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CONSTRAINTS FACED BY THE FARMERS IN RICE PRODUCTION AND EXPORT

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ABSTRACT

With the objective to find out the constraints faced by farmers to propose Government's policies regulating to overcome the constraints of rice production promotion and export in India and Vietnam. A study had surveyed on 100 farmers in Punjab and West Bengal states of India and An Giang and Vinh Long provinces of Vietnam. It found that the agro-ecological constraints faced by farmers, ranked from more to less serious were related to dependence on monsoon; land/soil problems; environmental pollution; lack of water and small land holdings. Under technical constraints, it was found that diseases (sheath blight, blast, and stem rot); pests; lack of proper varieties; post-harvest technology constraint; storage problems were the most serious constraints perceived by large percentage of respondents. Fertilizer problems; plant protection constraints; weed problems; lack of labours and poor processing were found to be other constraints as perceived by farmers. In case of socio-economic constraints, the study found that poor infrastructures; high cost of inputs; credit problems; low rice price; inadequate inputs and lack of trainings were the most important constraints as perceived by large percentage of farmers. Other constraints as perceived by lower percentages of farmers were poor extension services; lack of information and lack of helpfulness from local authorities/governments.

INTRODUCTION

Rice is the crucial crop in Vietnam and rice and wheat are the major food crops in India. For the rice crop, that accounts for nearly 41 per cent of the total area under cereals production in India and 22 per cent in total world rice production (Praduman and Mark 1994). Rice export in India and Vietnam has contributed to food security of many countries all over the world. The Food and Agriculture Organization (FAO) of the United Nation has calculated that in 1988 to 1990, 786 million people faced chronic under-nutrition in developing regions, or 20 per cent of their populations. Most of these people (528 million) are in Asia. The next largest group (168 million) is in Africa (Mills 1993). Rice export in both the countries also contributed in the improvement the life condition of rice farmers.

To enhance more export quantity, quality and export earning in the future, we need to know how about the constraints faced in rice export at different stages, in different levels, and different stakeholders involving in the exporting process to find out the suitable solutions for overcoming the constraints.

This paper aims at understanding problems and constraints faced by farmers in rice production and export. The main constraints towards farmers are focused in three problems viz. agro-ecological constraints, technological constraints and socio-economic constraints for understanding the real situations in rice production and export of India and Vietnam, which are useful to find out the suitable solutions for overcoming the constraints and promoting rice production and exports.

RESEARCH METHODOLOGY

Locations of the study: In case of Vietnam, Vinh long and An Giang are the two provinces out of total 12 provinces of Mekong (Cuu Long) River Delta, where rice area of

4.0 million ha produced 16.2 million tonnes or half of the total rice production in Vietnam (Bui 2000) and supplied about 90 per cent of surplus rice production for export every year of the country (Le, 2003). About 70 to 100 per cent rice area of the Cuu Long delta region produced rice for export. With the character of water submergence in rice area, the alluvial soil and good irrigation system, almost all farmers in the region can grow 3 seasons of rice per year with the rice yield per ha relatively high.

Two states *i.e*. Punjab and West Bengal located in the Indo-Gangetic Plain (this plain includes 5 states Punjab, Haryana; Uttar Pradesh, Bihar and West Bengal and Delhi) were selected for the study. In the six agro-ecological regions (Arid, Semi-arid, Sub-humid, Humid-per humid, costal and island), and 20 regions of India, Punjab belongs to Arid-ecological region and Western Plain region; and West Bengal to Sub-humid ecological region and region of Eastern Plateau and Eastern Ghats (Fertilizer Statistics 2002-03).

Selection of respondents: There were 100 farmers from the above states and provinces took part in the survey, which divided 50 farmers for each country.

Method of measurement the constraints: There is no single best method for identifying respondent's constraints and research needs. A personal survey helps to identify some constraints. Many research programmes have collected a tremendous amount of information on the needs of these clients (Roy and Dutt, 2000). The information on constraints faced in rice production and export by farmers was collected with the help of interview schedules. The major constraints taken into account were technical, socio-economic and agro-ecological constraints.

To help in the constraint analysis, a comprehensive list of socio-economic, technical and agro-ecological constraints was given to farmers. The respondents were asked to express the constraints as per the severity felt by them and the scores are analysed based on majority of responses as obtained and ranked on the basis of the importance.

RESULTS AND DISCUSSION

GENERAL INFORMATION ON LAND USE AND RICE PRODUCTION OF FARMERS

Before coming to the main objective of this paper, *i.e.* analysis of problems, constraints faced by farmers, along with analysis on profile of the farmers, it may be needed to know some general information related to the constraints and useful for more understanding the constraints such as situations in land use, rice production, productivities, sources of finance etc. We discuss these issues in step-by-step following each headline.

