

## **CHAPTER III**

### **RICE PRODUCTION ENVIRONMENT IN THE MEKONG DELTA**

The study area covered 22 villages from 6 subdistricts in 4 provinces of the Mekong Delta region, the country's rice basket. These provinces are Angiang, Dongthap, Haugiang and Tiengiang. All these provinces are located along the Tien and Hau rivers. The national road network in the region is not well developed, but river transportation is quite convenient. The purpose of this chapter is to describe the production environment, socio-economic conditions as well as support systems for rice farming. The information obtained from sample villages are pooled to describe the selected subdistricts and to represent the Mekong Delta. A total of 172 observations are included in the study.

#### **3.1 General Socio-economic Conditions**

##### **3.1.1 Demographic Characteristics**

The population size varied from 5,600 persons in Nhimy to 31,897 persons in Dongphuoc subdistrict. The percentage of female in the population is a little higher than that of male. More than 50% of the population in the study areas are female. The average number of persons per household was around 6 to 7 while the average labor force was about 3.5 persons (Table 3).

##### **3.1.2 Farming Experience**

In the study areas, the farmers were experienced in rice cultivation for an average of 26.5 years. However, years in production experience of the sample farms were not similar across areas as well as groups of farmers. Vinhmy farmers appeared to have the lowest mean level of overall farming experience. Years in rice farming was found significantly different ( $p < 0.05$ ) between group of farmers (Table 4). Farmers with small farm size were experienced in rice farming about 4 years less than farmers with large farm size. This is because most of the small farmers are new in the rice-production industry, they belong to the new generation, or tenants in the past who have just received some lands to cultivate following land reform policy.

Table 3. General Socio-economic Information of Study Area

Items	Unit	Vinh My	Long Dien B	Tan Phu Trung	Thanh Xuan	Dong Phuoc	Nhi My	All area
(i)								
Population	Persons	14,869	18,991	15,046	21,839	31,897	5,600	-
Female	Persons	7,790	10,113	7,975	12,000	16,397	3,959	-
Farm households	No. HH	2,022	2,754	2,252	2,909	4,800	1,275	-
(ii)								
No. of farms	Farm	27	28	29	29	29	30	172
Farm size	Acre	9.4	7.9	12.4	8.9	9.0	7.2	9.1
No. of labors	Person	3.3	3.7	2.8	3.7	3.7	3.6	3.5
Experience	Year	18.8	22.9	28.9	29.2	30.3	28.2	26.5
Education	Grade	5.6	4.3	6.4	6.3	5.3	7.8	6.0
Land ownership	%	100	100	100	100	100	100	100

Source: (i) Subdistrict Statistical Units

(ii) Survey

### 3.1.3 Education Level

Education in rural areas is one of the national concern at present. To

eliminate illiteracy, national school systems have expanded to subdistricts in all areas of the delta, from kindergarten to secondary school. The average level of education of farm labors in households was rather high. Most of the sample farmers finished primary school. This might have contributed to the farmer's ability to manage and allocate resources, and to increasing rice yield. There was significant difference ( $p < 0.1$ ) in the level of education between group of farmers. Large farmers attained higher level of education. This may be due to financial difficulty of small farmers in affording further education.

Table 4: General Characteristics of Rice Farming by Farm Size

Items	Units	Small farm	Large farm	MD <sup>a</sup>	t-Ratio
No. of farms	Farm	93.0	79.0		
Farm size	Acre	5.2	13.1	7.9	13.35***
Number of labors	Person	3.3	3.7	0.4	-1.85**
Experience	Year	24.7	28.6	3.9	-1.85**
Education	Grade	5.8	6.2	0.4	-1.42*
Land ownership	%	100.0	100.0		
% MV adoption	%	100.0	100.0		
% Tractor adoption	%	46.2	49.4		
% Thresher adoption	%	100.0	100.0		
% Direct seeding	%	85.1	89.3		
% Non-tillage	%	24.7	34.2		

\*\*\* : Significant at 1 per cent level

\*\* : Significant at 5 per cent level

\* : Significant at 10 per cent level

<sup>a</sup> MD : Mean difference

Source: Survey

### 3.1.4 Land Ownership

Land use ownership in agricultural production is considered as the most important factor which influenced the rapid increase in Vietnam rice production. All of the sample farmers were assigned long term, inheritable leases on their cultivated land. No landless farmer was found within the sample subdistricts. Average size of owned land per farm varies across areas and groups of farmers. The average farm size is highest in Tanphutrung (12.4 acres), a sulphate acid soil area, and lowest in Nhimy (7.2 acres per farm), a fertile soil area. Significant ( $p < 0.01$ ) difference was observed in farm size owned by small and large farmer groups. The average farm size owned by small farmers (5.2 acres) is less than half of that by large farmers (13.1 acres).

### 3.1.5 Farm Equipment and Assets

Farm equipment and assets of sample farmers were rather poor. Most of the farmers owned only sprayers. For areas where farmers have to pump water from laterals or canals such as in Tanphutrung and Nhimy, most of them bought water pumps for their own use. Not more than 2 percent of sample farmers owned tractor and threshing machine (Table 5). Farm equipment was similar for both groups of farms. Sprayer was the common tool owned by most of the farmers regardless farm size.

