

STUDY ON RICE PRODUCTION AND MARKETING OF FARMERS IN MEKONG DELTA

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ABSTRACT

The study on rice production and marketing via survey showed that farmers in Mekong had 0.5 ha, 2.2 ha and 6.5 ha for minimum, average and maximum farm size per household, respectively. 100% households carried out their rice production in winter- spring (Dong Xuan- DX) and summer- autumn (He Thu- HT) seasons. Only 55% implemented their production in the autumn- winter (Thu Dong- TD) season. The average yield gained 7.17 T/ha in DX season. Average rice yield in HT and TD seasons obtained 5.17 and 4.69 T/ha, respectively. The contribution of rice production due to DX season accounted for 45.20%, HT and TD contributed 33.7 and 21.10%, respectively. In methods of drying, Sun drying and mechanical drying were depended on season, marketing purpose, and farmers' capacity. Postharvest technology was still backward. For rice consumption, there were 35% of households who did not store their paddy for family consumption. They mostly bought milled rice in the market for their consumption. Of them, 65% carried out their rice milling. The farmers mainly sold their product to traders (90%). Rice price of IR50404 was lower than other high quality varieties significantly at 5% level. From this analysis, farmers would be strongly recommended to reduce growing areas of IR50404 (low grain quality) and to promote high quality rice varieties for export purpose. Farmers are looking the opportunities and expectations from government and other related organizations in order to improve their rice price for better production and export.

Keywords: IR50404, Dong Xuan, Thu Dong, He Thu, high quality

INTRODUCTION

Mekong Delta is the largest rice granary of Vietnam. In this region, rice product has been produce yearly for national food security and export. It has contributed the international food security. The great advances in the paddy rice production and milled rice export of Vietnam are indicated in 2011 with paddy rice production are 42.3 million tons, increases 5.8% and milled rice export leaped 4.36% as compared to 2010 with the quantities of rice are not ever seen before, 7.19 million tons. (<http://biz.thestar.com.my/27/12/2011>). Thus, rice production and exportation in Vietnam have been continuously increased in the near decade so far. In which, the contribution from Mekong delta is very large with nearly 54%

national rice production in the year 2010 (GSO, 2010), and about 90% rice surplus for export yearly come from this delta. Research on paddy rice production and milled rice consumption activities is one of the research contents conducted in the farmers, traders, millers and exporters. This research was collaborated with Foretell Business Solutions organization (India). Due to the limitation of the article, the report focuses only in the sector of farmers. The objective of the research is to provide basic information relating to rice production activities, harvesting status, dry, storage and the tendency for paddy/milled rice consumption and marketing of the farmers. Simultaneously, the research was also study the response of

farmers on the problems such as rice production constraints, challenges, opportunities, and expectation in their rice production and marketing. The findings from the research are very useful for the managers, researchers, businessmen, traders, millers, processors and exporters and anybody concern in rice production and export in Vietnam and international countries.

RESEARCH METHODOLOGY

- Designed interview schedules for farmers including the issues such as land use for rice production, area, yield, and production of rice in every season year round; postharvest technology status for rice; constraints faced in

production; opportunities and expectation in cultivation, rice consumption, marketing and selling for export...

- Primary data collection from designing interview schedules in 80 farmers' households, 10 millers and 20 exporters were selected randomly from four provinces of Cuu Long Delta. Those important rice production provinces of the region were An Giang, Kien Giang, Can Tho and Hau Giang.

- The surveying data were synthesized and analyzed by the SPSS software version 13.0, and Microsoft Excel program - The research conducted from March 2010 to March 2011.

RESULTS AND DISCUSSIONS

Evaluating rice production status of the farmers

Cultivating areas, production seasons of surveying farming households

Table 1. Cultivating areas and percentage of the farmers produced rice in each season

Cultivating areas/household (ha)			Farmers produced rice in each season (%)		
Mean	Min	Max	Winter-Spring	Summer-Autumn	Autumn-Winter
2.2	0.5	6.5	100	100	55

Note: Dong Xuan=Winter Spring season; He Thu=Summer Autumn season; Thu Dong=Autumn Winter season.

- In the case of randomly survey, the rice cultivating area was 2.2 ha for average per household, the minimum was 0.5 ha, and the maximum was 6.5 ha.

