally in winter-spring season yield was obtained higher than that of summer season (Phat, 1990). The same trend was found in the study areas (Table 3.8). The survey results showed that Hanoi farmers achieved rice yield of 175 kg/sao and 154 kg/sao in winter-spring season and summer season respectively, which was higher than Hatay farmers obtained. This could be explained by better production conditions in Hanoi. Being hilly zone, cultivated land in Hatay is usually damaged from flood in summer and drought in winter, so crop yield is unstable. Moreover, poorer fertility of soil may also be one of reasons justifying the situation.

Table 3.8: Average area, yield and production of major crops

Crops	Hanoi				Hatay			
	% of tot.hh	Area* (sao)	Yield (kg/sao)	Output* (kg/hh)	% of tot.hh	Area (sao)	Yield (kg/sao)	Output* (kg/hh)
Spring rice	98.0	4.2	174.9	742.9	75.0	5.2	152.8	793.1
Summer rice	98.0	4.2	154.2	654.9	70.0	5.8	129.1	749.6
Winter corn	100.0	4.9	117.2	571.2	22.5	0.9	88.7	82.8
Spring corn	100.0	4.9	131.3	640.1	37.5	1.5	97.9	146.6
Cassava	-	-	-	-	95.0	8.5	369.9	3,135.9
Fodder	52.0	1.9	6,588.7	12,782	97.5	5.7	6,022	34,308

Source: Survey, 1999

Note: "% of tot.hh" denotes percentage of the total interviewed household.

* Area and output were the means based on the total interviewed households

In comparison to the national level, crop yields in the study areas were higher. For example, the 1998 average rice yield of the nation was 140.4 kg/sao (3.9 tons/ha) (General Statistical Office, 1999), which was 11.8 kg/sao (0.3 tons/ha) lower than that of the study area. Abundant sources of manure resulting from cow raising largely explain the result. Because of available manure, the farmers rearing cows usually applied higher amounts of manure than other farmers did. Moreover, many households in the study area utilized manure as a main source of fertilizer, so soil fertility was maintained and improved. Those factors contributed to an increase in the crop yield. This was consistent with research results of Baldock and Murgrave (1980). They reported that crop yields obtained after applying manure could be comparable to or greater than those obtained by using inorganic fertilizer.

In addition to rice, corn was a common crop in the Hanoi cropping sub-system. All Hanoi sample households cultivated maize, and the average area under maize per household accounted for a greater area than that of rice. Maize cultivation plays an important role in milk production because it provides not only concentrate but also green feed. The farmers usually plant them with high density, then they gradually prune young corn for feeding. Maize was popularly practiced twice a year, namely spring maize and winter maize. Hanoi farmers have grown corn on alluvial land which is located outside of the Red River' dyke. From June to August, the alluvial area was usually unavailable for cultivating due to flood. Average yield of corn varied by both season and location. Since corn cultivation in Hatay was done under poorer environmental conditions (slope soil, lack of irrigation, etc.), the production per unit area seemed relatively low. Hatay farmers only obtained 88.7 kg of corn per sao in spring season, which was about 42.6 kg lower than that of Hanoi farmers. However, average yield of corn in the study area was still higher when compared to the national

level. Based on statistical yearbook 1998, average corn yield of the country was 89.2 kg/sao (2.5 tons/ha), which was 30.1 kg/sao lower than that of the region studied.

Instead of corn, cassava was a common crop in Hatay with an average yield of 370 kg/sao. Despite being a low-value crop, cassava was still a popular crop in the zone because it does not require a highly fertile soil, and its product is used not only for animal feed but also for food. Most of the Hatay farmers planted cassava in a relatively large area (about 8.5 sao per household). On the average, the annual output of cassava per interviewed household was over 3,400 kg.

As mentioned above, cow raising was the main source of household income contributing around 60% of the total farm income. Moreover, it also generated cash flow regularly for dairy farmers. Thus, fodder production that was derived from the demand of the cow sector became an important activity in the system. About 97% of the total households in Hatay grew grass with an average area of 5.7 sao per household. The survey revealed that almost all Hatay farmers had enough cultivated fodder to feed their cows. However, only 52% of the total sample households in Hanoi allocated their land for growing fodder. Grass output cultivated by one Hanoi household was only enough to feed her/his cows in four months of the year. The rest came from other activities such as collecting and buying. The survey showed that there were two main reasons behind the situation of few Hanoi farmers growing fodder.

