

Performance of Rice Production in the Red River Delta of Vietnam: A Case Study in Y Yen District, Namdinh Province

Bui Thi Nga, Nguyen Thi Xuan

Faculty of Accounting and Business Management, Vietnam National University of Agriculture, Ngo Xuan Quang Street, Trauquy, Gialam, Hanoi, Vietnam

***Corresponding Author:**

Bui Thi Nga

Email: hieu0306@gmail.com

Abstract: This article aimed to study the performance of rice production in a case study of Y Yen district, Namdinh province in the Red river delta and suggest some recommendation to improve the performance of rice production in the study site. The paper is based on the semi-structure, standard questionnaires and PRA methods to collect data from 48 representative rice producers. The results showed that average land area of rice production was low at 0.27 ha per household, but rice productivity was rather high as 5.34 tons per ha in Spring crop. The average revenue was 34.79 million VND, value added was 17.5 million VND. The production cost was too high, at 29.06 million VND, occupied 83.5% total revenue, which led to the low net income of the household at only 5.7 million VND per ha, accounted for only 16.5% of revenue. Counted on a hectare, hired labor cost took part 29% of total cost, proportion for the material equipment was 26.7%. Fertilizers and pesticide cost accounted for 28.7%, of which, 20% belonged to NPK. Some suggestion to improve the benefit for farmers were: reducing the production cost by using optimal fertilizers, pesticide; good material and equipment management; and applying technology and machine in rice production.

Keywords: rice, production, performance, cost, value added, income

INTRODUCTION

Rice plays a crucial role in Viet Nam's food security and overall political, economic, and social stability [1]. It is the country's main crop, consumed by more than 90 million people of its population. On the average, each Vietnamese consumes approximately 135 kg rice per annum [1].

Many researchers studied about performance of rice production in Vietnam [1-6]. Most of them studied in the Mekong river delta, but almost none of them studied in the Red river delta. While rice production in the Red river delta accounts for 14.45 % total area of production, and productivity in this area (6.02 tons/ha) was even higher than that of the Mekong river delta (5.94 tons/ha) (calculated from [7]).

The questions arising are: how is the situation of the rice production in the Red river delta area? How much do farmers invest in rice production? How much do they gain? In order to answer these question, the research of the performance of rice production in the Red river delta area was carried out. This paper is a part of the research with the aims to study the performance of rice production in a case study of Y Yen district, Namdinh province in the Red river delta and suggest

some recommendation to improve the performance of rice production in the study site.

METHODOLOGY

This research chooses Y Yen District, Nam Dinh province as a study site because it located in the Red river delta in the Northern area of Vietnam. Nam Dinh's rice is also a well-known trademark in the Northern area of Vietnam. In this area, farmers have a long time experience in rice production.

The primary data came from a survey of 48 representative households in a case study of Y Yen district, Nam Dinh province, based on the semi-structure, standard questionnaires and PRA method.

RESULTS AND DISCUSSION

Characteristics of the households

Average age of surveyed household's head was quite high at 41 years old, in which the eldest was 55 and the youngest was 22 years old. The mode age range was from 41 to 50 years old (56%). At this age, the farmers had experienced in life, could make good decisions, but a bit old to absorb, learn, and apply new scientific knowledge in the rice production process.