- There were three seasons per year. In which, 100% household carried out in the DX and HT seasons but in the TD season, it was only 55%.

Rice yield and harvesting output of every season

Table 2. Rice yield and harvesting output per season of the farmers

Data	Winter-Spring		Summer-Autumn		Autumn-Winter		Output per year (tons)
	Yield (tons/ha)	Output (tons)	Yield (tons/ha)	Output (tons)	Yield (tons/ha)	Output (tons)	
Mean	7.17	15.90	5.17	11.85	4.69	7.74	35.18
Min	5.00	3.80	4.00	3.00	3.60	2.60	9.17
Max	8.00	55.20	6.30	39.98	6.50	40.30	135.52
Compared to output per year (%)		45.20		33.70		21.10	

An average rice yield was 7.17 tons/ha in the DX season. However, the minimum of yield (5 tons/ha) and the maximum yield (8 tons/ha) were represented in some of households. The rice outputs depend on areas and yields. In the

DX season, the average rice output got 15.9 tons per household. The lowest was 3.8 tons, and highest was 55.2 tons per household. In the HT season, the average rice yield was 5.17 tons/ha. (Min was 4 tons/ha and max was 6.3

tons/ha). The Average rice production got in the HT season was 11.85 tons. The minimum rice production was 3.0 tons and maximum was nearly 40 tons per household. For the TD season, currently, this season has promising potential to become main season over many aspects such as area, yield and production. In this study, the average rice yield got 4.69 tons/ha, the minimum yield was 3.60 tons/ha and maximum was 6.5 tons/ha. In case of rice output, TD season gained 7.74 tons/household in average, minimum was 2.6 tons and maximum with 40.3 tons per household. The contributing percentages of rice output every season into total yearly output per household indicated that DX season contributed nearly half of the total rice output all year (45.2%). The remaining rice production contributions were HT and TD seasons with 33.7 and 21.10% respectively. In the near future, with the investment from the Ministry of Agriculture and Rural Development, the contribution of rice output from the TD season will be more and more. The result of statistical analysis on the average rice yield of HT compared with TD season, by t-Test: Two-Sample Assuming Unequal Variances indicated that means of rice yields of two variables were not different. In other words, the average rice yields in the HT and TD seasons are the same in this survey. However, other researches from Nguyen Cong Thanh *et al.*, in the year 2011 and 2012 at Hau Giang and Bac Lieu provinces respectively, shown that rice yields in the TD seasons of these provinces higher than those of HT seasons.

The status of drying harvesting rice

The status of drying harvesting rice of the farmers: In rice production over seasons in Cuu Long Delta, the farmers usually treat

their paddy products after harvesting by sun drying, mechanical drying. Some of them sell immediately after harvest if they feel prices is favorable at that time. In this case, the traders will dry paddy they bought depending on their conditions. Drying paddy rice under sun or using dryers depend on seasons, marketing conditions and infrastructures of the households. In this study, in the DX season, almost farmers held their paddy products to dry by sun (85%) and remaining numbers (15%) used dryers to dry their paddy before selling it to the traders when the prices are proper. No one sold paddy after harvest without drying. But in HT season, 10% of farmers sold their paddy for traders after harvest. Remaining numbers of 40% households dried paddy by sun and 50% of households used dryers for drying paddy before selling. In case of TD season, this tendency was somewhat similar to HT season with 50% households dried paddy by sun and 45% households used dryers. The remaining small percentage of households (5%) sold their paddy after harvest without drying. The time consumption for drying by sun in the DX season was shortest with the min was 1/2 day, max was 7 days and average was 2.5 days. Drying by dryers in the DX season consumed time from 7 to 18 hours. In the HT season, the time for drying by sun was from 2 to 8 days (average was 3.8 days). Time consumed in the case of application dryers in the HT season was more than DX season, from 8 to 20 hours (average was 12 hours). In case of TD season, farmers drying paddy by sun from 1 to 7 days (average was 3.2 days). Time consumed for dryers in this season from 7 to 20 hours (average was 11.6 hours) (see in table 3).

