

STUDY ON RELATIVE PROFITABILITY OF BRRI Dhan33 OVER BR11 FOR MONGA MITIGATION IN GREATER RANGPUR REGION

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ABSTRACT

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The present study was conducted in Rangpur, Nilphamari, Kurigram and Lalmonirhat districts under greater rangpur region during 2007 after harvesting BRRI dhan33 to determine and compare the relative profitability BRRI dhan33 rice variety over farmers' existing cultivated variety BR11. A total of 78 out of 150 farmers were purposively selected. Monga is used to describe the famine like situation at northern part of Bangladesh in which the poor suffered acute deprivation. BRRI dhan33 is an early maturing short duration rice variety which has potentiality to mitigate monga by generating employment opportunities during peak monga period. Findings indicate that all the farmers of all 4 locations together, mean per hectare yield of BRRI dhan33 (3.58 tons) was found significantly lower than BR11 (4.42 tons). Overall per hectare profit of BRRI dhan33 and BR11 were found Tk. 15186 and Tk. 15232 respectively. The equivalent BCRs are 1.74 and 1.81. So, both yield and profit per hectare were lower in case of BRRI dhan33 compared to BR11. But this loss will be compensated by prevailing higher price of paddy (as well as rice straw) during October-November i.e. peak monga period and higher yield and profit expected to be obtained from following early planted potato crop. Large and medium farmers got more profit than the small farmers in cultivating BRRI dhan33. On an average 123 labor days were required per hectare for cultivating BRRI dhan33 of which 64 labor days (i.e. 52.03%) from family sources and 59 (i.e. 47.96 %) from hired sources. On the other hand, for cultivating BR11 variety, on average 137 labor days were required of which 68 labor days (i.e. 49.63%) came from family sources and 69 (i.e. 50.36%) from hired sources. In case of BRRI dhan33 cultivation 123 labor days utilized per hectare, from which 64 and 59 persons found employments for each hectare of land cultivated, people who otherwise would have remain unemployed. This means that slightly higher number labor days utilized from family sources compared to hired labor days. Like the hired agricultural workers, family workers also sit idle during *monga* period and used in activities related to BRRI dhan33 cultivation. The overall experience of the farmers, both large, medium and small, on BRRI dhan33 was thus very positive.

Key word: Monga Mitigation, BRRI dhan33 and BR11

INTRODUCTION

Bangladesh is predominantly an agricultural country with an area of 1,47,570 square kilometers. The total population of the country is 148.1 million with the annual growth rate of 1.42 percent. Population density of the country is 926 persons per square kilometer. The country is supplying to meet the basic need to her population from its net cultivable land which is estimated around 8.03 million hectares in which about 2.87 million hectares of cultivable land are single cropped, 4.13 million hectares are double cropped area and 1.03 million hectares are triple cropped areas with a cropping intensity of around 180 percent (BBS, 2007). The country has been struggling hard to feed her increasing population as food shortage is her salient feature. To feed the burgeoning population is a dire necessity to increase crop production. According to FAO, (2000) hunger has reached around 840 million people in the recent years. Further, about 25% of the world's population or 200 million people are extremely hungry and their sheer survival is threatened by food insecurity, under consumption, malnourishment and hunger related diseases. In Bangladesh, about 25% (of 140 million) people are hardcore/ultra poor and they face severe food insecurity every year. Of the total population, about 50% or more than 70 million people are living below the poverty line and around 35 million are estimated to belong to be hardcore poor. 45% of the children under five are considered as short for the age and maternal malnutrition is widespread. Apart from the prevailing deficit in calorie intake, the normal Bangladeshi diet is seriously nutritionally unbalanced. Northwest region of Bangladesh is the poorest region in the country, where 41.6% of the population live below the poverty line as compared with 35.6% nationally, while daily wage rates are also the lowest in the country. Horizontal expansion is rarely possible with limited land area but increase in crop production is still possible with vertical expansion through increasing crop yield per unit area (Anonymous, 2005).