Table 5. Farm Equipments Owned by Sample Farmers (Units)

Area, farm size	4-wheel tractor	2-wheel tractor	Sprayer	Irrigation pump	Threshing machine
Vinh My	0	1	17	1	0
Long Dien B	0	0	23	5	0
Tan Phu Trung	0	2	27	23	1
Thanh Xuan	0	0	28	16	0
Dong Phuoc	0	0	26	2	0
Nhi My	0	0	28	24	1
Small farm	0	1	75	34	1
large farm	0	2	74	37	1
Total	0	3	149	71	2
(% of Household)	0	1.77	86.3	40.5	1.2

Source: Survey

### 3.2 Production Environment

#### 3.2.1 Arable and Paddy Land Distribution in Sample Farms

Arable land available per capita in sample areas is rather low, with an average of 1000 m<sup>2</sup> per person (Table 6). This figure is the lowest in Longdien B, 641 m<sup>2</sup> per person. Most of the arable land, however, is devoted to grow two paddy crops a year. More than 80% of the arable land are paddy fields in Vinhmy, Longdien B, Thanhxuan, and Dongphuoc.

Table 6: General Agro-economic Information of Rice Farming by Location

Items		Vinh My	Long Dien B	Tan Phu Trung	Thanh Xuan	Dong Phuoc	Nhi My	All area
(i)								
Total area	(ha)	2,858	1,693	2,600	2,701	5,447	769	-
Arable land	(ha)	1,774	1,218	1,678	1,838	3,216	686	-
Paddy (2 seasons)	(ha)	1,726	1,020	1,500	1,150	3,029	256	-
Perennial crops	(ha)	8.3	31	334	450	678	424	-
(ii)								
% MV adoption	%	100	100	100	100	100	100	100
% Tractor adoption	%	30	14	18	93	28	100	47
% Thresher adoption	%	100	100	100	100	100	100	100
% Direct seeding	%	100	96	100	93	100	37	87
% Non-tillage	%	0	69	54	0	52	0	29

Source: (i) Subdistrict Statistical Units  
(ii) Survey

### 3.2.2 Cropping Systems

Two rice crops, Winter-Spring rice (WS rice) and Summer-Autumn rice (SA rice), were the dominant cropping pattern in all study areas. WS rice is cultivated at the beginning of the dry season while SA rice is grown soon after monsoon rainfall of the year. In either season, farmers adopted modern rice varieties which are resistant to Brown planthopper (BPH) and grown in short duration only.

WS rice- Soybean, Mungbean- SA rice was yet another cropping pattern found in the region where water can be controlled well, and those farmers who possess good endowment of labor or capital, especially in Longdien B and Tanphutrung many farmers practice this cropping pattern.

WS rice- SA corn pattern was also practiced by few of the sample farmers. These farmers do not cultivate SA rice in wet season since it is not as profitable as other crops. Alternative crops to SA rice could be corn, sweet potatoes, or legume (Figure 4).

Beside rice-based cropping patterns, sugarcane and fruit trees of many kinds were also grown by most sample farmers in their own home gardens or "high" land. In the villages of Thanhxuan and Dongphuoc, more than one-third of sample farmers converted part of their paddy fields to orange cultivation. The reason for this change in cropping pattern was due to the high return of orange crops.

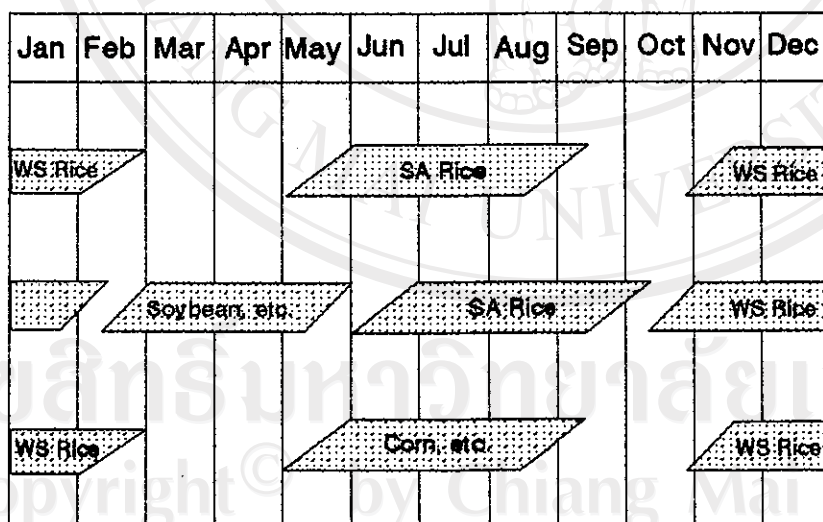


Figure 4: Rice-based Cropping Patterns in the Study Area

### **3.2.3 Production Management**

#### **3.2.3.1 Land Preparation**

Land preparation practice for paddy cultivation in the dry season is much dependent on the prevailing conditions of soil and water. Within the study areas, land preparation for WS rice took place in late November, or early December some days before sowing. The requirement of power for land preparation was not high in this season since most of the fields have just been deposited with alluvial from flooding water in preceding months, and the soil is still moist. Many farmers do away with the ploughing operation by going straight to harrowing. Depending on the soil condition, farmers only harrow and puddle once or twice at most. Harrowing was done by either 2-wheel tractor or bullock, or combination of both. Non-tillage technique to overcome acidity was also common in this growing season provided that the fields were almost free from weed. About 29 per cent of sample farmers do not spend money for land preparation by tractor or bullock except a small amount for labor in preparing bulks surrounding fields and clearing some weeds. The low cost of land preparation is one of the advantages of rice production in this season in comparison with the wet season and other regions of the country.