Table 3. Application of drying rice by sun or by dryers and the time of drying

Season	Winter-Spring			Summer-Autumn			Autumn-Winter		
	By sun	By dryer	Sold	By sun	By dryer	Sold	By sun	By dryer	Sold
% of farmers	85	15	0	40	50	10	50	45	5
Time consumption	0.5-7 days, average 2.5 days	7-18 hours	-	2-8 days, average 3.8 days	8-20 hours, average 12 hours	-	1-7 days, average 3.2 days	7-20 hours, average 11.6 hrs.	-

The means for drying rice currently by the farmers: The means for rice drying by sun or by dryers indicated the current infrastructure conditions and post-harvest technology situation available with the farmers. Table 3 shows that almost the farmers dried paddy by sun, and in the raining season nearly half of the farmers used dryers. In case of drying by sun, the means for drying was very outdated where farmers mainly based on front yards to dry paddy by sun (62%), to make use of transportation roads for drying with relatively high percentage (23.5%), and drying by sun on the rice field was 11.5%. Remaining percentage of 3% households used canvas-tents to dry paddy. In case of drying by dryers, there were only 35% of households had private dryers at their houses. Large percentage of households (65%) hired dryers in their locality (table 4).

These findings indicated that the pre-and post-harvest conditions for the farmers were still backward. Therefore, to go advanced production with completed mechanization from the cultivation to harvest, it needs to

improve as soon as possible by post-harvest technology. To do this, the Government provide to the farmers agricultural tools as combine harvesters, dryers through credit and investment or improve the situation by organizing the paddy buying systems, in which, buying combine with drying in the concentration and all the seasons with larger paddy quantity. This means that the production and consumption of paddy in the type of concentration with higher specialization and modern technology for paddy drying and processing. Since, help the farmers to avoid the situation of drying paddy rice on transportation roads, house's yards, rice fields, and canvas, etc... This improvement subsequently, help in increasing rice quality for export and reducing post-harvest loss significantly, because sun drying loss are the highest and most important loss component, in the raining season the loss rice can reach 3.6%, and loss due to cutting is the second runner in the list and rather high with 2.3% (Mard-Danida, 2003).

Table 4. The means for drying paddy rice currently by the farmers

The means for drying rice by sun (%)				Dry paddy by dryers (%) (DX 15, HT 50 & TD 45)	
Front yard	Transportation road	In the field	Canvas	Family's dryers	Hiring dryers
62.0	23.5	11.5	3.0	35.0	65.0

Evaluation the status of paddy/milled rice consumption and marketing of farmers

The status of paddy/milled rice consumption of the farming household

The percentage of paddy quantity milled compared to total paddy output in the year of survey was as follows: there were 35% of households did not reserve paddy for family consumption. These households usually buy milled rice for family consumption. Contradict to this, there were 65% of households reserved paddy and milled for families consumption. In which, in the DX season was highest with 60%, followed by HT season with 55% and lastly in the TD season with 30%. The percentage of households

milled paddy was low in the TD season. It may be due to paddy prices are highest at this time as compare to all year (table 5). In case of milled paddy for family consumption, the average quantity was highest in the HT season with 873kg/household, followed by 755 kg per household in the DX season and lowest with 217 kg/household in the TD season. The average of yearly paddy quantity that kept for milling was 1,844 kg /household. (minimum was 420 kg, and maximum was 9,500 kg/household). The percentage of paddy reserved for milling was relatively low as compared to total yearly paddy production and for each season (see in table 5).

Table 5. Details of paddy production and milling of paddy for family consumption

Seasons	Paddy production (tons/Ha)	Percentage of milling households	Details of paddy quantity milled at local millers			
			% compared to paddy production	Mean (Kg)	Min (Kg)	Max (Kg)
Dong Xuan	16.00	60	4.72	755	300	3000
He Thu	11.85	55	7.36	873	250	6500
Thu Dong	7.43	30	2.92	217	120	2500
All year	35.18	65	5.24	1844	420	9500

Details on paddy/rice selling by farmers: In this survey, farmers sold their paddy products mainly for traders (90%), remaining percentages of 5% farmers sold their products for other farmers with small quantity when they need, and 5% of households (only in An Giang province) sold paddy for the Japanese companies by underwriting-agreement. In which, the farmers produced high quality rice with rice seeds provided by Japanese companies. In some places, such as Thot Not district (Can Tho city), some farmers milled their paddy into brown rice and sold for the traders or rice export processing companies. (Surveying results from exporting companies). However, in case of farmers, they sold their paddy directly for the buying

objects without milling (table 6). The yearly average quantity of paddy sold by every household was 34.05 tons, (min was 7.95 tons, and max was 135.52 tons/year). These data are very important that rice production in the Mekong Delta is a huge production to ensure food security of the country. In addition, the surplus rice quantity for export is also large and need to have many markets of different types of rice quality for the different demands of the world. The export of rice in the Mekong Delta has contributed to global food security along with the income of farmer's must be ensured. In case if the export market interrupted, production and livelihood of the farmers will be largely effected.

