AN ECONOMIC ANALYSIS OF IMPROVED PADDY CULTIVATION IN BILASPUR DISTRICT OF CHHATTISGARH

Girija Sahu[1], Sarju Pallewar[2] and Rajesh Khavse[3]

1 Department of Agricultural Economics & Farm Management, JNKVV, Jabalpur (MP)
2 Department of Agricultural Economics, IGKV, Raipur (CG)
3 Department of Agro-meteorology IGKV, Raipur (CG)
Email ID: spallewar@gmail.com

Abstrect: An attempt has been made in this paper to examine the economic analysis of improved paddy cultivation in Bilaspur district of Chhattisgarh. The study was conducted in Bilaspur district of Chhattisgarh with thirty farmers who were selected by simple random sampling techniques from four villages. After selection of villages, a list of total paddy growers by traditional method was prepared separately and categorized in to three size group on the basis of their land holding size viz, small (up to 02 ha.) medium (02-04 ha.) and large (above 04 ha.). Ten farmers were selected from each of the size group to collect the required information. The primary data were collected from the paddy producers through well prepared interview schedule for the production year 2011-12. Study revealed that the, on an average material cost was estimated as Rs.8165.40 per ha in which 45.00 per cent share of total material cost constituted by the fertiliser material. The average cost of cultivation of improved paddy was estimated to be Rs.31808.40 per ha and ranged from Rs. 27785.60 to Rs.35912.2 in different size groups. The average gross income of paddy was estimated to be Rs. 75961.60 per ha. The average net income and farm business income was calculated as Rs. 44153.20 and Rs. 60517.10 per ha respectively at sampled farms of improved paddy growers in the study area.

Key word: Break of cost, Cost of Cultivation, Cost concepts

INTRODUCTION

Rice is one of the important food crop in the world and ranks, second in terms of area and production. It is the staple food for about 50 per cent of the population in Asia, where 90 per cent of the world's rice is grown and consumed. In Asia, India has the largest area under rice occupying 29.4 per cent of the global area, and it is one of the staple food for 65 per cent of the population in India. It is the largest consumed calories source among the food grain, India is the second largest producer of rice in the world next to China. In India rice is cultivated in 43.81 million hectares with production 96.43 million tonns. This crop plays a vital role in our national food security and is a mean of livelihood for million of rural household. In India, there is growing demand for rice due to ever burgeoning population. It is estimated that rice demand by the year 2010 will be of 100 million tonnes. To assure food security in the rice-consuming countries of the world, rice production would have to be increased by 50 per cent in these countries by 2025 and, this additional yield will have to be produced on less land with less usage of water, labour and chemicals (Zeng et al, 2004). Also, the main threats to the future food-security are: shrinking land, depleting water resources, declining trends in soil fertility and productivity, and depletion of ground water table. Chhattisgarh is the state where paddy is the important crop during kharif season which occupies about 90 per cent area during kharif season. The total area under paddy cultivation in the state is 3.48 million hectare having 6.15 million tonnes of production. The productivity of paddy in the state is 1517 kg per hectare during 2010-11. The area, production and productivity reduced in the subsequent year. The research and development activities in paddy have consistently been concentrated on new paddy varietal.

Therefore, an attempts made in this way in order to analyse the yield, input use and there economics of improved paddy cultivation in the study area to know the efficientness of the resources in to yield to make future intervention of improved paddy cultivation and to suggest to the improved paddy producers accordingly.

MATERIAL AND METHODS

Bilaspur district of Chhattisgarh was selected purposively. The district comprises of block *viz* Bilaspur, Kota, Lormi, Mungeli, Masturi, Pendra road, Bilha and Takhatpur blocks out of which Mungeli block was selected for the study as due to more number of paddy growers After selection of block, a list of total paddy growers by traditional method was prepared separately and categorized in to three size group on the basis of their land holding size viz, small (up to 02 ha.) medium (02-04 ha.) and large (above 04 ha.). From each size group 10 farmers were selected for the study purpose with simple random sampling method. Total 30 farmers were considered to collect the required information on different aspects, which are related to specific objectives of the study. The study pertains to agricultural year 2011-12. Simple mean and average method was applied for analysis.

RESULT AND DISCUSSION

Material used in improved paddy cultivation

Material used in improved paddy cultivation at different farms is presented in Table 1. The table revealed that on an average total cost of cultivation

of paddy was estimated as Rs. 31808.40 per hectare out of which the material cost was estimated as Rs. 8165.40 per ha. It is clear from the table that fertilizer was the major item across the categories in the material cost. The expenditure on this material was estimated as Rs. 3717 per hectare (45.50 per cent) which varied from Rs. 3281.10 at small farms to Rs. 4999.00 at large farms. It is clear from the figures that farmers of small, medium and large categories are very much cautions for production hence they use the more quantity of fertilizer which increases the cost of fertiliser materials. The next major cost incurred on seed material which showed a decreasing trend with the increase in farm size. On an average cost estimated for this material was Rs. 3628.70 (44.40 per cent) which varied from Rs.3590.00 at small farms to Rs.3670.00 per ha. at large farms. Plant protection material was the input another used in the paddy cultivation constituted 10 per cent of the total material cost.

Table 1. Materials used in improved paddy cultivation Unit: (Rs./ha.)