Land use situations of Indian and Vietnamese rice farmers

First, we examine the land holding and land use situations of Indian and Vietnamese rice farmers. Table 1 helps to know these issues by the data presented

- **Land holding:** Based on the classification of Directorate of Economics and Statistics, Ministry of Agriculture, Govt. of India (ICAR 2004), the classifications of land holding of Indian rice farmers are as follows: Majority of Indian farmers in this study were small holding (1-2 ha; 34.00%), followed by semi-medium holding (2 – 4 ha; 26.00%), and medium holding (4 – 10 ha; 24.00%). Farmers with large holding (10 ha & above) were 10 per cent and the marginal farmers (below 1 ha) were 6.00 per cent.

Land holding in case of Vietnamese rice farmers were much different as compared to Indian farmers when almost all of them (72.00%) belonging to marginal and small-holdings (28.00% and 44.00 %, respectively). The semi-medium holding was only 20.00 %. About 8.00% were classified under medium holding and there was no farmer in this study belonging to large holding class.

- **Operational holding:** The classification for operational land holding was also based on the above standards for land holding. With this classification, percentages for different classes of operational holdings of Indian rice farmers were relatively similar to those of land holding, but only changed in the medium and large operational holdings due to these

farmers hired some land from other sources (reduced medium class to 18.00 % and increased large class to 24.00%).

- Paddy land: Total paddy lands of Indian rice farmers were 326.51 ha and it occupied 82.6 per cent of total land of the farmers. These numbers for Vietnam was 71.26 ha and 82.42 per cent.

In case of Vietnamese farmers, the percentages for operational holding classes were almost similar to those of landholding classes due to very little land, which farmers hired from other sources.

Table 1: Land use situations of farmers (N=100)

S.No.	Characteristics	Category / range	Vietnam		India	
			F	%	F	%
1.	Land holding	Marginal(below 1 ha)	14	28	3	6
		Small (1 – 2 ha)	22	44	17	34
		Semi-medium (2 – 4 ha)	10	20	13	26
		Mediu (4 – 10 ha)	4	8	12	24
		Large (10 ha & above)	0	0	5	10
2.	Operational holding	Marginal (below 1 ha)	14	28	4	8
		Small (1 – 2 ha)	22	44	13	26
		Semi-medium (2 – 4 ha)	10	20	12	24
		Medium (4 – 10 ha)	4	8	9	18
		Large (10 ha & above)	0	0	12	24
3.	Paddy land	Total (ha)	71.26		236.51	
		% in operational land	82.42		82.6	
4.	Irrigated land	Total (ha)	86.46		264.14	
		% in operational land	100		92.3	
5.	Rainfed land	Total (ha)	0		50.27	
		% in operational land	0		17.6	
6.	Land leased in (min 0.33, max 10, mean 4.46 ha)	Total land leased in (ha)	3.5	40.5	84.83	30
		Leased in households	2	4	19	38
7.	Sources of Irrigation	Well	0	0	1	2
		Canal	50	100	11	22
		Tube wells	0	0	33	66
		Rainfall	0	0	5	10
8.	Seasons per year	2 seasons per year	48	96	8	16
		1 season per year	2	4	42	84

(India: N=50; Vietnam: N=50)

- Irrigated land: The lands under coverage by irrigation for Indian farmers were 92.30 per cent. This number was less than the average of the state Punjab (95.00%) and due to good condition of irrigation in Punjab as compared to the average of all India (60.20%) (Agricultural Marketing Statistical Abstract, 2001). In case of Vietnamese farmers, they enjoyed the good irrigation condition, where this percentage was 100 per cent.

- Sources of irrigation: Due to the advantage of natural condition, 100.00 per cent Vietnamese farmers used the canals for the main sources of irrigation; whereas, for Indian respondent, it is one of the main constraints in their production when more than half of them used tube-wells (66.00%), followed by canals (22.00%), rainfall (10.00%) and wells (2.00%).

- **Season per year:** Rice season per year for Vietnamese farmers dominated with 3 rice seasons per year (96%) followed 2 seasons per year only 4.00 per cent. In case of India, most of respondents cultivated rice only 1 season per year (84%), followed by 2 seasons per year with 16.00 per cent. This condition is also another constraint due to lack of water or poor irrigation system, which need to be improved.

- **Rainfed land:** In condition of Indian farmers in this survey still 50.27 ha under rainfed land (17.6%); whereas, there was no land under rainfed condition in case of Vietnamese farmers.

- **Land leased in:** Indian farmers have leased in 84.83 ha (30%) for 19 households (38%); whereas, for Vietnamese farmers there were only 4 per cent households who have leased in with 3.5 ha.

Rice productivities of Indian and Vietnamese farmers

One attempt was made to analyse the rice productivities both for Indian and Vietnamese farmers based on the interview schedule for last 4 and 3 years for India and Vietnam respectively. The data were indicated in the Tables 2 and 3.