Agriculture is the mainstay of the economy of Bangladesh as it contributes about 25 percent to the country's GDP of which the contribution of crop sub-sector alone is about 23%. Besides crop sub-sector employs about 68.5% of the country's total labor force, which is about 90% of the labor force being employed by the

agriculture sector (Anonymous, 2002). Seasonal scarcity of employment and hence incomes leading to lack of access to food amongst rural poor families are the main causes of food insecurity at household level. The root of this food insecurity lies in the lack of employment opportunities for the rural wage laborers. The immediate impact of this seasonal joblessness is increased unemployment rates and consequently reduced family incomes, food security and nutrition level. In northern Bangladesh, most of the rural poor households are dependent on agricultural sector as day laborer. Around 71% of the rural poor households in north Bangladesh are dependent on agricultural field as day laborers, where 52% are dependent on agricultural field in other part of Bangladesh (Rahman 1995). In north Bangladesh, around 56% of the total populations are marginal and landless and mainly these peoples are living below the poverty line. On the other hand, as per 1995 census, only 6.2% people owned 40% of the total land and the percentage of these landless peoples are increasing day by day. Mostly these landlessness people are surviving themselves as day laborer and they are the main victims of *monga* (RDRS, 2001). *Monga* is seasonal food insecurity in ecologically vulnerable and economically weak parts of north-western Bangladesh, primarily caused by unemployment and income deficit before *amon* paddy is harvested. It mainly affects those rural disadvantaged families depending directly or indirectly on agriculture. *Monga* is therefore, not a problem of food availability, but lacking access to food (Anonymous, 2007). *Monga* is not a new phenomenon in rural Bangladesh, but the topic just started to catch public attention in the last few years. Pushed by the media, it became a part of the political debate between the government and opposition parties and also found its way into Bangladesh's Poverty Reduction Strategy Paper. To the NGOs and other social workers in the development process, *Monga* is now an important concern and try to support in various way to implement programmes to mitigate *monga* (Zug, 2006). "*Monga*" is not itself the cause of the problems, but the word used to describe the impact at household level comprising combination of factors such as the reduction employment opportunities due to lack of farm works, seasonal higher prices of basic food commodities, and the after-effects of monsoon flooding (Anonymous, 2004). *Monga*, a famine-like situation is a local term used to indicate acute deprivation caused due to the loss of purchasing power due to lack of employment opportunities. This is a major recurring crisis each year strikes the rural poor in Northern part of Bangladesh, especially greater Rangpur – Dinajpur districts. Twice each year (in the month of September to November and April to May), the people of the area regularly suffer from severe seasonal hardship, when household food availability and farm employment ceased. People of five districts i.e., Nilphamari, Rangpur, Kurigram, Lalmonirhat and Gaibandha district under greater Rangpur region are severely affected by a famine-like situation called *monga* every year during September-November. Extreme shrinkage in job opportunities for the landless agricultural laborers is the root cause for such a situation. The short-duration early-maturing BRR1 dhan33 thus has the potentiality to mitigate *monga* through creating employment opportunity during October-November when the rice is harvested. Normally in Northern Bangladesh, almost hundred percent farmers are cultivating transplanted *amon* during *amon* (monsoon) season. They are using long duration (150-170 days) modern varieties like BR11, Shwarna, etc. They prepare the seed beds and sow the seeds in the beds during June and transplant the seedlings to the main fields in July. Intercultural operations such as weeding, mulching, top-dressing, control of pests and diseases etc. are conducted as and when required till August & early September. After that there remains no farming activities required to be done after this period till harvesting commences early December. Absence of agricultural activities in the *amon* fields from mid-September to November create *monga* situation. As a short-duration early maturing modern *amon* variety that can be harvested during late September to November, BRR1 dhan33 may create significant number of job opportunities during *Monga* period for the landless agricultural laborers. And this has prompted the author to undertake the present post-project study for assessing the comparatively profitability of BRR1 dhan33 and its potential to alleviate the *Monga* situation.