#### **3.2.3.2 Crop Establishment**

Crop establishment can be done by transplanting or direct seeding method. In the Mekong Delta there has been a rapid shift from transplanting



to direct seeding (Xuan, 1991). Nearly 90 per cent of farmers cultivate rice by the method of direct sowing rice in puddle soil. This practice saved a large amount of labor in field works such as preparing and caring for the nursery bed, pulling and transplanting the seedlings, and requires only 1–2 mandays per hectare in 1992 dry season. All of the sample farmers used seeds of high-yield varieties to grow in the dry season. The seeds were sprouted for at least 72 hours, then broadcasted evenly in the prepared field in which water was drawn out a few hours before. Sowed field was kept free of standing water for 6–8 days so that the seeds were easy in taking root to the soil. Then, water was pumped into the field to a depth of about 3–5cm. Later, water depth was controlled according to the rice height. However, 7–10cm depth of water was considered good for rice growth and development. By appropriate water management, sample farmers could get high germination percentage, good growth, and weed reduction.

### **3.2.3.3 Nutrient Management**

Nutrient management in paddy fields is generally related to soil characteristics. In the Mekong Delta, around 40 and 30 percent of the land comprise acid-sulphate soils of various degrees and alluvial soils, respectively (UNDP 1990). Soils in the study areas mostly belong to the above soil types, hence, nutrient management is somehow specific. Most of the sample farmers follow fertilizer recommendations from agricultural information sources, especially the time interval of fertilization. In acidic alluvial soils (e.g. in Vinhmy and Longdien B), nitrogen were often divided into 3 or 4 doses, and applied at 10–12, 23–25, 45, and 60 days after sowing.

In acid sulphate soils ( e.g. in Tanphutrung), a large amount of phosphorous fertilizers, and ploughing after harvesting SA rice were popularly practiced. Of the required nutrient elements, nitrogen was used with the largest quantity, followed by phosphate and potassium. Organic fertilizers were mainly ash from rice straw burnt in the field.

#### 3.2.3.4 Pest Management

Loss caused by insects and other pests during growing seasons are remarkable. Integrated pest management on paddy field was one of the major tasks of agricultural offices in some study areas as Vinhmy and Tanphutrung. In such areas, farmers along with agricultural officers visited rice fields often during growing season. They made diagnosis and forecasts of insect density or disease symptoms so that suitable control measures could be done. In areas where technical supports were not found, farmers controlled pests according to their own knowledge or learning from neighbors.

Insect infestation was one of the major management problems limiting high yield of rice. According to farmer reports in panel discussion, there were more than 15 species of insects present in the rice fields and these damaged the rice crops during the 1992 dry season in the study areas. The most destructive pests were stem bores, plant hoppers, rice bugs, rice leaf folders, cut worms and army worms. In Tanphutrung, Brown planthopper was reported to be the most dangerous pest and caused remarkable damages to WS rice.

At present, aside from using high yielding varieties resistant to Brown planthopper or some other target insects and diseases, the application of pesticides appeared to be the only practical method to reduce the pest population within a short time. This integration of insecticide control and resistant varieties seemed to be the best possibility for controlling rice pest by sample farmers. Common pesticides are reported in appendix table A5.

Weeds on the rice fields were controlled by both physical and chemical methods. Physical methods include manual, mechanical, cultural and ecological means through land preparation, flooding, or hand weeding. In direct seeding fields, weed control by chemicals were becoming widespread due to the availability of low cost but effective chemicals. Two types of herbicide applications were observed: Pre-emergence and post-emergence. 2,4D, NC310, Soffit were common herbicides used at most in the study areas.

#### **3.2.3.5 Water Management**

The main source of water supply for expansion of WS rice in the Mekong Delta is a network of rivers, canals and laterals from the Mekong river passing through Vietnam. In the study areas, water were taken into the fields by different ways. In many places, water can be taken in or out of the field by daily tide regime. Whereas, other places needed power to pump water. In such areas, irrigation stations operated by electricity or diesel were set up to serve the farmers. The station management was either by local or authorized persons.

Irrigation fee was collected evenly for those who have the same water utilization. If water could not reach the farmers' field from laterals by opening water gates, and the farmers had to get water pumped during the second time to their fields, then irrigation fee will be reduced at a certain amount to cover the cost of the second pump. Arguments in the management of irrigation station and fee was observed in a number of sample farmers, particularly, those farmers in Vinhmy.

#### **3.2.3.6 Harvesting and Post-Harvest Operations**

About 110 days after sowing was harvest time for WS rice. However, given the sunny weather and no time restriction for growing the next crop, farmers in the region do not hurry in harvesting their products so that the rice crop had time to ripen fully. Most of the fields were harvested in March. Cutting rice and mounting sheaves of grain were done by human labor. On the other hand, threshing was done by threshing machines transported to harvesting fields, and 100 percent of the farmers adapted this technique. Grains after threshing were then put in bags and carried home by boat or bullock carriages for further drying before selling or storage.

#### **3.2.4 Farmers' Concerns in Rice Production**

Mekong Delta of Vietnam is usually mentioned as the "rice bowl" of the country, and rice production in this area hold commercial characteristics from the early days. Moreover, since years in the late 18th century, besides favorable biophysical environment, applications of innovations in agricultural

cultivation resulted in high productivity. At present, rice is still a crop adhering to cultural, economic, social activities of people who live in this delta (Tran, 1991).

In production aspect, the technological component was the most important factor considered by the sample farmers. Table 7 shows that, in the whole, more than 84 percent of farmers said that their foremost concern in producing rice was how to get the high yield. According to farmers' opinion, low yield means low income and they can not pay for the cost of living. Economic components such as market, rice price and capital received less concern from farmers.