In general, the average yields of West Bengal farmers were lower than those of Punjab. The average yield increased gradually in last 4 years in West Bengal *i.e.* 1.92; 1.95; 2.19 and 2.13 tonnes per ha for 2001; 2002; 2003 and 2004, respectively; whereas, these numbers were 2.87; 3.10; 2.67 and 2.92 tonnes per ha for above years for Punjab. The averages for overall 2 states were 2.41; 2.53; 2.45 and 2.55 for 2001; 2002; 2003 and 2004, respectively. The rice yield in the two states can be improved if we consider and have suitable planning to tackle the constraints that have been faced by the farmers in rice production (Table 2).

Data for rice yields in the two provinces of Vietnam were presented in the Table 3 in three years 2001; 2002 and 2003 with 3 seasons (Winter-spring; Summer-autumn and Autumn-winter). The data reveal that there were relatively similar rice yields between two provinces (Vinh Long and An Giang) and it depends on season also. In general, the highest yield was received under winter-spring season (6.36; 6.46 & 6.54 for 2001; 2002 and 2003, respectively). The lowest yield was got under Summer-autumn season (5.25; 5.28 and 5.34 for 2001; 2002 and 2003, respectively). The medium yield was received under Autumn-winter season (5.38; 5.38 and 5.46 for 2001; 2002 and 2003, respectively.

Table 2: Average rice productivity in last 4 years (India)

States	Average productivity in last 4 years (T/ha)			
	2001	2002	2003	2004
Punjab (N = 25)	1.92	1.95	2.19	2.13
West Bengal (N = 25)	2.87	3.10	2.67	2.92
Overall (N = 50)	**2.41**	**2.53**	**2.45**	**2.55**

(The average of 2 seasons per year in W.B. and 1 season par year in P.J.)

Vietnamese farmers have suitable rice cultivating condition as compared to Indian farmers, the average rice yield also higher than those of Indian rice yields in this study data.

Table 3: Average rice productivity in last 4 years (Vietnam)

Years	2001			2002			2003		
Providences	DX	HT	TD	DX	HT	TD	DX	HT	TD
Vinh Long (N=25)	6.31	4.91	4.94	6.45	4.92	4.92	6.53	4.88	4.93
Am Giang (N=25)	6.40	5.61	5.88	6.47	5.66	5.90	6.56	5.82	6.10
Overall (N=50)	**6.36**	**5.25**	**5.38**	**6.46**	**5.28**	**5.38**	**6.54**	**5.34**	**5.46**

Notes: DX = Winter-spring; HT= Summer-autumn; TD = Autumn-winter seasons.

Income and profit per ha of rice farmers

In parallel with interview on rice productivity, effort of the study focussed to interview farmers about income and expenditure in rice cultivation per ha per year and then, calculating the profits for each state/province. To make easier comparisons, the money of each country changed to USD with the exchange rate on August, 2005 (1 USD = 43.45 Rs (India) and 1 USD = 15.835 Dong (Vietnam). The results of this survey were presented in the Tables 4 and 5 for India and Vietnam, respectively. Incomes, expenditures and profits were classified into four categories *i.e.* below 1150; 1150 to 1725; 1725 to 2300 and above 2300 (USD) as shown in two tables 4 and 5. It is necessary to note that for the incomes and expenditures of the farmers, the family labours unusually was not covered, so the efficiency of one USD of capital was relatively higher.

Table 4: Income and profit per ha of Indian rice farmers

States	Particulars	Income and profit per ha (USD)			
		Below 1150	1150-1725	1725-2300	Above 2300
Punjab (N = 23)	***F (%)***	***14 (61)***	***6 (26)***	***2 (9)***	***1 (4)***
	Income	819.99	1157.32	1967.78	4372.84
	Expenditure	506.82	821.04	996.63	2661.46
	Profit	313.17	336.28	1001.15	1711.38
West Bengal (N = 25)	***F (%)***	***24 (96)***	***1 (4)***	***0***	***0***
	Income	956.08	1196.78	-	-
	Expenditure	663.41	828.54	-	-
	Profit	292.67	368.24	-	-
Overall (N = 48)	***F (%)***	***38 (80)***	***7 (14)***	***2 (4)***	***1 (2)***
	Income	905.94	1163.90	1967.78	4372.84
	Expenditure	605.72	792.70	996.63	2661.46
	Profit	300.22	371.20	1001.15	1711.38

It was found from Table 4 that in 23 out of 25 farmers in Punjab (2 farmers did not reveal their income), the majority (61%) were belonging to first category of income (below 1150 USD), followed by second one (1150-1725 USD; 26.00%). The higher categories of income (1725-2300 and above 2300 USD) were fewer in percentages (9.00 and 4.00%, respectively). The expenditures as well as profits were found increasing for the next category of income and it ranged from 819.99 USD for first category to 2661.46 USD for fourth category. The incomes of Punjab farmers were seen better than those of West Bengal farmers where majority of them ranged under first and second categories of incomes only with 96.00 and 4.00 per cent respectively and no one was found in the higher category.