First, due to limited land some farm households wanted to fully utilize their land for growing maize. In order to have green feed everyday, they utilized their idle labourers to cut grass and collect fodder outside the village such as along roadsides, public areas, etc.

Second, the task of fodder zoning has not been conducted well by local leaders. Crop fields and fodder blocks were interspersed haphazardly in the villages. The fodder blocks were alleged to harbor crop pests that attacked the crops in the adjacent fields. This often raised conflicts due to heavier sabotage by rats and insects between neighbors having their crop and fodder fields located adjacently. The situation made dairy farmers hesitate to cultivate grass.

The popular type of fodder planted by farmers was elephant grass (*Penisetum purpureum*). One planting cycle can be harvested for two years. On average, dairy farmers harvested grass between 8 and 10 times in a year with aggregate production of 6,022 - 6,558 kg/sao per year. After cutting, they use urea or manure to fertilize the field.

3.3.2 Livestock component

Livestock (particularly cows and pigs) were the main source of cash for all of the interviewed households. The average number of pigs per household was 1.1 head and 1.6 head in Hanoi and Hatay, respectively. In general, the growth of pig production was not high since the farmers only attempted to make use of home left - over food to feed them. About 82.5% of sample households in Hatay owned pigs, while that number was lower in Hanoi (Table 3.9).

Poultry were also common species in the region. They were usually kept in the backyard of the farmers' homestead as scavengers. Due to having the advantage of a larger homestead area, the number of households owning poultry in Hatay was much higher than that of Hanoi. Only 22% of the total sample households in Hanoi raised poultry, while that figure was 66% in the case of Hatay. Poultry productions were used for meat and eggs, which largely served for home consumption. Thus, its contribution

to farm income was very small, about 0.1% and 1% of the total household income in Hanoi and Hatay, respectively.

Table 3.9: Dominant livestock types in the study area

Livestock species	Hanoi		Hatay	
	% of hh owning	Contribution to the total hh income (%)	% of h.h owning	Contribution to the total hh income (%)
1. Pig	54.0	5.8	82.5	7.5
2. Cow	100.0	67.4	100.0	59.6
3. Poultry	22.0	0.1	65.0	1.0

Source: Survey, 1999

With the purpose of investigating the milk production system in the RRD, all interviewed households owned at least one cow. Most of them raised dairy cows in a confinement system, which was located in the same area as their houses. Milk production in the region was said to be intensive. The average milk yield obtained was about 3,000 kg per year and varied by kinds of breed. More details of milk production will be discussed in the next chapter.

3.3.3 Planted forestry and fruit trees

Forest production in the study area was small. The amount marketed was not ascertained. *Acacia auriculiformis, Acacia mangium* and *Eucalyptus cammaldulensis* are forestry trees that were popularly planted in the region, mainly under the PAM program supported by a non-government organization. The planted forests served a number of purposes including the protection of the catchment from erosion, the provision of fuel, the source of timber for construction, etc. It also contributed to cash income for farm households in the long term.

Major fruit trees in the region were banana, papaya, pineapple, longan, mango, and litchi. Most of them were grown on the homestead garden in a small piece of land. There were only 3.3 percent of the total sample households having over 1 sao of fruit trees. Except for some traditional fruit species, such as banana, papaya, and pineapple, fruit cultivation was found concentrated in the large farms. Although fruit trees did not generate high income, they played an important role in supplementing nutrition for the farmers in the study area.

3.3.4 Off-farm activities

According to Tran (1997), the amount of farmland allocated to a farm household is extremely small and dispersed in the RRD. Therefore, the farmers in the region use land intensively. But incomes from crops are not enough to support their living, so most of the farmers needed to raise livestock. Moreover, when opportunities allowed, they became engaged in off-farm jobs.

Off-farm activities in the study area were rather diverse. They were rice milling, wine making, handicraft, small trading, labors and services. The survey revealed that there were 23.3% of the total sample households having extra income from off-farm activities.

3.3.5 Socioeconomic environment

Socioeconomic factors, such as government policies, institutional organizations, infrastructure networks, etc., are important for the smooth and viable existence of the farming system. As mentioned, cow raising requires a high level of investment in both capital and management. Hence, accessibility to credit, and to

technological information is significant for enhancing the production. This section gives a brief description of the issues.