Table 7. Farmers' Concerns in Rice Production at Present Time

Concerns	Percentage of farmers responding (%)						
	Vinh My	Long Dien B	Tan Phu Trung	Thanh Xuan	Dong Phuoc	Nhi My	All Area
Market	0.0	7.1	0.0	3.4	0.0	0.0	1.8
Policy	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rice price	18.5	0.0	6.9	0.0	0.0	0.0	4.2
Input price	7.4	3.6	3.5	0.0	0.0	0.0	2.4
Capital	22.2	7.1	10.3	0.0	0.0	3.3	7.1
Technology	51.9	82.1	79.3	96.6	100.0	96.7	84.4

Source: Survey

### 3.3 Marketing Environment

#### 3.3.1 Proximity and Accessibility to Market

The six sample subdistricts are not equal in proximity and

accessibility to provincial and central markets<sup>3</sup>. Nhimy subdistrict is located nearby the national road No.4 which is the main road connecting provinces of the delta. It is about 35 km and 90 km away from the provincial and Hochiminh city central markets, respectively, and has the most advantages in both road and river transportation (Table 8). On the other hand, Dongphuoc and Tanphutrung are in the opposite situation. Though not far from the provincial market, road transportation in these subdistricts is the worst among areas.

Table 8. Proximity and Accessibility to Market of the Study Area

Province	District	Subdistrict	Proximity to central market	Accessibility & road condition
Angiang	Chaudoc	Vinhmy	>230km	Yes; Rather good
	Chomoi	Longdien B	>180km	Yes; Rather good
Dongthap	Chauthanh	Tanphutrung	>150km	Yes; Very poor
Haugiang	Chauthanh	Thanhxuan	>170km	Yes; Poor
	Chauthanh	Dongphuoc	>170km	Yes; Poor
Tiengiang	Cailay	Nhimy	<100km	Yes; Very good

Source: survey

Transport of rice from the study areas, except Nhimy subdistrict, to Hochiminh city market by truck often takes time due to ferry-boat

<sup>3</sup> Hochiminh city market is the central market in Southern provinces of Vietnam

congestion at Tien and Hau rivers. River transportation is much better and convenient. Thus, rivers and canals play an important role in transporting inputs, agricultural products, etc., in and out of the study areas.

### 3.3.2 Input Market

Agricultural policy reforms in the last few years provided good environment for marketing inputs for rice production. Pesticides and fertilizers, the two main inputs for rice production were quite readily available in all villages. Farmers could buy them whenever they want to use at private or state shops. These shops were supplied by Agricultural Service Companies at the district or provincial level. Due to the availability of inputs in the market and quality control of Agricultural Service Companies, low quality or counterfeit inputs were not big problems as they were in the past few years. However, some unregistered agricultural chemicals were also present in the markets of all study areas, especially, those imported from China. Banks for Agricultural Development at the local level also provided loans in the form of fertilizers instead of cash to farmers. But this kind of arrangement was not highly appreciated since farmers could not bargain for lower prices.

The availability of inputs in the market brings about the ease in accessing inputs. Table 9 shows that the average distance farmers bought inputs range from 0.75 to 3.4 km away from their farms. Even, in remote villages shops selling inputs were also in service, hence, low cost for transporting inputs was observed. The average cost of transportation per kg

was estimated at 17.06 VN dong in the 1992 dry season. Much transport was still made by boat or ferry. Around 65 percent of sample farmers used boat to transport inputs to their farms (Table 10).

Table 9. General Information on Input Market

Area, farm size	Fertilizer VN dong /kg NPK	Pesticide VN dong /kg a.i.	Wage VN dong /manday	Average dist. to input mar. (meter)	Average Cost of transport- ation (VN dong /Kg)
By area					
Vinh My	4,186b*	97,444a	13,110a	2,420	22.04
Long Dien B	4,221b	88,710b	11,500bc	0,755	11.36
Tan P. Trung	4,437b	93,010b	12,460abc	3,369	15.17
Thanh Xuan	4,862a	108,700a	13,660a	3,141	23.28
Dong Phuoc	4,728a	88,740b	12,730ab	2,200	18.28
Nhi My	4,268b	81,050b	11,170c	1,232	12.17
By farm size					
Small farm	4,453	90,260	12,380	1,870	16.10
Large farm	4,455	95,600	12,480	2,558	18.02
All farms	4,454	92,850	12,430	2,186	17.06

\* Figures within a column followed by at least one same letter are not significantly different at 1 per cent level.

Source: Survey

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Table 10. Means of Input Transportation in The Study Area

Means of transportation	Percentage of farmers involved (%)						
	Vinh My	Long Dien B	Tan Phu Trung	Thanh Xuan	Dong Phuoc	Nhi My	All Area
Carts, carriage	40.7	82.1	0.0	3.5	0.0	60.0	31.1
Boat	48.1	7.2	100.0	93.0	100.0	40.0	64.7
Shoulder poles	11.1	10.7	0.0	3.5	0.0	0.0	4.2

Source: Survey

The farm gate prices of inputs faced by sample farmers were different across areas and farm sizes. Among input prices, the price of fertilizers were almost similar among areas. Farmers in the two subdistricts of Haugiang province paid the highest prices which were significantly different at 0.01 level with those in the other four study subdistricts. 65.5 to 75.9 per cent of Dongphuoc and Thanhxuan farmers stated that the price of fertilizer was high. Pesticide prices ranged from 81,050 VN dong to 108,700 VN dong per kilogram of pesticide active ingredient. Farmers in Vinhmy and Thanhxuan subdistricts got the highest pesticide prices. This may be due to the proximity and poor road transportation of these areas to provincial and Hochiminh central market. Significant ( $p < 0.05$ ) difference in pesticide price was observed between groups of farmers. Perhaps this maybe attributed to the different kinds of pesticides used. In the case of labor, there was an excess in the labor force and farmers can easily procure laborers. The average wage was 12,430 VN dong per day, and the wage was not significantly different between groups of farmers.