In general, the average profits per ha for farmers in average in the two states of the

study location ranged under 300.22; 371.20; 1001.15 and 1711.46 for first; second; third and fourth categories of incomes (Table 4).

The incomes in case of two provinces Vinh Long and Angiang of Vietnam were observed higher than those of India. The reasons might be due to the higher rice productivities, and more rice seasons per year than the two locations of India. Other advantages in case of Vietnam were fewer percentages of farmers in low and more percentages in high categories of incomes (Table 5).

In general, 20.00 per cent of Vietnamese respondents were found in first category; 10.00 per cent second category; 12.00 per cent in third category and 48.00 per cent in the last fourth category and the average profits for these categories were $425.64; $591.73; $1023.03 and $1630.75, respectively.

Table 5: Income and profit per ha of Vietnamese rice farmers

States	Particulars	Income and profit per ha (USD)			
		Below 1150	1150-1725	1725-2300	Above 2300
Vinh Long (N = 20)	***F (%)***	***6 (24)***	***4 (16)***	***0 (0)***	***10 (40)***
	Income	884.12	1345.00	-	3175.24
	Expenditure	452.58	747.43	-	2026.62
	Profit	431.43	597.57	-	1126.62
An Giang (N = 25)	***F (%)***	***4 (16)***	***1 (4)***	***6 (24)***	***14 (56)***
	Income	950.43	1515.63	2037.68	3161.17
	Expenditure	457.85	947.27	834.65	1171.00
	Profit	492.58	568.36	1203.03	1990.17
Overall (N = 45)	***F (%)***	***10 (20)***	***5 (10)***	***6 (12)***	***24 (48)***
	Income	910.64	1379.85	2037.68	3167.04
	Expenditure	485.00	788.12	834.65	1536.69
	Profit	425.64	591.73	1203.03	1630.35

Financial sources to the farmers in rice production and export.

One of the efforts of the study was to understand the sources from where the farmers in both countries received finances to cultivate rice for export purpose. The results of the survey were depicted in the two Fig. 1 and 2 for India and Vietnam respectively.

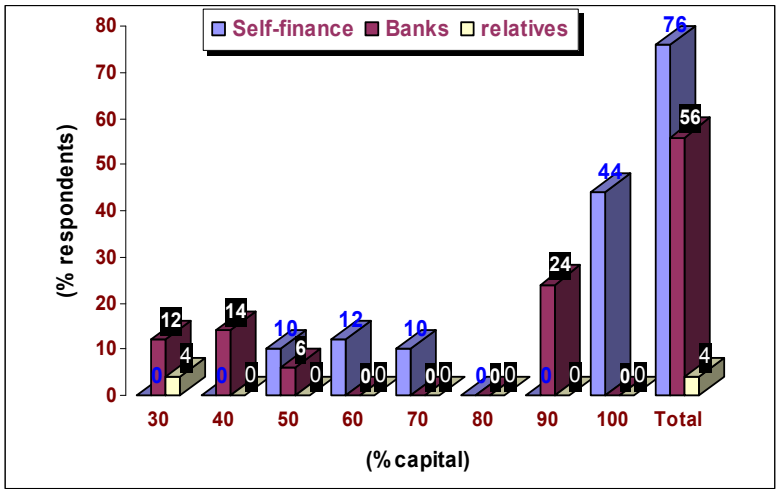

Fig. 1: Financial sources to Indian farmers in rice production for export

It can be seen from the Fig. 1 that, 76.00 per cent of Indian farmers cultivated rice for export with their own finance sources; in which 44.00 per cent of them had self-finance for 100 per cent and 10.00; 12.00 and 10.00 per cent had self-finance for 70.00; 60.00 and 50.00 per cent money respectively. This meant that besides self-finance they also got finance from other sources. The finance sources from the banks helped to more than half (56%) of Indian respondents to cultivate rice for export, in which 24.00; 6.00; 14.00 and 12.00 got finance from the banks for 90.00; 50.00; 40.00 and 30.00 per cent of money, respectively. Some respondents (4%) revealed that besides self-finance and banks, they also got help from their relative for 30.00 per cent of total money for rice production.

As compared to Indian respondents, Vietnamese rice farmers (8.00%) got very less help from the banks (Fig. 2). And almost all of them cultivated rice for export with self-finance (86.00%), followed by relative (6.00%).