Table 6. Details on paddy/rice sold by farmers to the buying objects

Type of products	Selling quantity (Tons)	Buying objects		
		Farmers (%)	Traders/Middlemen (%)	Others (%)
Rice (%)	0	0	0	0
Paddy (%)	34.05	5	90	5
Note	Mean 7.95 tons, max 135.52 tons	Sole with both farmers and traders or/and for traders only.		Contracted with Japanese companies

Rice varieties for production and selling prices

Rice varieties and selling prices

There were 57 rice varieties grown in 3 seasons of the year as follows: ĐX season included 23 rice varieties: IR50404 (36.1%), OM4900 (7.7%), OM1490 (6.6%), OM2395 (4.2%), OM6561 (2.3%), Jasmine 85, OM2517, OM4218, BN, OMCS2000, Kinu, Kochi- Hikari, OM6976, OM6677, OM5464,

OM4498, AS996, VND95-20, IR64, VD20, OM5796, OM5637 and OM576. First five varieties occupied high area percentage (56.9%), all remaining varieties occupied in small area. In HT season, there were 21 rice varieties selected to grow: IR50404 (40.0%), OM4900 (8.3%), OM1490 (6.6%), OM2395 (4.6%), OM2517 (3.7%), OM2518, OM4218, OMCS2000, BN, Kinu, Haranomai, OM6677, OM5464, OM4498, AS996, VND95-20, IR64, VD20, OM5796, OM5637, OM576.

First five varieties occupied 63.2% production area, the remaining varieties produced in small area. For TD season with 55% households cultivated as compared with two seasons DX and HT. Total rice varieties for this season were only 13 varieties. In which, first five varieties occupied 71.5% including IR50404 (44.1%), OM2395 (12.4%), OM2517 (7.7%), OM4218 (5.2%), and

OM4900 (2.1%), The following varieties OM5464, OM6976, AS996, OM6677, OM5464, OMCS2000, BN and OM4498 occupied 28.5% of production area. In the HT and TD seasons, the farmers have tendency to produce IR50404 variety (due to this variety is largely adaptation and suitable for the difficult seasons than DX season).

Table 7. Quantity of rice varieties over seasons and rice selling prices

Items		Winter-Spring	Summer-Autumn	Autumn-Winter
Numbers of rice varieties		23	21	13
Rice selling price (VND/kg)	Mean	5034	4726	5150
	Min	3600	3200	3700
	Max	9000	9000	6100

Note: current price in 3 seasons of the year 2010; in round figures.

There were 57 paddy varieties produced in 3 season of the year 2010. In which, the DX season has large number with 23 varieties, then HT season with 21 and last was TD season with 13 varieties. The average selling price of rice over seasons found to be highest in the TD season (VND 5,150 /kg), followed by DX (VND 5,034 /kg) and finally for HT (VND 4,726 /kg). Since then, the minimum prices were also similar with VND 3,700 /kg, VND 3,600 /kg and VND 3,200 /kg for TD, DX and HT season, respectively. The maximum price was high up to VND 9,000 /kg in this study, due to some households have contracts with Japanese companies for cultivation and consumption but produced only in DX and HT seasons. Therefore, in the TD season, the highest selling price was VND 6100 /kg for high quality rice varieties.

Analysis results of selling price under different qualities

In this investigation, we found that the high and low selling price is dependent on the quality of paddy. Most of these high quality varieties were sold with high prices than IR50404 variety (due to low quality).

However, in somewhere the price of IR50404 was equivalent or even the same as high quality varieties. So, to have a basis for evaluating the basic price of low quality (particularly, IR50404) with high quality varieties, the data were analyzed by t-Test. Where Y was the price of high quality varieties (excepted Japanese varieties), which recommended for production for export in comparison with the X was the selling price of all households who sold IR50404 variety. The data got after excluding those households who sold paddy in contract with Japanese companies at high prices (see in table 8).