With the current input prices, 94 percent of sample farmers said that the labor wage was also reasonable. In response to the current fertilizer and pesticide prices, 65 percent of the farmers stated that fertilizer price was high while 57 percent of them said that the price of pesticide was reasonable (Table 11). For the cost of land preparation by tractor or bullock, most of sample farmers were pleased with the prevailing cost per unit of area.

Table 11. Farmers' Evaluation on Prices of Input and Tractor/Bullock Cost

Scale of evaluation	Percentage of farmers responding (%)						
	Vinh My	Long Dien B	Tan Phu Trung	Thanh Xuan	Dong Phuoc	Nhi My	All area
<b>Fertilizers</b>							
High	44.4	35.7	34.5	75.9	65.5	58.7	52.1
Fair	44.4	46.4	62.1	24.1	34.5	43.3	42.5
Low	11.1	17.9	3.5	0.0	0.0	0.0	5.6
<b>Pesticides</b>							
High	18.5	53.6	31.0	58.6	62.1	23.3	41.2
Fair	77.8	48.4	69.0	37.9	37.9	76.7	57.6
Low	3.7	0.0	0.0	3.5	0.0	0.0	1.2
<b>Labor</b>							
High	0.0	3.6	13.8	0.0	0.0	0.0	2.9
Fair	81.5	98.4	86.2	100.0	100.0	100.0	94.0
Low	18.5	0.0	0.0	0.0	0.0	0.0	3.1
<b>Tractor/bullock</b>							
High	7.4	14.3	13.8	27.6	10.3	0.0	12.2
Fair	92.6	85.7	86.2	72.4	89.7	100.0	87.8
Low	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: Survey

### 3.3.3 Rice Marketing

#### 3.3.3.1 Marketing Practices

Privatization of output markets provide farm households the right to own all products generated by them and to sell at any price and any place. Over 95 percent of farmers sold rice at farm gate, therefore, they did not incur any marketing cost. The buyers, most of whom are in private business, paid cash directly to farmers. An average of 26 per cent of the farmers sold products right after harvesting, and 51% sold rice when they need money, particularly, for returning debts to money lenders at the end of growing season. Therefore, it can be inferred that more than 70 percent of sample farmers sold their products soon after harvest time (Table 12).

Table 12. Marketing Practices of Sample Farmers on Selling Rice

Marketing practices	Percentage of farmers responding (%)						
	Vinh My	Long Dien B	Tan Phu Trung	Thanh Xuan	Dong Phuoc	Nhi My	All area
Before harvest	7.4	3.6	0.0	0.0	3.5	0.0	2.4
When necessary	25.9	46.4	58.6	58.6	86.2	33.3	51.5
Right after harvest	29.6	28.6	24.1	34.5	10.3	33.3	26.7
When high price	37.0	21.4	17.2	6.9	0.0	33.3	19.3

Source: Survey

#### 3.3.3.2 Price Determination

At present the government makes no interventions in controlling rice

price, but let the free market adjust itself. The current rice price at farm gate was estimated at 963 VN dong per kilogram. Investigation of factors affecting current rice price, reveal that huge quantity of rice at harvest season and market prices were the main factors that determined the rice price. Surprisingly, rice quality and the middle man were not important in setting price in the study areas (Table 13).

Table 13. Farmers' Opinion of Factors Affecting Rice Price

Factors	Percentage of farmers responding (%)						
	Vinh My	Long Dien B	Tan Phu Trung	Thanh Xuan	Dong Phuoc	Nhi My	All area
Quantity supplied	14.8	64.3	69.0	41.4	31.0	23.3	40.6
Quality	0.0	7.1	3.5	0.0	0.0	16.7	4.5
Transportation	3.7	0.0	0.0	0.0	0.0	30.0	5.6
Market price	40.7	17.9	24.1	34.5	55.2	30.0	33.7
Middle man	22.2	3.6	3.5	6.9	3.5	0.0	6.6
Others	18.5	7.1	0.0	17.2	10.3	0.0	8.9

Source: Survey

With the current rice price, 59 to more than 96 percent of the farmers felt that the price they received was cheaper than what they expected at the beginning of growing season (Table 14). Particularly, in Tanphutrung and Thanhxuan more than 95% of sample farmers complained that the rice price was cheap.

Table 14. Farmers' Evaluation on Current Rice Prices

Levels of evaluation	Percentage of farmers responding (%)						
	Vinh My	Long Dien B	Tan Phu Trung	Thanh Xuan	Dong Phuoc	Nhi My	All area
High	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rather high	3.7	0.0	0.0	0.0	0.0	0.0	0.6
Fair	14.8	10.7	3.4	3.4	20.7	30.0	13.9
Cheap	59.3	89.3	96.6	96.6	79.3	70.0	81.8
Rather cheap	22.2	0.0	0.0	0.0	0.0	0.0	3.7

Source: Survey

In responding to the question of what were the basis to evaluate the current rice price whether it is low or high, more than 40 to 83 percent of farmers said that they based it on input/output price ratio (Table 15). The rice price was relative low in comparison with the prices of inputs.

Table 15. Farmers' Basis for Estimation of Expected Rice Price

Basis	Percentage of farmers responding (%)						
	Vinh My	Long Dien B	Tan Phu Trung	Thanh Xuan	Dong Phuoc	Nhi My	All Area
Only thinking	18.5	17.9	13.8	6.9	20.7	10.0	14.6
Input/out.price ratio	40.7	60.7	75.9	75.9	55.2	83.3	65.3
Fixed prices	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Past trend	7.4	0.0	0.0	0.0	0.0	0.0	1.2
Others	33.3	21.4	10.3	17.2	24.1	6.7	18.9

Source: Survey

### 3.3.3.3 Seasonal Price Variation

The seasonal pattern described by the farmers was rather similar. However, data on this were not adequately available in all areas. The succeeding discussions were based on data collected from two districts of Angiang province.