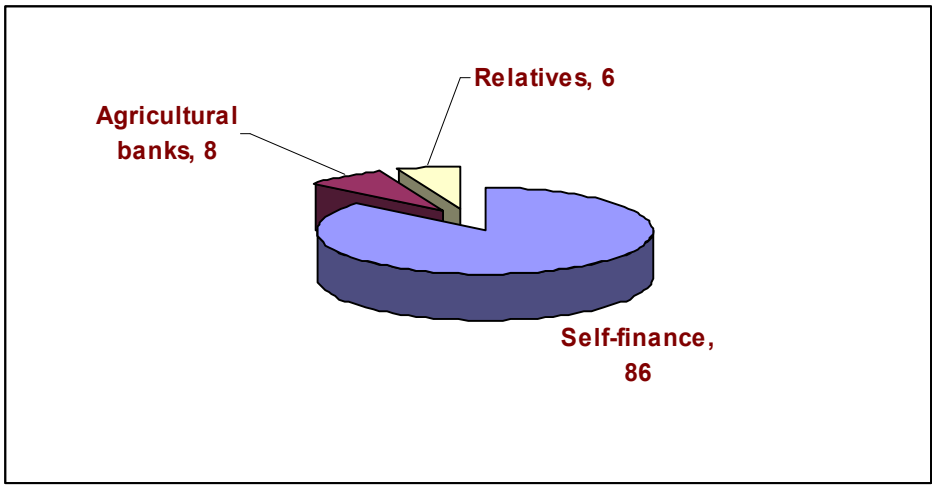

Fig. 2: Financial sources to VN's farmers in rice production for export

PROBLEMS AND CONSTRAINTS FACED BY THE FARMERS

The problems and constraints faced by the farmers in their rice production for export were worked out for India and Vietnam. The main problems and constraints were focused on agro-ecological constraints, technical constraints and socio-economic constraints.

Agro-ecological constraints

The results of the study on agro-ecological constraints have been analysed and presented in the Table 6. In this Table, five main problems as perceived were the main constraints being faced by Indian farmers in their rice production for export nowadays and they were arranged according to the raking importance.

Farmers perceived dependence on the monsoon as the most important constraint (64.00% of respondents). The farmers in the locations of study in West Bengal and Punjab depended mostly on monsoon to sow their rice crop every year and almost all of them just cultivated one season per year due to this constraint. Despite of most of them have pumps, they could not be able to tackle this constraint due to lack of water and increase in cost of production leading to the loss in their farming business.

Land/soil problems were perceived as the second main constraint by 52.00 per cent of respondents. To explain they revealed that

their lands were uneven and it had water logging, degraded land/soil, salinity (in case of farmers in West Bengal) and lack of fertility. These problems led to the loss in rice production and low in rice productivity.

Environmental pollution has been considered the third constraint in the agro-ecological constraints by farmers (42.00%). Many farmers nowadays perceived that the pollution of the environment was the big problem, which needs to notify the alarm all over the world. Environmental pollution as perceived by the farmers is synonym with water pollution as they revealed that due to the excessive used of pesticides and fertilizers causing poisonous matters in water and others such as arsenite, iron, etc., and pollution due to post harvest activities (burning straw…).

Table 6: Agro-ecological constraints as perceived by Indian farmers (N = 50)

Problems	Frequencies	Percentages	Ranks
Dependence on monsoon	32	64	**1**
Land/soil problems	26	52	**2**
Environmental pollution	21	42	**3**
Lack of water	16	32	**4**
Small land	14	28	**5**

Lack of water as perceived by 32.00 per cent of respondents ranked at number 4 of the importance. To explain this constraint, most of them revealed that they need more water and ask for the building of irrigation systems and irrigation facilities due to tendency of lands, which cause more water logging and due to it is erratically in the monsoon, etc.

Small land holdings were perceived as another constraint in rice production for export by 28.00 per cent of respondents. This is clear that small and marginal farmers (in this study small and marginal farmers account for 40 %, table 7 and 8) faced many problems in their credit access, inputs supply and commercial farming etc. In India, according to report by ICAR (2004), in the year 1995-96, the number farmers in marginal and small size holding were 61.6 and 18.7 per cent, respectively; and they occupied only 17.2 and 18.8 per cent, respectively as compared to all size classes.

The analysis on agro-ecological constraints faced by Vietnamese farmers was presented in the Table 7. Similar to Indian farmers, in this kind of constraints, Vietnamese farmers considered 3 main constraints *i.e.* lack of water, environment/water pollution and land/soil declines in fertilities and expressed by 56.00, 34.00 and 20.00 per cent of respondents, respectively.

Despite of too many canals available in the region, there was inadequacy of irrigation and canal systems induced the lack of water in the summer season. In this time, water from main canal could not reach to every field. Therefore, it is necessary to call for attention from local authorities to take action immediately.

Table 7: Agro-ecological constraints as perceived by the VN's farmers (N = 50)

Problems	Frequencies	Percentages	Ranks
Lack of water (Summer-autumn)	28	56	**1**
Environment/water pollution	17	34	**2**
Land/soil declines in fertilities	10	20	**3**

In case of second constraint *i.e.* water pollution, it can be said that this is the serious situation nowadays in the rural region. It was the result of excessive use of fertilizers and pesticides, especially, the use of pesticides to control "golden snail" which was outbreak into epidemic in the rice fields in Cuu Long delta, Vietnam. This pest attacks young paddy rice, especially in the sowing time, inducing many losses. To control this pest, farmers used a lot of pesticides, which led to environment/water pollution. In order to

reduce the pollution, it is imperative to call for attention to educate farmers in the application of bio-control methods and bio-pesticides.