From the research results on the selling price of paddy with different quality, we are strongly persuasive to recommend farmers to limit planting of IR50404 variety and they should plant high quality and special rice varieties to avoid marketing risk. In parallel with changing varieties, the production is also change in form of cooperation, simultaneously working with large cultivated fields to increase the efficiency of production and export.

Table 8. t-Test: Two-Sample Assuming Equal Variances

Items	Price of IR50404 varieties (X)	Price of high quality variety (Y)
Mean	4336	4741.154
Variance	462816.7	468914.6
Observations	35	36
Hypothesized mean	0	
Df	69	
t Stat	-2.11901	
P(T<=t) one-tail	0.019579093	
t Critical one-tail	1.676550893	
P(T<=t) two-tail	0.039158186	
t Critical two-tail	2.009575237	

Farmers' evaluation on post-harvest loss of paddy/rice over production periods

Post-harvest loss over rice production periods have been studied by DANIDA Organization, the direct financial support to Vietnam by Denmark government. This project had conducted post-harvest loss systematically in the Mekong Delta from 2003. However, this

awareness only in the side of researchers, the study on farmers' evaluation, but levels of interest base on their awareness over cultivating seasons were not study completely so far. Results of the study on farmer's evaluation on post-harvest loss in rice production at harvest and post-harvest periods are presented the table 9 and 10.

Table 9. Farmer's evaluation on levels of loss in paddy harvest period

Paddy harvest period	Percentage of loss (%)				
	Harvesting	Threshing	Drying	Transport	Total loss
Mean	1.84	1.32	0.36	0.12	3.63
Standard deviation	1.098	1.068	0.489	0.332	2.136
Min	0	0	0	0	0.2
Max	4.0	4.5	1.0	1.0	9.0

Harvesting period includes the following activities: cutting, handling; threshing, drying by sun and by dryers and transportation. Depended on the awareness of every farmer and their harvesting condition (cutting, handling; cutting machines, combine-harvesters...) or sold immediately after harvest without drying, or transported from

the fields to home. Therefore, levels of evaluation by every farmer were not homogeneous among farmers and among periods. There were average of 1.84% farmers evaluated the loss of paddy due to cutting activity and followed by others activities: threshing 1.32%, drying: 0.36% and transport: 0.12%. (see in table 9).

Table 10. Farmer's evaluation on levels of loss in post-harvest period

Post-harvest period	Loss percentage (%)				
	Storage	Milling	Other loss	Total loss	Total loss of 2 periods
Mean	0.50	0.92	0	1.42	4.65
Standard deviation	1.016	0.847	0	1.479	2.620
Min	0	0	0	0	0.2
Max	3.0	2.0	0	5.0	10.0

In the case of loss of paddy during post harvest period, the evaluations of farmers based on different activities as loss due to storage, milling, other loss, and tot up loss of this period and finally present total loss of the two periods (harvest and post harvest period). For storage activity, the evaluation of farmers ranged from 0% to 3% (average of 0.5%). From these information, we suggested that the milling activity was done by 65% of households and remaining 35% households bought milled rice for family consumption. Since, the evaluation became more varied with 0, 0.92 and 2.0% respectively for minimum, mean and maximum percentage of evaluation. The farmers did not recognize on other losses. Tot up loss for this period was 0, 1.42 and 5% for min, mean and max percentages evaluation by farmers and the total loss for the harvest and post-harvest periods were 0.2, 4.65 and 10.0% for min, mean and max evaluation. In comparison with the results from previous study and report, the post-harvest loss evaluation by farmers was very low. According to Bui Chi Buu (<http://www.sggp.org.vn>, 03/4/2012), rice post-harvest loss in the Cuu Long Delta is still

very large with about 13.7%, equivalent to USD 500 million. However, the maximum level of loss evaluation by farmers in this survey was based on their own experience only. These evaluations might be partly corrected because of it just equivalent to the minimum percentage loss which reported by World Resources staff (1998), quoted from Satin, and FAO (1997) that consequently, estimates of total postharvest food loss are controversial and range widely—generally from about 10 % to as high as 40 %.