In view of the above circumstances, the present study was undertaken keeping in view of the following specific objectives:

1. To describe the socio-demographic characteristics of the respondents.
2. To explain the comparative profitability of BRR1 dhan33 and other *amon* varieties like BR11.

METHODOLOGY

Data were collected during January to March, 2007 after harvesting BRR1 dhan33 and the following rabi crops. For collecting data, an interview schedule was prepared according to the objectives of the study. The study information was collected from a group of sample respondents of 4 locations i.e. Nilphamari (Sadar Upazila), Rangpur (Gangachara Upazila), Lalmonirhat (Hatibandha Upazila) and Kurigram (Ulipur Upazila). All the farmers (150 farmers) of the selected four Upazilas who have cultivated BRR1 dhan33 constituted the population of the present study. Among the 150 farmers, seventy eight (78) farmers were selected as sample

following simple random sampling technique. Separate focus group discussions with the sample farmers were arranged in each study location. These focus group discussions were organized to identify the common opinion of the respondents regarding performances of BRR1 dhan33 comparing to popular amon varieties (such as BR11) and potentialities of BRR1 dhan33 in overcoming monga situation. After collecting requisite data; they were processed and analyzed with a view to achieve the objectives of the study. SPSS 12.0 was used in data analyses. Statistical analyses include descriptive statistics, mainly mean and percentages, parametric statistics such as t-statistics for comparing the mean values of various study parameters, were employed for data analyses and explanation. Beside quantitative analyses, qualitative analyses of information were also performed.

FINDINGS AND DISCUSSION

Selected characteristics of the farmers

The salient features of the farmers with their five characteristics have been presented in Table 1. Data presented in Table 1 indicate that majority (38.5%) of the respondents were in young-aged group as compared to 30.8 % in middle and 30.8 % in old-aged group. Majority of the respondent’s (44.9 %) education level were in secondary level whereas 24.4 percent had never gone to the schools, 19.2 percent had primary level of education and 11.5 percent possessed education above secondary level. Table 1 indicates that more than half (66.7%) of the respondents had small size family while 19.2 and 14.1 percent of the respondents had medium and large size family respectively. Highest proportion (59%) of the farmers possessed small farm while 37.2 percent of the respondents belonged to the mediuml farm and only 3 percent fell into large farm category. Data presented in Table 1 indicate that 43.6 percent respondents had 0.14-0.24 ha area compared to 35.9 percent having <0.14 ha and 20.5 percent with >0.24 ha area under BRR1 dhan33 cultivation.

Table 1. Categorization of the respondent’s characteristics

Characteristics	Scoring method	Categories	Grower		Mean	Standard deviation
			Number	Percent		
Age	Number of years	Young (18-35)	30	38.5	41.06	11.033
		Middle (36-45)	24	30.8		
		Old (46 and above)	24	30.8		
Education	Year of schooling	Illiterate (0)	19	24.4	6.32	4.543
		Primary (1-5)	15	19.2		
		Secondary (6-10)	35	44.9		
		Above secondary (above 10)	9	11.5		
Family size	Number of member	Small (Up to 5)	52	66.7	4.84	2.56
		Medium (6-7)	15	19.2		
		Large (Above 7)	11	14.1		
Farm size	Area in hectare	Small (0.51- 1.0 ha)	45	59.0	1.02	0.80
		Medium (1.01- 3.0 ha)	30	37.2		
		large (>3.0 ha)	3	3.8		
Area under BRR1dhan33	Area in hectare	Cultivated <0.14 ha	28	35.9	0.19	0.103
		Cultivated 0.14-0.24 ha	34	43.6		
		Cultivated >0.24 ha	16	20.5		