The third land/soil constraint was the decline in soil fertility. Vietnamese farmers revealed that this constraint was due to the cultivation of 3 rice seasons per year, which led to decline in soil fertility, created many toxic matters in the soil and affected the physical property of soil due to the submerging situation for long time. It is needed to change the cultivation system by rotation with one or two legumes crops.

Technological constraints

The results of analysis on technological constraints were presented in the two Tables 8 and 9 for Indian and Vietnamese farmers, respectively. The constraints were arranged in descending order according to the importance. Indian farmers perceived 11 technical constraints as against 8 constraints by Vietnamese farmers.

Table 8: Technical constraints as perceived by Indian farmers (N = 50)

Problems	Frequencies	Percentages	Ranks
Disease (sheath blight, blast diseases)	40	80	**1**
Pests (stem borer)	39	78	**2**
Lack of proper varieties	30	60	**3**
Post harvest technology	24	48	**4**
Storage problems	22	44	**5**
Low rice price	21	41	**6**
Fertilizer problems	20	40	**7**
Plant protection constraints	19	37	**8**
Weed problems	14	28	**9**
Labour (lack of labour/skill labours)	12	24	**10**
Poor processing	11	22	**11**

Most of constraints in rice production for export are belonging to technical constraints. There were 11technical constraints and these constraints were arranged according to the perception of their seriousness by the farmers (Table 8).

Major rice diseases and pests such as sheath blight, blast, stem rot diseases and stem borer were perceived as most serious constraints ranking at number 1 and 2 by 80.00 and 78.00 per cent of respondents, respectively. Blast, bacterial sheath blight and stem borer were the major pests and diseases in the traditional Basmati belt. They caused sizable yield losses (Siddiq 1994). Farmers revealed that these pests caused more cost on control and reduced rice productivity and quality (more broken rice, prolong thee ripeness, etc). They ask for new resistant varieties and new method of control as well as biological pesticides/ methods.

Lack of proper varieties was ranked at number 3 as perceived by 60.00 per cent of respondents. The problems to create this constraint were poor quality, low yield, susceptibility to diseases, pests, saline soil, logging, etc.

Post-harvest technology has the important role in the effectiveness of rice production to ensure the rice quality. About 60.00 per cent of respondents (ranked number 4) perceived lack of post-harvest technology as constraint by which they faced many problems such as lack of threshing machines (especially farmers in W.B.), combine-harvester, lack of dryer (mostly farmers using sun drying of their products) and lack of other advanced post-harvest technologies. In the location of the study in W.B. even now the farmers used to resort traditional manual methods of post-harvest technology (harvesting, drying, transport, etc.). This constraint has been contributing into increased loss after harvest and decreased rice quality.

Storage constraint was ranked at number 5 by 44.00 per cent of the farmers in the locations of study. Regarding to this, they revealed that they faced the problems like lack of or

improper storage facilities and knowledge. Most of them use the traditional techniques and this kind of technique cause more humidity to rice produce and more loss and reduce quality.

Low price of rice produce was perceived by 44.00 percent of respondents. Especially, poor farmers have no transportation facility or money to sell where they want or keep their produces and sell when is suitable price. This problem also revealed the lack of proper organizations both collective and government organizations to ensure good price of farmer's produces.

For the fertilizer constraint, 40.00 per cent of farmers in the locations of study revealed that they faced the problem such as lack of combine fertilizers, not available bio-fertilizers to improve their soil, and high cost of fertilizers.

In case of plant protection, 37.00 per cent of respondents perceived this as important constraint due to the reasons of lack of control of disease and pests effectively, lack of better pesticides, unavailable bio-pesticides, lack of method of bio-control and high cost of pesticides.

Other technical constraints were weed control problems; lack of labours and skill labours and poor processing of produces due to lack of processing facility, lack of knowledge in processing to make value addition to increase their rice quality. These constraints were perceived by 28.00; 24.00 and 22.00 per cent of respondents, respectively.

Almost all the technical constraints as perceived by Indian farmers were the same with Vietnamese farmers but with changes in positions of importance (Table 9).

The inadequacy in post-harvest technology was perceived the first important constraints by 90.00 per cent of respondents. These techniques ensure rice quality and reduce loss. The post-harvest constraints included lack of processing facilities, lack of knowledge about processing and value addition, poor storage, lack of dryers, and drying grounds.

The second important constraints were pests, especially "golden nail", the outbreak of this pest was the big problem for farmers nowadays in Cuu Long Delta and this was perceived as serious constraint by 74.00 per cent of farmers.