Farmers' evaluation on levels of loss in the small-scale millers in their residence

Farmers' opinions on loss in the small-scale millers in their residence

Results of study on this sector aimed to examine farmers' opinions toward the milling technology in their residence to have the direction for improving. For this purpose, the yes/no question were: "Do you know that losses are high in very small village level mills?", and explain in case of yes or no. The results on response of farmers were presented in the table 11.

Table 11. Farmers' opinions on loss in the small-scale millers in their residence

Response of the farmers	Percentage (%)
Yes	47
No	50
Non-response	3
Explanation with "Yes" response	
1. Loss more in small-scale millers is due to backward technology.	
2. Small scale miller activity has to do many sections.	
3. Loss percentage in local small-scale miller is about 2 to 5% as compare to large miller.	
Explanation with "No" response	
1. Loss more or less depends on the millers.	
Explanation with Non-response	
1. No attention, and unawareness are due to no milling paddy for family consumption.	

Farmers' opinions on the capacity to invest large modern mills

There were different opinions on the equipment of large modern mills nearly the

farmers' residences. The response of farmers to the loss of paddy due to small millers was 47% of agreed opinions and there were also disagreed opinions who stated that loss more or less depends on the millers (table 10).

Therefore, to examine the farmers' opinions on the capacity of investment large modern mills to change the small mills. The question for interview in this case was: "Do you feel that it is better to have large modern mills as compared to small-distributed mills? Yes/No and qualify their response. The result on the response of farmers for "agreement" was 60% and for "disagreement" was 40%. (see in table 12).

Table 12. Farmers' explanation for agreeing response

TT	Reasons for agreement
1	More benefits from large mills, the loss is less as compare to small-distributed mills.
2	Increase milled rice quality, decrease loss, less broken rice, adequate rice quality for export.
3	We need more large modern mills to serve for rice export.
4	We have not large mill in our locality; hence, we can invest one for comparison.
5	Small mill in the village is low efficiency, and more loss.
6	Large modern mill help to reduce workers and laborers.
7	Large modern mill is better due to give high uniformity and good appearance of rice grains.

Table 13. Farmers' explanation for disagreeing response

TT	Reasons for disagreement
1	Mill with small quantity for consumption, so, if large mill the farmers can afraid to bring paddy for milling to avoid complication.
2	Farmers want to mill paddy that lives in scatter locations, therefore, mobile small mills come to serve for every household can facilitate for them, even with higher price.
3	Sell 100% paddy, and buy milled rice for consumption all year round without milling.
4	Farmers do not understand every advantages and disadvantages of the mills.
5	Sell paddy for companies via purchasing contract, therefore, do not pay attention.
6	Transportation problem, if equip large mill in the locality, it needs to improve the roads.
7	Small mill is suitable for milling with small paddy quantity for family consumption.

Nowadays, the "specialization" in rice production and "experience" in business, a good ways is that farmers sell paddy to retail traders who are expert in providing milled rice back to farmers. The small and movable mills have been considerably reduced their activity day by day. There are some of places in Mekong Delta has been formed large mills and wholesale markets, processing and exporting rice such as Thot Not (Can Tho city), Cai Be (Tien Giang province), Thoai Son (An Giang province). These zones are usually concentrated nearly big rivers and roads that suitable for transportation and export.

Constraints faced by farmers in the production process

Constraints in the rice cultivating stage

Most of farmers reflected that they have to face the difficulties in the production process. However, there were a number of farmers (5-10 %) did not find difficulties due to their advantages such as rice cultivating machineries are available or due to they have experience in rice cultivation for many years and so on. The constraints faced by farmers were synthesized in the table 14.