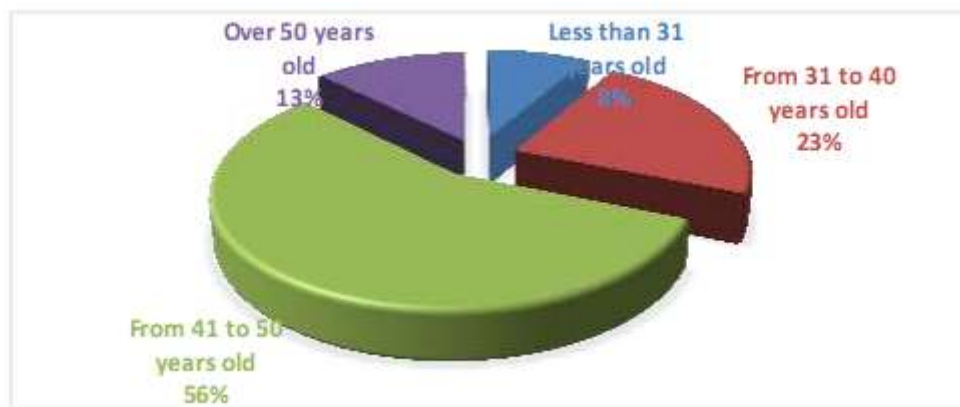


Fig-1: Age structure of the households

Source: Survey result, 2016

Number of family members were commonly at 4 and 5 people, of which, the woman were 2. The most members in the households were 8 and the least were 2 people. The common laborers were 2 people. Most of them were female. Farmers used family labors for rice production. Besides, they had to hire extra labors, especially in the cultivating or harvesting period. They also usually exchanged labor or supported each other in production activities.

Regarding to educational level, four fifths of the farmers had just finished the secondary school level. This can be explained by the fact that the majority of people with higher qualifications have done other work such as government officials, workers in companies or migrate to other major cities for work.

In terms of land area, the average households land area was 0.27 hectares (ha), the largest land area was 0.43 ha and the smallest one was 0.18 ha.

Table 1: Characteristics of the households

No	Indicator	Unit	Max	Min	Mean
1	Age of the household's head	Year	55	22	41.15
2	Numbers of family members	People	8	2	4.78
3	Numbers of labors in households	Labor	3	1	1.88
	Number of women labor in household	Labor	3	1	1.63
4	Education level of the household's head				
	Secondary school	%	81.25		
	High school and above	%	18.75		
5	Land area	Ha	0.43	0.18	0.27

Source: Survey result, 2016

Production cost
Seed

Household spent 1.2 million Vietnam dong (VND) [8] per ha on seed, accounted for 4.1% total cost of the rice production. It seems that this cost was relatively high. According to the responds of the farmers, seed played an important role in rice production as it could help to increase the productivity and efficiency of farm. Almost seed originated from sources of Vietnam National University of Agriculture, rice seed providers in Thai Binh, Nam Dinh, Ninh Binh [9] provinces. Only a small amount came from China. The farmer acknowledged that seed of Vietnam had better quality than that of China. They usually bought seed from local agents. Three main types of seed that farmers planted in the study site were BC15, Bac Thom and Tap Dao [10]. Of which, BC 15 seed accounted for around three fifths of the total amount of seed in the region.

Land preparation and planting

Land preparation for cultivating rice was aimed at making porous soil, increasing water holding capacity, keeping nutrients, killing weed seeds and pests, and helping plant grow quickly. Before planting rice, farmers plowed, mixed, and irrigated the field carefully. Cost for land preparation and planting rice included hired labor cost (approximately 50%), tools and equipment (50%) to prepare the land and to plant the rice. It was also rather high, ranged between 4,167,000 and 4,722,600 VND per ha. On average, the amount were around 4.5 million VND per ha, and accounted for 15.4% of total production cost.

Fertilizers and pesticide

Fertilizer cost was really high at 7.5 million VND per ha of rice production, occupied 25.8% total cost of rice production. In which, the cost for NPK was 5.8 million VND, accounted for the most proportion at 20%. Cost of urea, Kali and pesticide were almost the

same at 0.84 million VND, each kind accounted for 2.9% in the total production cost. The cost of fertilizer was rather high because the farmers believed that the more fertilizers, the higher productivity and they sometimes used too much in their field. This not only

increased the cost of production, reduced the efficiency and profits, but also affected the future and sustainable development of the farm and resulted in the environmental pollution.