Yield Performance of BRR1 dhan33 Compared to BR11 in different locations

Table 2. Comparison of yields obtained by different categories of farmers

Parameters		Locations with mean values				All Locations
		Nilphamari	Rangpur	Lalmonirhat	Kurigram	
Yield (ton/ha) BRR1 dhan33	Small	3.92	3.68	2.27	4.56	3.72
	Medium	3.08	3.28	2.17	5.01	3.28
	Large	4.94	-	2.37	5.26	4.19
	All	3.72	3.55	2.22	4.76	3.58
Yield (ton/ha) BR11	Small	3.80	5.16	3.03	2.93	4.49
	Medium	3.30	5.35	2.59	6.44	4.27
	Large	3.95	-	3.16	6.91	4.66
	All	3.65	3.65	2.81	5.97	4.42
Yield (ton/ha)	BRR1 dhan33	3.72	3.55	2.22	4.76	3.58
	BR-11	3.65	5.23	2.81	5.97	4.42
	t-values	0.38	11.48**	4.41**	4.67**	7.27**

The main approach of this survey is as a short duration variety and directly seeded BRRI dhan33 will mature earlier and can be harvested during October-November, the peak *monga* period thus generating employment for the landless agricultural laborers. Data in Table 2 revealed that overall yield of BRRI dhan33 was higher in Kurigram (4.76 tons/ha) followed by Nilphamari (3.72 ton/ha) and Rangpur (3.55 ton/ha). Lowest average yield of BRRI dhan33 was obtained by the farmers of Lalmonirhat (2.22 ton/ha). Farmers of Lalmonirhat reported that crop lodging due to strong wind was the main reason for lower yield. Regarding yield of BR11 variety revealed that, Kurigram farmers also ranked higher (5.97 tons/ha) followed by Rangpur (5.23 ton/ha) and Nilphamari (3.65 ton/ha). Lalmonirhat farmers, like BRRI dhan33 also got lowest yield in case of BR11 (2.81 ton/ha). Paired t-test of mean yield data (Table 2) revealed that no significant difference between BRRI dhan33 and BR11 yield in Nilphamari. But in all other three locations the mean yields of BR11 were significantly higher compared to BRRI dhan33. Overall mean yield of BR11 (4.42 ton/ha) was also found significantly higher than BRRI dhan33. This clearly spelled out that BR11 was the higher yielder compared to BRRI dhan33 but this loss will be compensated by prevailing higher price of paddy (as well as rice straw) during October-November and higher yield and profit expected to be obtained from following early planted potato crop. Unless it is profitable compared to traditional popular *amon* variety such as BR11, farmer will respond positively to BRRI dhan33.

Profit/Loss Situation of BRRI dhan33 and BR11

Information about the farmers who got profit and incurred losses in cultivating BRRI dhan33 and BR11 are presented in Table 3 and Table 4. In case of BRRI dhan33, 14 farmers (17.95%) faced loss (mean Tk.2425 per hectare) while 64 farmers (82.05%) earned profit (mean Tk. 15186 per hectare) in cultivating the variety (Table 3). Medium farmers suffered more per hectare loss (Tk.3298) followed by the large (Tk.2697) and small (Tk.973) farmers. Large farmers got highest profit (Tk. 31327) followed by the medium (Tk.15069) and small (Tk.14444) farmers.

Table 3. Yield and profit/loss information about BRRI dhan33

Farm category	Information about Loosing farmers (BRRI dhan33)			Information about farmers who got profit (BRRI dhan33)		
	No.	Yield obtained (ton/ha)	Tk. Loss/ha	No.	Yield obtained (ton/ha)	Tk Profit/ha
Small	5	2.09	973	40	3.92	14444
Medium	8	1.97	3298	22	3.75	15069
Large	1	2.37	2697	2	5.11	31327
All	14	2.05	2425	64	3.90	15186

In case of BR11 (Table 4), 6 farmers (7.69%) suffered loss (mean Tk3809/ha) and 72 farmers (92.31%) earned profit (mean Tk.15232/ha). Small farmers suffered more loss (Tk.4567/ha) followed by the medium (Tk.3052/ha) farmers. No large farmer faced such losses. Large farmers got highest profit (Tk.22290/ha) followed by the medium (Tk.15395/ha) and small (Tk.14623/ha) farmers.