Table 14. Constraints and difficulties faced by farmers in cultivating stage

TT	Constraints and difficulties
1	Lack of capital, drying grounds, harvesting machines, and labours, especially at transplanting and harvesting periods. Price labours are high and when the paddy plants are collapsed (the price for collapsed paddy fields were VND 200,000 /1000m ² , in the DX 2010-2011 season).
2	Prices of input materials and labours are high. Usually, farmers suffer from capital loss in the HT season.
3	Rice production is still manual, heavy activities, and lack of mechanization.
4	Many pests, diseases, and rats attack, particularly with BPH, the technical difficulties in prevention and treatment.
5	High petrol price induced difficulty in the water pumping. Lack of water in the DX season and increase cost of irrigation.
6	Constraints as insect pests in the DX season, salt water penetration in the HT season, submersion, flood and storm in the TD season.
7	Affected monsoon and increase more difficult during the rainy season.
8	Rice cultivation techniques are limited.
9	Soil infests of acidity, salinity, and lack of acid sulfate soil tolerant varieties.
10	Difficulties in transportation of cultivating machines and paddy product.
11	Difficulties in water drainage in the DX season, and improper filed leveling.
12	Constraints in funding procedures from banks, and consume more time in the warehouse entry procedures.

Constraints in the rice processing stage

Almost the farmer's response that there was no difficulty in rice processing because their paddy had sold to traders in favorable

condition. However, some farmers said they faced some constraints as represented in the table 15.

Table 15. Constraints faced by farmers in the rice processing stage

TT	Constraints in the rice processing stage
1	Milled rice is not appropriate criteria.
2	Farmers fear losing milled rice or fraud rice.
3	Unbroken rice gain is low.
4	Mills is far from home.
5	Paddy and rice loss is more.

Constraints in the selling stage

This is a problem that the farmers have faced in rice production. Most of farmers are not satisfied due to low and unstable prices at this selling stage, the prices are squeezed by

traders, paddy selling is difficult in the early DX season and the rice consumption is difficult due to far from roads and rivers (see in table 16).

Table 16. Constraints faced by farmers in the selling stage

TT	Constraints in the selling stage
1	The paddy purchasing prices are not stable and low.
2	Prices are squeezed from traders.
3	The rice consumption is difficult due to far from roads and rivers (selling price lower than VND 100-200 per kg compared to normally).
4	Slowly in paddy consumption due to traders come late.
5	Paddy selling is difficult in the early ĐX season.

Farmers' opportunities and expectations for improving cultivating and marketing of paddy/rice

Farmers' opinions on the opportunities for improving cultivating paddy

Table 17. Farmers opinions on the opportunities for improving cultivating paddy

TT	The opportunities for improving cultivating paddy
1	Complete the agricultural mechanization, the availability of large plough machines for land preparation, combine harvesters, dryers to reduce difficulty in machine hiring and lack of labours.
2	Organize the training courses on rice cultivating and plant protection technologies for farmers.
3	Stabilizing prices of the input materials, fertilizers, pesticides to help the farmers reduce production cost.
4	Creating new rice varieties with higher yield, pest and disease resistance and tolerant to soil acid sulfate and saline soil.
5	Build general solutions for preventing saline water penetration and protecting dykes preventing the submerged and flooding situation for paddy, adaptability to the climatic change.
6	Need a good irrigation and canal systems, building pumping station cooperatively to serve for draining and watering so that the sowing and cultivation are done actively.
7	Create good solutions for reclamation of acid sulfate and saline soils.
8	Improve plant protection technology with good pesticides to protect from BHP, rice blast, snails...
9	Invest capital and credit for equipment of machines and production facilities.
10	Develop cooperatives for large production and large fields with linkage in rice production and marketing.
11	Innovating rice production and marketing policies to help the farmers get more income.

*Farmers' expectations for improving cultivating and marketing paddy/rice***Table 18.** Farmers' expectations for improving cultivating and marketing of paddy/rice

TT	Expectations for improving cultivating and marketing of paddy/rice
1	Rice selling price are stable, high, and stabilizing input material prices to help the farmers get more benefit in rice production.
2	Reduce costs to use electrical power and to use irrigation pumps powered by electricity instead of using oil pump with high cost.
3	The authorities should regularly organized training courses for farmers.
4	Credit support for rice production and investing in agricultural mechanization and post-harvest technology.
5	Provide information science and technology for rice production.
6	Improve the irrigation system for the farmers.
7	Provide marketing information to orient production, product consumption and marketing.
8	Increase production and use of bio-pesticides.
9	The rice fields need to be planning to produce rice varieties with high quality and specialty.
10	Invest the high technological mills in the locality.
11	Develop comprehensive policies for rice production from sowing until the consumption for export to benefit the farmers and ensure sustainable production.