Table 2: The production cost per ha of rice Unit: VND

No	Types of cost	Amount	Ratio (%)
1.	Seed	1,193,067	4.1
2.	Land preparation and planting of rice	4,488,220	15.4
3.	Fertilizers	7,501,571	25.8
	<i>NPK</i>	5,808,631	20.0
	<i>Urea (nitrogen)</i>	845,817	2.9
	<i>Kali (potassium)</i>	847,123	2.9
4.	Pesticide	842,956	2.9
5.	Material equipment to protect rice from mice and insects	5,508,246	19.0
	<i>Nylon</i>	4,007,265	13.8
	<i>Mousetrap</i>	1,500,981	5.2
6.	Harvesting cost	9,525,067	33
	<i>Hired reaper</i>	3,333,600	11.5
	<i>Hired labor cost</i>	6,191,467	21.3
	Total cost of production	29,059,127	100.0

Source: Survey result, 2016

Material equipment

In order to protect rice plant from destroying by mice and insects, or to prevent their rice from bad weather such as cold, or rime, farmers often used nylon to cover their field or used mouse trap to catch the mice. Cost for material, equipment ranked the third highest cost of production, at 19%. Of which, the average cost of buying nylon per hectare was about 4 million VND, accounted for 13.8%. If the farmers managed the nylon well, they could reuse for the second time. The mouse trap cost was 1.5 million and could not reuse due to the farmers use the once mouse trap only.

Harvesting cost

Farmers had to hire extra labors in two main periods of rice production: at the time of land preparation and planting, and at the time of harvesting rice. The popular labor cost for harvesting per ha ranged from 6.1 to 6.94 million VND per ha. On average, the cost of hire labor was rather high, at 6.19 million VND

per ha, and occupied 21.3% total cost of rice production.

All rice planting households hired reaper for harvesting their crops. The average cost for the reaper per ha was 3.3 million VND which accounted for 11.5% total cost of production.

The performance of rice production

Productivity of rice

The average productivity of rice production in the surveyed households was 5.34 tons per ha. Compared to the same crop of the previous year (2015), 81.2% responded that this crop productivity of their household was lower, 15.6% responded of constant productivity and only 3.2% said that it increased. The main reason for the decreased trend in this crop productivity were due to the bad weather in comparison to that of the previous year.

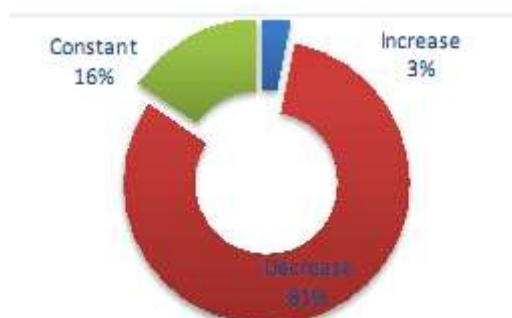


Fig-2: Productivity of rice in spring crop 2016 compared to that of 2015

Source: Survey result, 2016

Price of rice

Price of rice depended on the types of rice seeds. Price for the BC15 ranged from 6.5 to 6.7 thousand VND per kilogram (kg). Price of Tap Dao was the lowest at 5.8 to 6.0 thousand VND per kg, while that of Bac Thom was highest at 7.9 to 8.0 thousand VND per kg. Besides, farmers responded that price of

rice relied on the market demand and was affected by the trader. The average price of rice was 6.5 thousand VND per kg. Farmers also said that, the price of rice in this crop was higher than that of 2015 because of the drought situation in the southern area of Vietnam.

Performance of the rice production

Table 3: Performance of one ha rice production

Indicators	Unit	Quantity	Ratio (% of revenue)
Revenue	VND	34,788,924	100.0
Average productivity	Kg/ha	5,339	
Average Price	VND/kg	6,516	
Total cost	VND	29,059,127	83.5
Intermediate cost	VND	17,289,950	49.7
Value added	VND	17,498,974	50.3
Labor cost	VND	8,435,577	24.2
Gross income	VND	9,063,397	26.1
Depreciation	VND	3,333,600	9.6
Net income	VND	5,729,797	16.5

Source: Survey result, 2016

The survey results showed that revenue from rice production of the farmers in Spring crop 2016 was quite high, reaching 34.78 million VND per ha. The value-added of rice was 17.5 million VND, accounting for 50.3% of total revenue. However, due to the total production cost was very high, occupied 83.5% revenue, the gross and net income (with family labors) of the household was rather low. Gross income was 9 million VND per ha, accounting for 26.1% of revenue. In particular, net income from rice production was very low, only 5.7 million VND per ha for 4 to 5 months of growing, accounting for only 16.5% of revenue. This was also the household income because the other income of the households was almost negligible.