3.3.5.1 Access to credit

Most farmers in the study area needed to borrow money to operate their farms because they could not afford the high capital investment during establishment of the farms. The survey showed that farmers could borrow money from two available credit sources, namely formal and informal sources. In which, formal sources included agricultural banks, womens associations, and milk processing factories that provided larger loans (Tables 3.10 and 3.11). There were 32.1% and 47.2% of the total borrowers in Hanoi and Hatay, respectively borrowing money from agricultural banks at an interest rate of 1.2% per month. Some other state organizations like womens associations, centers of extension lend to farmers at the lower rate of interest (0.6% - 0.8% per month). However, it was still difficult for the farmers to obtain credit from those organizations due to complicated lending procedures, inadequate assets to meet collateral requirement, etc.

Informal sources such as village lenders, relatives, friends, etc. were also important for farmers, because they could get credit easier than that from the formal sources. Those individuals do not require complicated procedures to lend money. The survey revealed that most of the farmers who borrowed money from their relatives paid no or low interest rate, i.e. 0% or 1% per month. About 14.3% of the total borrowers in Hanoi fell under this group. Note that 10.7% and 5.5% of the total borrowers in Hanoi and Hatay, respectively did not have opportunities to get access to formal sources. They had to borrow money from village lenders at high rate of interest (i.e. 2% per month).

Table 3.10: Farmers' access to credit in Hanoi

Sources	% of total borrowers	Amount of borrowed (million VND)*	Interest rate (%/month)	Duration (month)
1. Friends	3.6	3.0	0.0	No limited
2. Village lenders	10.7	6.0	2.0	No limited
3. Relatives	14.3	7.0		
- Relatives 1	*76.7*	*9.0*	*0.4*	*24.0*
- Relatives 2	*23.3*	*5.0*	*0.0*	*No limited*
4. Womens associations	35.7	5.0	0.6	24.0
5. Agricultural banks	32.1	6.3	1.2	20.5
7. Other	3.6	10.0	0.2	No limited

Source: Survey, 1999

Table 3.11: Farmers' access to credit in Hatay

Sources	% of total borrower	Amount of borrowed (million VND)*	Aver. interest rate (%/month)	Duration (month)
1. Village lenders	5.5	3.0	1.7	18.0
2. Relatives	2.8	4.0	1.0	No limited
3. Milk factories	41.7	5.0	0.0	12.0
4. Agricultural banks	47.2	6.6	1.2	28.4
5. Other	2.8	5.0	0.8	24.0

Source: Survey, 1999

Note: Average amount of borrowed = (total loan / number of borrowers in each category)

Hatay farmers were said to have easier access to credit than Hanoi farmers. If a Hatay farmer wants to buy a dairy cow to raise, he/she can borrow 5 million VND/cow from the milk processing factory at 0% interest rate (in the first year). The repayment will be deducted every month from the quantity of raw milk that farmers

have to sell to the factory. However, the farmers still have difficulty buying and raising cows, because the amount of money borrowed from the factory was not high enough to buy a cow (they need about 10 million VND to buy 1 cow). Moreover, they became dependent on the factory.

3.3.5.2 Access to information

The survey showed that co-farmers (i.e. neighbors, friends, etc), agricultural extension officials, and the mass media were common sources of information for farmers concerning production technology. Farmers in the study areas had chances to get access to new technologies through participation in training courses held by extension centers. However, the training courses were not organized regularly, so main information sources for farmers were still their co-farmers (Tables 3.12 and 3.13)

Table 3.12: Ranking sources of technological information by Hanoi farmers

Sources	Percentage of farmers responses with priorities			Total score
	1st	2nd	3rd	
Co-farmers	58	40	2	128
Extension officials	32	36	24	96
Mass media	10	24	48	63
Other	0	0	26	13

Source: Survey, 1999

Note: First to third under percentage of farmers indicates farmers rank to respective sources.

To calculate total score, first was accorded 3 score, and third equals 1 score.

Table 3.13: Ranking sources of technological information by Hatay farmers

Sources	Percentage of farmers response with priorities			Total score
	1st	2nd	3rd	
Co-farmers	77.5	20.0	2.5	110
Extension officials	15.0	47.5	27.5	67
Mass media	7.5	27.5	57.5	54
Other	0	5.0	12.5	9

Source: Survey, 1999

Note: First to third under percentage of farmers indicates farmers rank to respective sources.

To calculate total score, first was accorded 3 score and third equals 1 score.