The stable or varied situation in rice land of the farming households

This section aimed to study the stable, increased or decreased situation in rice land of the farmers. The result shown that there were 80% of farming households maintained rice production lands in the last 5 years. Only 20% of the households changed rice land areas by increasing from 2-2.5 times by buying and hiring more farmlands. One thousand square meters (100m²) of farmland was sold at a cost of 20 million VND at time of survey (2010). The reasons that farmers maintained the rice farmland last time are: lack of labours for enlarging the rice production area, not able to manage in large area, not enough money to purchase; no rice farmlands are sold, difficult to change plant structure, experience in rice monoculture.

CONCLUSION

The system of production and export of rice in the Mekong Delta have components such as farmers, traders, processors and exporters.

This report is limited results on the farmers in the Mekong Delta. The findings are useful information on current state of production area, yield and production, drying conditions, paddy and rice consumption situation, the difficulties and desire to improve rice cultivation, development the modern processing facilities of rice exports for the Mekong Delta. Research results show that the paddy yield and production are more and more increasing. For paddy and rice consumption, there are 65% of households having milled rice to eat and 90% of farmers selling rice to traders. In the TD season, paddy price is the highest compare with other seasons. Therefore, this season should be concerned for enlarging in production in near future. The price of paddy variety IR50404 (low quality) is lower than prices of high quality paddy varieties statistically significant. Since then, we have recommended farmers in limiting to grow low-quality rice varieties and improve cultivation of high quality and special rice varieties for export in both orienting integration, cooperation with large

area of mechanization. To achieve the above desire, and to meet the farmers' expectations for improving cultivating and marketing paddy/rice, it emphasizes on the interest of the management agencies and functional organizations to provide credit investment. Besides, training and transfer of new technologies, new proper varieties, modern machineries and facilities to the farmers should be organized in yearly to reduce loss, heavy works, constraints, production costs, and increase profit for farmers.

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NGHIÊN CỨU VỀ SẢN XUẤT VÀ TIÊU THỤ LÚA GẠO CỦA NÔNG DÂN ĐỒNG BẰNG SÔNG CỬU LONG

Kết quả nghiên cứu về hiện trạng sản xuất lúa bình quân hộ được điều tra có diện tích nhỏ nhất là 0,5 ha, lớn nhất là 6,5 ha và trung bình là 2,2 ha. Có 100% số hộ sản xuất lúa Đông Xuân (ĐX) và Hè Thu (HT), chỉ có 55% hộ sản xuất vụ Thu Đông (TĐ). Năng suất trung bình vụ ĐX đạt được 7,17 T/ha (hộ đạt thấp 5 T/ha, cao nhất 8 T/ha). Vụ HT năng suất trung bình là 5,17 T/ha và vụ TĐ là 4,69 T/ha. Tỷ lệ đóng góp về sản lượng thu hoạch cả năm của nông hộ vụ ĐX là 45,2% còn lại vụ HT và TĐ thứ tự là 33,7 và 21,10%. Việc phơi hay sấy lúa tùy theo mùa vụ, điều kiện thị trường và cơ sở vật chất của nông hộ. Điều kiện công nghệ sau thu hoạch của nông dân còn yếu kém. Về tiêu thụ lúa gạo, có 35% số hộ không dự trữ lúa để ăn, những hộ này thường mua gạo để ăn. Có 65% hộ có xay chà gạo cả năm. Trong đó, vụ ĐX 60%, HT 55% và TĐ chỉ 30%. Nông dân chủ yếu bán lúa cho thương lái (90%). Kết quả phân tích thống kê cho thấy giá bán lúa IR 50404 thấp hơn có ý nghĩa so với giá bán các giống lúa chất lượng cao. Từ đó, khuyến cáo nông dân hạn chế trồng giống lúa IR 50404 và nên trồng các giống chất lượng cao cho xuất khẩu. Nghiên cứu cũng cho thấy những vấn đề khó khăn mà nông dân phải đối phó trong sản xuất, qua đó tổng hợp những ý kiến về những cơ hội và nguyện vọng của nông dân để phản ánh với các cấp quản lý và cơ quan liên quan trong việc cải thiện tình hình, phát triển công nghệ sau thu hoạch nhằm giảm thất thoát và nâng cao lợi nhuận cho nông dân song song với phát triển hệ thống chế biến và mở rộng thị trường xuất khẩu gạo.