Figure 5 shows that the lowest and highest prices are in April and December, respectively. In February, farmers started harvesting WS rice and lasted until March. As mention before, this season usually produces high yield, thus, a large amount of rice came into markets. This situation coupled by a large proportion of farmers selling their products right after harvest made the rice price in April the lowest. At the beginning of SA rice season in May, price climbed up and reached the first peak of the year in July. When SA rice was harvested in the last week of July and August, price declined. However, because most farmers usually store their products for consumption and low quantity came into markets, the rice price did not drop as much as the previous season. About one month after harvest season, price went up again and reached the highest peak in December when the rice volume sold in markets was very small. In January, farmers harvested traditional rice crop in many places in the Mekong Delta. These places are adjacent to the study areas. Therefore, the rice price in the study areas was influenced and began to drop, and continued to decline thereafter when sample farmers harvested WS rice in February.

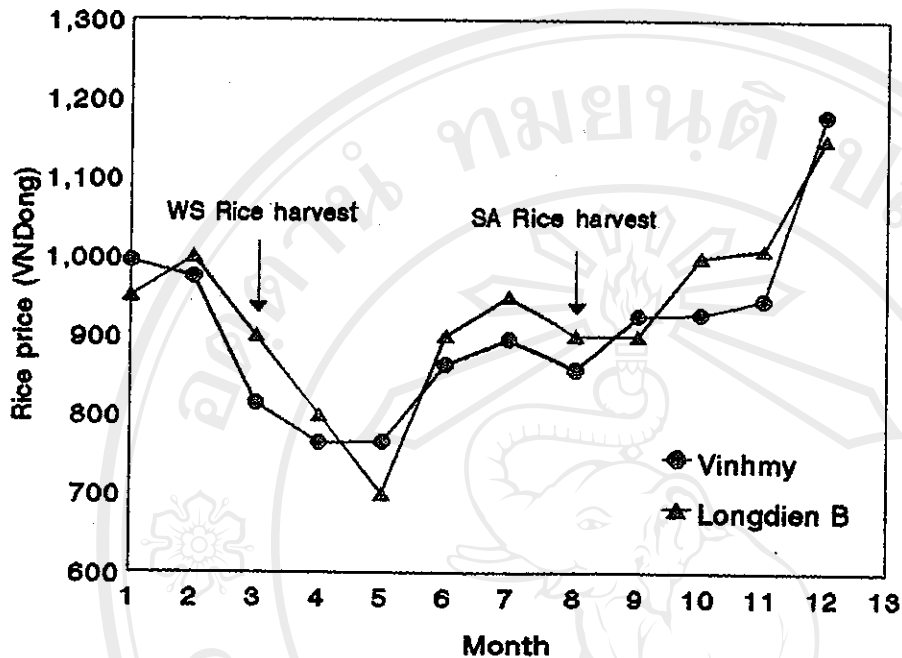


Figure 5: Seasonal Fluctuation of Rice Price in 1991

#### 3.3.3.4 Price Difference among Locations and Farm Sizes

Farmers in the six study areas were faced with specific rice prices. Statistical test shows that the rice price was significantly different between study areas. Nhimy farmers received the highest price (1,184 VN dong/kg) while the lowest price (856.3VN dong) was obtained by Vinhmy farmers (Table 16). The lowest price was received by Vinhmy farmers because this subdistrict is located far away from provincial market and Hochiminh central market.

Table 16. Rice Price at Farm Gate Received by Farmers in the Dry Season

	Vinh My	Long Dien B	Tan Phu Trung	Thanh Xuan	Dong Phuoc	Nhi My	All area
Small farms	828.1d*	877.9cd	947.5bc	910.0bc	970.0b	1.183a	962.4
Large farms	897.3b	931.8b	923.9b	962.9b	936.1b	1.188a	963.7
All farms	856.3c	899.1bc	932.1b	935.5b	953.6b	1.184a	963.0

\* Figures within a category followed by at least one same letter are not significant at 1 per cent level

Source: Survey

No significant difference in the price of rice was found between groups of farmers. The prices received by small and large farmers were 962.4 and 963.7 VN dong respectively. However, small and large farmers in locations also faced different prices. Both small and large farmers in Nhimy subdistrict obtained the highest prices. The difference in prices received by large farmers in all areas, except Nhimy, was not significant. In contrast, the prices received by small farmers differed across areas. This maybe due to less bargaining power of the small farmers.

### 3.4 Agricultural Supporting Factors

#### 3.4.1 Credit

Rural credits are provided by both formal and informal sources. The major source of formal credit was the Bank for Agricultural Development at the district level. The bank usually provides two types of loans to farmers.



The interest charged for the short term loan lasting for 4 months ranged from 3.3 to 10 per cent per month. It was the most popular loan type. Another type is that part or all of the loan was in the form of chemical fertilizers and also lasted 4 months with the same interest. The amount a farmer could borrow depended on the capacity of the bank and farm size. The larger the farm size the greater the amount of money could be borrowed from the bank. In Vinhmy and Longdien B farmers were able to borrow 100,000 VN dong per acre while in other places the amount of money lent was set arbitrarily by the bank. The average loan per acres are presented in Table 17. In two sub-districts of Angiang province most sample farmers borrowed from the bank and the average indebtedness per acre were 70,000 and 74,830 VN dong, respectively. Data from the study also showed that the average amount of money borrowed per acre were 53,200 and 30,400 VN dong for small farms and large farms, respectively. These amounts were significantly different at 1 per cent level.