Weed problems (54%) were another constraint in rice fields in Cuu Long Delta. The farmers used to spend more cost to buy herbicides to control weed. Some kinds of weeds remain in the fields and farmers have to apply 2 or 3 time spraying sometimes with hand-weeding.

Lack of technical knowledge was revealed by 46.00 per cent of farmers. This kind of constraints meant that farmers had lack of trainings in rice export properly. There is a need to help them aware about rice qualities/standards and apply suitable techniques to ensure quality, etc.

Table 9: Technical constraints as perceived by VN's the farmers (N = 50)

Problems	Frequencies	Percentages	Ranks
Inadequacy in post-harvest technology	45	90	**1**
Pests (golden-snail)	37	74	**2**
Weed problems	27	54	**3**
Lack of technological knowledge	23	46	**4**
Rice price and selling problems	18	36	**5**
Quality of pesticides	15	30	**6**
Lack of proper varieties	13	26	**7**
Lack of labours	17	24	**8**

Lack of labour, lack of proper rice varieties, rice prices and selling problems were as another constraint and were the same with Indian farmers. For the selling problem, at the simultaneous harvest, price at this time is usually low and some times farmers feel

difficult to sell. The qualities of pesticides were other constraints similar to ones in plant protection as perceived by Indian farmers. They expressed about the low quality of pesticides and need to examine to overcome the problems.

Socio-economic constraints

Tables 10 and 11 present socio-economic constraints as perceived by farmers in India and Vietnam, respectively. It can be seen from the two tables that almost all the constraints were same in the two countries but some changes in the positions of importance. There were 8 and 6 main problems in the socio-economic constraints as perceived by farmers in India and Vietnam, respectively.

The most important constraint was poor infrastructures as perceived by 78.00 and 64.00 per cent of Indian and Vietnamese respondents, respectively. In these constraints, they revealed about the problems of poor road for transportation and non-availability of transporting facilities to move the rice produce from farmer's fields to the markets and home. There was the lack of other advanced facilities for storage, processing, drying, etc. Some farmers revealed that they have still used traditional tools and method for rice harvesting.

Table 10: Socio-economic constraints as perceived by Indian farmers (N = 50)

Problems	Frequencies	Percentages	Ranks
Poor infrastructures	39	78	**1**
High cost of inputs	37	74	**2**
Credit problems	35	70	**3**
Inadequate inputs	30	60	**4**
Lack of trainings	27	54	**5**
Poor extension services	23	46	**6**
Lack of information	19	38	**7**
Lack of helpfulness from local governments	14	28	**8**

The second important constraint as perceived by 74.00 and 76.00 per cent of respondents in India and Vietnam, respectively, were high cost of inputs. Farmers revealed that important inputs for rice production such as fertilizers, pesticides, fuels for irrigation, etc. were increasing day by day which led to high cost of production and reduced their profits. The constraints in high cost of inputs were also expressed by the farmers that were unaffordable to buy.

As more than 70.00 per cent of farmers belonged to small and marginal size of holding, they need credit facilities from the banks to invest in their rice cultivation. This was the main constraint as perceived by 70.00 and 82.00 per cent of Indian and Vietnamese respondents, respectively. This problem was due to non-availability of credits, not easy to access, complicated in paper works, banks were not helpful, etc. This finding was coincided with statement that banks have seldom been able to meet minimum target of agricultural production credit, because the farm sector could not develop absorptive capacity corresponding to the liquidity available with the banks for agricultural production credit. In spite of multiple numbers of recommendations made by several expert committees and policy enunciations of the government, flow of credit to agriculture sector remains restricted" (Johl 2005).

The inadequate inputs supply was another constraint as perceived by 60 per cent of the Indian farmers. To explain this constraint, they revealed the reasons like sometime shortage of inputs, not available combine fertilizers, bio-fertilizers and bio-pesticides, ineffective pesticides, created pollution and high cost of inputs, etc.

Two constraints, which can be said, belonged to extension organizations' direct responsibility *i.e.* lacks of training and poor extension services. These constraints were expressed by 54.00 and 46.00 per cent of

Indian farmers and 54.00 and 48.00 per cent of Vietnamese farmers, respectively. They said that training is immediately needed but no training programme has been organized for them. Very few farmers have undergone training. They need to be trained in the rice production for export, rice quality/standards, and globalization of agriculture, WTO, etc.

For the extension services, they revealed that the important reasons, viz. there was no T & V programme for them, extension personnel did not come to help them in every day production/problems, and extension was very weak, not having concern for farmers, improper activities, not helpful, etc.

The last two constraints as perceived by less number of Indian farmers were lack of information relating to rice export production, quality/standard of rice export, export market, price information, etc. and lack of helpfulness of local authorities/governments. The percentages were 38.00 and 28.00 per cent of Indian farmers, respectively; whereas, lack of information was perceived by 46.00 per cent of Vietnamese farmers.