Table 4. Yield and profit/loss information about BR11

Farm category	Information about Loosing farmers (BR11)			Information about farmers who got profit (BR11)		
	No.	Yield obtained (ton/ha)	Tk. Loss/ha	No.	Yield obtained (ton/ha)	Tk Profit/ha
Small	3	2.79	4567	42	4.61	14623
Medium	3	2.47	3052	27	4.49	15395
Large	0	-	-	3	4.66	22290
All	6	2.64	3809	72	4.56	15232

Comparative Benefit-Cost analysis of BRR1 dhan33 and BR11

Table 5 Comparison of Production Costs, Product (output) prices and BCRs of small, medium and large farmers between BRR1 dhan33 and BR11

Farm Categories	No.	BRR1 Dhan-33 (mean values)			BR-11 (mean values)		
		Production cost (Tk./ha)	Product price (Tk./ha)	Mean BCR	Production cost (Tk./ha)	Product price (Tk./ha)	BCR
Small	45	16428	29159	1.77	17576	30969	1.76
Medium	30	15950	26122	1.64	15894	29444	1.85
Large	3	15785	35771	2.27	15764	38054	2.41
All	78	16219	28245	1.74	16859	30655	1.81

A detail comparative performance analysis of BRR1 dhan33 and BR11 cultivated by the same respondent farmers were undertaken using parameters such as yield (ton/ha), production cost (taka/ha), products' market price (taka per hectare), profitability (in terms of benefit-cost ratio) and total profits etc. Comparative analysis of production costs of BRR1 dhan33 and BR11 including BCRs of small, medium and large farmers of all the study locations are mentioned in Table 5. From the data it revealed that overall BCR of the variety BR11 was higher (1.81) compared to BRR1 dhan33 (1.74). In case of BRR1 dhan33 BCR was higher for the large farmers (2.27) followed by small farmers (1.77) and medium farmers (1.64). In case of BR11, BCR was also higher among the large farmers (2.41) followed by the medium (1.85) and small farmers (1.76). The overall benefit cost ratio of BR11 is higher (1.81) compared to BRR1 dhan33 (1.74) but at that period when BRR1 dhan33 is harvested it is profitable to the farmers. Because of its higher market price of the paddy (as well as rice straw) during October – November. On the other hand, the land vacated after harvesting of BRR1 dhan33 can be used for cultivating early potato that will give higher yield and market price of potato.

Employment Generation Capabilities of BRR1 dhan33 and BR11

Generally, no employment opportunities were generate during this monga period in northern part of Bangladesh. The agricultural labor are passes their days in a very suffering. Neither they pass their day's even take a meal or half meal in a day; they leave their places for searching the jobs. In this situation, it was a great achievement to create employment opportunities during monga period. Numbers of labor days used in cultivating BRR1 dhan33 and BR11 (per ha) by the sample farmers are shown in Table 6

Table 6 Utilization of family and hired labor per hectare in cultivating BRR1 dhan33 and BR11 by the sample farmers

Labor type		BRR1 dhan33	BR11
Male labor days utilized per hectare	Family	61	65
	Hired	54	64
	Total	115	129
Female labor days utilized per hectare	Family	3	3
	Hired	5	5
	Total	8	8
Total family labor days		64	68
Total hired labor days		59	69
Total labor days utilized per hectare (family + hired)		123	137

Data mentioned in Table 6 revealed that out of 123 labor days utilized for cultivating per hectare of BRR1 dhan33, 64 and 59 persons found employments for each hectare of land cultivated, people who otherwise would have remain unemployed. This means that slightly higher number labor days utilized from family sources compared to hired labor days. Like the hired agricultural workers, family workers also sit idle during *monga* period and used in activities related to BRR1 dhan33 cultivation. On the other hand, comparatively higher numbers of labor days (137) were utilized in cultivation BR11 variety; the numbers of family labor days were almost equal i.e. 68 and 69 from family and hired sources. As the variety can be harvested in September-October, large scale cultivation will be generate sufficient number of employment opportunities for the farmers of the monga prone area.

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