Table 17 : Indebtedness of Sample Farmers in 1992 Dry Season

Type of borrower	Percentage of farmers indebted (%)						
	Vinh My	Long Dien B	Tan Phu Trung	Thanh Xuan	Dong Phuoc	Nhi My	All Area
Non-borrower	22.2	32.1	58.6	62.1	82.8	83.3	56.9
Borrower	77.8	67.9	41.4	37.9	17.2	16.7	43.1
Of informal market	3.7	7.2	17.2	10.3	13.7	0.0	9.9
Average loan/ acre (VN dong)	70,000	74,830	32,790	42,350	9,080	22,890	42,730

Source: Survey

At present, farmers in the study areas are still at the mercy of private money lenders. For those farmers who had no access to credit institutions, informal credit market are usually provided by merchants and relatives. Farmers reported that they have to pay interest of 10% to 20% per month. In Tanphutrung and Dongphuoc about 17% and 13% of farmers committed to informal market.

Merchants or traders lent money with high interest rate, at least 10% a month. Some of them lent money in terms of rice quantity equivalence with "no interest". The arrangement for this kind of loan is as follows. For example, if farmers borrow an amount of money equivalent to 100 kilograms of rice, they have to return the same amount of rice, not money, to the lenders at harvest time. Providing this type of credit service to farmers will assure the merchants or traders of a marketing tie up with farmers. Borrowing money from relatives with interest free was also present but not popular.

The interest charged by the banks was appreciated by most farmers. However, the duration of loan was so short that farmers had to sell their products at the end of the growing season to return money to the bank. This partly explains why a large proportion of farmers sold rice right after harvest. Unless farmers return the money on the due date, they can not borrow in the next growing season. This may imply that the term was too short to help improve farmers' income since it restricts opportunities for farmers to store and sell rice when the price is high.

In the future, credit requirement for farm investment would be high in Thanhxuan and Dongphuoc. 40% to 60% of farmers in these areas need money to convert part of their paddy fields to orange orchard. Approximately, 33 percent of sample farmers will use credit in paddy production (Table 18).

Table 18. Requirement of Credit for Future Investment on Farm

Use of credit	Percentage of farmers responding (%)						
	Vinh My	Long Dien B	Tan Phu Trung	Thanh Xuan	Dong Phuoc	Nhi My	All area
No required	33.3	42.9	17.2	6.9	10.3	36.7	24.6
Paddy production	33.3	35.7	31.0	20.7	44.8	30.0	32.6
Animal husbandry	29.6	10.7	17.2	13.8	0.0	20.0	15.2
Soil improvement	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Others (mainly for fruit trees)	3.7	10.7	34.5	58.6	44.8	13.3	27.6

Source: Survey

### 3.4.2 Technology Diffusion Institutions

Technology transfer from research centers to farmers were handled by researchers from agricultural related institutions and extension officers from agriculture offices of different levels. Agricultural extension in Angiang province was not only highly appreciated by farmers in the sample villages but also served as a good model for other provinces in the region. In the two subdistricts of Angiang, and Tanphutrung subdistrict, Integrated Pest Management (IPM) activities guided by agriculture offices at the district and subdistrict levels were evaluated as practical and helpful in improving

profitability of rice production. However, lacking techniques on innovation diffusion and financial funds, the effectiveness of these activities did not last so long. Responding to the question where farmers receive technology and price information, only 25% of farmers replied that they could get technical supports from agriculture offices or institutions, and nearly 90% of farmers caught the price information from neighbors (Table 19).

Table 19. Sources of Technology and Price Information Received by Farmers

Sources	Percentage of farmers receiving (%)						
	Vinh My	Long Dien B	Tan Phu Trung	Thanh Xuan	Dong Phuoc	Nhi My	All area
<b>Technology</b>							
Other farmers	22.2	71.4	69.0	72.4	89.7	40.0	60.8
Agr.Ext.Workers	59.3	7.14	10.3	13.8	3.5	60.0	25.7
Mass media	11.1	10.7	6.9	6.9	6.9	0.0	7.1
Other sources	7.4	10.7	13.8	6.9	0.0	3.33	7.0
<b>Prices</b>							
Other farmers	88.9	85.7	100.0	96.6	100.0	100.0	95.2
Agr.Ext.Workers	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mass media	0.0	3.6	0.0	0.0	0.0	0.0	0.6
Other sources	11.1	10.7	0.0	3.4	0.0	0.0	4.2

Source: Survey

Technology and price information from either sources received by farmers were evaluated to be useful and easy to understand (Table 20)

Table 20. Usefulness of and Difficulty in Understanding and Applying Price and Technology Information

Level of usefulness & difficulty	Percentage of farmers responding (%)						
	Vinh My	Long Dien B	Tan Phu Trung	Thanh Xuan	Dong Phuoc	Nhi My	All area
<b>Understanding &amp; applying</b>							
Very difficult	3.7	0.0	0.0	0.0	0.0	0.0	0.6
Rather difficult	3.7	0.0	0.0	0.0	0.0	0.0	0.6
Not difficult	92.6	100.0	100.0	100.0	100.0	100.0	98.8
<b>Usefulness</b>							
Very useful	88.9	67.9	55.2	62.1	69.0	90.0	72.2
Useful	11.1	32.1	44.8	37.9	31.0	10.0	27.8
No effects	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: Survey

### 3.5 Income and Consumption

Besides rice cultivation as the main source of income, the sample farmers could earn additional incomes from other different sources (Tables 21 and 22). Among these incomes, planting other crops provided the highest income per month. This kind of income was significantly different between group of farmers. The large farmer group could earn about 230,000 VN dong per month while the small farmer group could get around 155,000 VN dong per month. Farmers in Thanhxuan, Dongphuoc, and Nhimy got a substantial money from cultivating fruit trees. Income from raising animal was not significantly different between two farmer groups. Since the data on rice income were not collected for the SA rice, it is not possible to compute the average income from rice per month.