Table 11: Socio-economic constraints as perceived by VN's farmers (N = 50)

Problems	Frequencies	Percentages	Ranks
Credit problems	41	82	**1**
High cost of inputs	38	76	**2**
Poor infrastructures	32	64	**3**
Lack of trainings	27	54	**4**
Poor extension services	24	48	**5**
Lack of information	23	46	**6**

The above agro-ecological, technical and socio-economic constraints as perceived by the farmers were similar to remarks stated by Prasad (2002) that India, the country having largest rice area in the world has only 41 per cent of the productivity reached in USA and 48 per cent of that in China…Factors like drought, lodging, weeds, soil acidity/sodicity, poor soil fertility, insect pests, diseases, rodents etc. are responsible for low yields and the yield loss varies from ecosystem to ecosystem. However, the major factor is too much or not enough water. He further emphasized that also eastern India has country's 90 per cent area under rainfed uplands, where drought occur frequently. High yieding varieties (HYVs), which are resistant to major disease and pest for this region, are yet not available. The socio-economic situation in this part of the country is not so good and rice farmers have very little funds of their own and the credit availability is also meager. This keeps rate of application of fertilizer and other agricultural inputs very low and the potential of available rice varieties is not attained. For increasing the productivity of rice in India, this region deserves full attention of the scientists, extension personnel, planners and policy makers of the country.

Excepting some specific conditions, for examples higher rice yields, not so difficult water problems, almost all situations were similar to Vietnam. This might be because both countries are developing countries and rice production for export.

CONCLUSION

The study found that the agro-ecological constraints faced by farmers, ranked from more serious to less serious were related to dependence on monsoon; land/soil problems; environmental pollution; lack of water and small land holdings.

Under technical constraints, it was found that the diseases (sheath blight, blast, and stem rot); pests; lack of proper varieties; post-harvest technology constraint; storage problems were the most serious constraints perceived by large percentage of respondents. Low rice price; fertilizer problems; plant protection constraints; weed problems; lack of

labours and poor processing were found to be other constraints as perceived by the farmers.

In case of the socio-economic constraints, the study found that poor infrastructures; high cost of inputs; credit problems; inadequate inputs and lack of trainings were the most important constraints as perceived by large percentage of farmers. Other constraints as perceived by lower percentages of farmers were poor extension services; lack of information and lack of helpfulness from local authorities/governments.

From the findings of the study, it is imperative to call for attention from government, policy makers, and planners to design effective rice export policy/strategy that would ensure to overcome the constraints faced by the farmers for promoting rice production and export.

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Nghiên cứu những hạn chế mà người nông dân phải đối phó trong sản xuất và xuất khẩu lúa gạo

Mục tiêu của nghiên cứu này là tìm ra những hạn chế mà người nông dân phải đối phó để kiến nghị với chính phủ điều chỉnh chính sách cho phù hợp, khắc phục được những hạn chế này, phục vụ phát triển sản xuất và xuất khẩu lúa gạo ở Việt Nam cũng như Ấn Độ. Một nghiên cứu đã tiến hàng điều tra trên 100 nông dân ở hai Tiểu BangPunjab và West Bengal của Ấn Độ và hai tỉnh An Giang và Vĩnh Long của Việt Nam. Kết quả nghiên cứu nhận thấy rằng: Đối với sinh thái nông nghiệp;, những hạn chế mà nông dân phải đương đầu từ mức rất nghiêm trọng đến ít nghiêm trọng bao gồm sự phụ thuộc nước vào chế độ gió mùa; những vấn đề về đồng ruộng và đất đai; ô nhiễm môi trường; thiếu nước tưới và canh tác manh mún do thiếu đất. Đối với kỹ thuật canh tác, nghiên cứu cho thấy hạn chế chính là bệnh hại lúa như đốm vằn, đạo ôn và bệnh thối thân; sâu hại; giống chưa phù hợp; những khiếm khuyết về công nghệ sau thu hoạch; những khó khăn về bảo quản. Những vấn đề về phân bón; bảo vệ thực vật; quản lý cỏ dại; thiếu lao động và kỹ thuật chế biến kém là những hạn chế thứ yếu theo như nhận thức của nông dân. Đối với kinh tế-xã hội, hạn chế chính được ghi nhận là cơ sở hạ tầng yếu kém; chi phí đầu vào cao; giá bán lúa thấp; khó khăn về tín dụng; vật tư đầu vào chưa thích hợp và thiếu đào tạo tập huấn. Ngoài ra, còn những hạn chế khác như dịch vụ khuyến nông kém cõi; thiếu thông tin và thiếu sự giúp đỡ nhiệt tình của chính quyền địa phương. Đó là những hạn chế chung cho cả nông dân Việt Nam và Ấn Độ trong sản xuất và xuất khẩu lúa gạo