CONCLUSIONS AND IMPLICATIONS

In the surveyed household in Y Yen district, Nam Dinh province, the head of the households were middle age at 41 years old with low level of education. Common numbers of family members were 4 to 5 people, of which, a half was female. Besides hiring labor, most households used family labors, especially female labors. Average land area of rice production was low at 0.27ha per household, but rice productivity was rather high as 5.34 tons per ha in Spring crop compared to the average level of the whole country [7]. The average revenue was 34.79 million VND, value added was 17.5 million VND. The production cost was too high, at 29.06 million VND, occupied 83.5% total revenue, which led to the low net income of the household at only 5.7 million VND per ha, accounted for only 16.5% of revenue. Counted on a hectare, hired labor cost took part 29% of total cost, a proportion for the material equipment was 26.7%. Fertilizers and pesticide cost accounted for 28.7%, of which, 20% belonged to NPK. The farmers thought that the more

fertilizers they use, the higher productivity they could gain.

One of the main problems with the rice farmers was that their production was too high. Therefore, in order to improve the performance of rice production, it is necessary for farmers to reduce the cost of production. This could be done by:

- Applying new machineries and technology to the production process to reduce the hired labor cost. Farmers should buy or hired machines: plows, harrows, transplants in the land preparation and to plant the rice.
- Improving the management of materials and equipment. For example, the farmers should take care of their nylon so that, they can reuse it three or more times to save input cost. For the mouse trap, they could replace the single-time trap by the multi-times trap. They had better use the cage snap case, a live-catch mouse trap, spring-loaded bar trap... These traps could reuse many times.
- Using fertilizers and pesticides more suitably. At least, they should follow the instruction by the manufacturers on the product packaging to reduce the cost, reduce the chemical residual to protect their health and environment.

REFERENCES

1. Asian Development Bank –ADB. (2013). Rice value chains in China, India, Lao PDR, and Vietnam: 2012 Survey results, Interpretations, and Implications for Policy and Investment.
2. Khai, H. V., & Yabe, M. (2011). Technical efficiency analysis of rice production in Vietnam. *Journal of International Society for Southeast Asian Agricultural Sciences*, 17(1), 135-146.

3. Che, T. N., Kompas, T., & Vousden, N. (2001). Incentives and static and dynamic gains from market reform: rice production in Vietnam. *Australian Journal of Agricultural and Resource Economics*, 45, 547–572.
4. Pandey, S., & Minh, D. V. (1998). A socio-economic analysis of rice production systems in the uplands of northern Vietnam, doi:10.1016/S0167-8809(98)00152-2
5. Wassmann, R., Hien, N. X., & Hoanh, C. T. (2004). Sea level rise affecting the Vietnamese Mekong delta: Water elevation in the flood season and implications for rice production. *Climatic Change*, 66, 89.
6. ThiUt, T., Kajisa, K. (2006). The impact of green revolution on rice production in Vietnam. *The Developing Economies*, 44, 167–189.
7. General Statistics Office of Vietnam – GSO. (2015). Statistical Yearbook 2015. Statistical Publishing house. Hanoi, Vietnam.
8. Vietnamdong (VND) is Vietnamese currency, 1 USD= 22,260VND.
<https://www.vietcombank.com.vn/ExchangeRates/?lang=en>, consulted on 25/7/2016.
9. All these three provinces located in the Red River delta of Vietnam.
10. Vietnamese names of the rice seed.