Table 21. Sources of Farmers' Income Classified by Location  
(Thousand VN dong/month)

Sources	Vinh My	Long Dien B	Tan Phu Trung	Thanh Xuan	Dong Phuoc	Nhi My	All Area
Wage labor	63.17	23.21	11.12	12.07	8.62	28.33	24.42
Trading	135.20	42.86	65.62	18.62	3.10	24.33	48.19
Services	46.89	65.70	11.90	35.34	11.48	73.90	40.87
Animal Husbandry	14.52	5.00	284.70	68.41	174.10	242.80	131.59
Other crops	26.48	43.32	123.30	355.10	310.40	263.70	187.05

Source: Survey

Table 22. Sources of Farmers' Income Classified by Farm Size  
(Thousand VN dong/month)

Sources	Small farm	Large farm	MD <sup>a</sup>	t-Ratio
Wage labor	30.20	16.70	13.50	1.07*
Trading	36.13	60.16	2.40	-0.99
Services	37.87	44.35	6.48	-0.26
Animal Husbandry	120.10	151.00	3.09	-0.77
Other crops	155.20	231.40	7.62	-1.34*

\* : Significant at 20 per cent level

<sup>a</sup> MD : Mean difference

Source: Survey

Most of the farmers can make money from doing off-farm and non-farm activities such as hired labor, non-agricultural labor, transportation services, merchants and services. Income from working as hired labor of the small farmer group was significantly higher than that of larger farmer group at 10 per cent level. On the other hand, the large farmer group can earn more money in doing services or as merchants. In Vinhmy, an area nearby the Vietnam-Cambodia border town, farmers are able to make much money from

either legal or illegal businesses besides farm work.

Expenditures of sample farmers for living needs were rather similar. Households with high income would spend more money for different needs. Among the six major needs, expenses on food accounted for the largest amount while the smallest money was for health care (Table 23). In general, farm households spent from 12580 VN dong to 15870 VN dong per month for daily food. One thing that should be mentioned here is that next to the food expense was the money spent for ceremony and rituals (e.g. weeding day, birthday). Most of the farmers said that it was a little bit difficult for them to cut this expense because it was traditional. This norm is comparable with farmers in other developing countries.

Table 23. Farmers' Expenditures in Living Needs Classified by Location (Thousand VN dong/month)

Needs	Percentage of farmers responding (%)						
	Vinh My	Long Dien B	Tan Phu Trung	Thanh Xuan	Dong Phuoc	Nhi My	All area
Food	468.60	400.00	387.40	410.00	377.40	476.10	419.92
Clothing	50.21	45.35	47.26	62.29	60.59	59.13	59.91
Medicine	22.30	21.36	8.13	10.02	16.95	21.04	16.63
Housing	121.33	63.82	-	1.57	-	-	-
Education	71.94	29.20	65.01	92.13	45.00	40.68	57.33
Ceremony - rituals	105.60	100.50	148.70	156.10	148.00	193.90	142.13

Source: Survey

The expenses of small farmers on living needs were lower than those of large farmers (Table 24). This may be due to the low income of small farmers. Significant differences at 5% or greater in expenditures for food,

clothing, education, and ceremony and rituals were found between group of farmers.

Table 24. Farmers' Expenditures in Living Needs Classified by Farm Size (VN dong/month)

Needs	Small farm	Large farm	MD	t-Ratio
Food	385,500	460,200	7,470	-2.41***
Clothing	50,680	58,480	7,800	-1.74**
Medicine	13,390	20,310	6,920	-0.96
Housing	20,430	40,610	20,180	-0.74
Education	45,480	71,050	25,570	-1.99**
Ceremony, rituals	115,400	175,700	60,300	-3.92***

\*\*\* : Significant at 1 per cent level

\*\* : Significant at 5 per cent level

<sup>a</sup> MD : Mean difference

Source: Survey

### 3.6 Highlights

The dominant cropping pattern in the study sites is two rice crops a year \_ Winter-Spring rice and Summer-Autumn rice. Low power requirement for land preparation, comparative high labor investment, preferring broadcasting to transplanting method of crop establishment, and totally adopting High Yielding Varieties and threshing machine are significant characteristics of rice production in the dry season. The transplanting method was adopted by more than 60% of the farmers in Nhimy subdistrict. Besides, farmers are producing rice under poor endowment in terms of farm equipment, rural credit, and efficient marketing system.



On the market prices and inputs aspect, high price of material inputs, low rice price and seasonal price fluctuation are noticed. The rice prices are at peaks just before harvesting times, and at troughs in April and August. Selling rice right after harvesting, high productivity, and short term rural credit are among reasons which explain the low price of rice.

Proximity to market may have influences on inputs and rice prices. The rice price is highest in Nhimy subdistrict nearest to Hochiminh central market, and lowest in Vinhmy subdistrict farthest to Hochiminh central market. The farmers in Thanhxuan face with the highest prices of fertilizes, pesticides, and labor wage.

Output and rice prices received by small and large farmers are similar, except pesticide prices. Land, education, labor force, and years of experience in rice farming are significantly different between small and large farmers. Animal husbandry and growing other crops, especially fruit trees provide a substantial income for rice farmers across areas and farm sizes.

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