Particulars	Small	Medium	Large	Overall
Seed	3590.0 (47.5)	3625.9 (46.5)	3670.0 (40.0)	3628.7 (44.4)
Fertilizer	3281.1 (43.4)	3380.0 (43.9)	4499.0 (49.0)	3717.0 (45.5)
Plant Protection Measures	680.1 (9.0)	779.0 (10.0)	1000.0 (10.9)	819.7 (10.0)
Total	7551.4 (100)	7784.9 (100)	9160.0 (100)	8165.4 (100)

Note: Figures in parentheses indicate per cent to sub-total.

Break-up cost of cultivation of improved paddy cultivation at sampled farms

Cost incurred on different operations of paddy cultivation at different farms is presented in Table 02. Table revealed that on an average total cost of cultivation of paddy was estimated as Rs. 31808.40 per hectare. It is clear from the table that fertiliser was the major item across the categories in the variable cost. Out of the total cost of cultivation, cost incurred on fertiliser was estimated on an average Rs. 3717.00 per ha constituted 24.00 per cent of total cost of cultivation which varied from Rs. 3281.10 at small farms to Rs. 4490.00 at large farms. The next major cost incurred on seed material. On an average cost estimated for this input was Rs. 3628.70 (23.40 per cent) which varied from Rs.3590.29 at small farms to Rs.3670.00 at large farms. Human labour is an important component in paddy cultivation. The expenditure made on human labour was found to be Rs. 3446.40 per ha (20.60 per cent) on an average, which varied from Rs.3341.20 at small farms to Rs.3599.10 at large farms. The expenditure on machines used for different operations of paddy cultivation was estimated as Rs. 2240.00 (14.50 per cent). Other operations such as value of insecticide and bullock labour charges are estimated on an average Rs. 1252.90 per ha constituted about 08 per cent of the total cost of cultivation. Among the fixed cost, the land revenue was estimated equal at all the categories with an average of 0.01 per cent respectively. Similarly, the interest on working capital calculated at the rate of 10 per cent constituted 4.70 per cent. Table showed that the above said operation constituted 48 per cent of the total cost while remaining of 52 per cent cost constituted under interest on fixed capital, rental value of owned land and imputed value of family labour etc. in the total cost of cultivation of improved paddy cultivation.

Table 2. Break-up cost of cultivation of improved paddy cultivation at sampled farms Unit: Rs/ha

Particulars	Small	Medium	Large	Overall
1) Hired Human Labour	3341.2 (25.2)	3399.1 (21.6)	3599.1 (20.6)	3446.4 (20.6)
2) Bullock Labour Charges	1300.0 (9.8)	-	-	433.3 (2.8)
3) Machine Charges	-	3320.0 (21.1)	3400.0 (19.5)	2240.0 (14.5)
4) Value of seed	3590.2 (27.1)	3625.9 (23.1)	3670.0 (21.0)	3628.7 (23.4)
5) Value of Fertilizers	3281.1 (24.7)	13380.0 (21.5)	4490.0 (25.7)	3717.0 (24.0)
6) Value of Insecticides	680.1 (5.1)	779.0 (4.9)	1000.0 (5.7)	819.7 (5.3)

7) Depreciation on implements & Machinery	345.2 (2.6)	349.4 (2.2)	349.4 (2.0)	348.0 (2.2)
8) Irrigation Charges	58.2 (0.4)	60.0 (0.3)	60.0 (0.3)	59.4 (0.3)
9) Land revenue & other taxes	17.3 (0.1)	17.3 (0.1)	17.3 (0.1)	17.3 (0.1)
10) Interest on working capital @ 10 per cent	629.8 (4.7)	457.6 (4.7)	828.4 (4.7)	734.6 (4.7)
Cost A_1 / A_2	13243.1 [47.6]	15676.3 [49.4]	17414.2 [48.4]	15444.5 [48.5]
11) Interest on fixed capital @ 10%	315.4	320.3	340.0	367.9
Cost B_1	13558.5	15996.7	17754.2	15769.8
12) Rental value of owned land (1/6th of gross income)	10700.8	12606.6	14673.3	12660.2
Cost B_2	24259.3	28603.3	32427.5	28430.0
13) Imputed value of family labour	1000.4	240.0	220.0	486.8
Cost C_1	14558.9	16236.7	17974.2	16256.6
Cost C_2	25259.7	28843.3	32647.5	28916.8
14) 10% of Cost C_2	2525.9	2884.3	3264.7	2891.6
Cost C_3 (Total Cost)	27785.6 (100)	31727.6 (100)	35912.2 (100)	31808.4 (100)

Note: A figure in parentheses shows per cent to Cost C_3 (Total Cost).

Gross Income analysis of improved paddy cultivation at sampled farms

The gross income analysis of improved paddy at sampled farms is presented in Table 03. Table clearly revealed that the average yield was observed as 49.00 quintal per ha. which varied from 41.40 quintal per ha at small farms to 56.80 quintal per ha. at large farms. The average gross income was observed as Rs.75961.60 per hectare which ranges from Rs.64205.00 per hectare at small farms to Rs.88040.00 at large farms. These figures clearly indicate that farmers of larger categories have received more gross income as compared to the farmers of medium and small categories mainly due to relatively higher yield and price realized of the produce only.

Table 3. Gross Income analysis of improved paddy cultivation at sampled farms Unit: Rs. /ha

Particulars	**Small**	**Medium**	**Large**	**Overall**
Main produce (qtl.)	41.4	48.8	56.8	49.0
Value of main product (Rs.)	49680.0 (77.3)	58560.0 (77.4)	68160.0 (77.4)	58800.0 (77.4)
By Product (qtl.)	41.5	48.8	56.8	49.0
Value of by product (Rs.)	14525.0 (22.6)	17080.0 (22.5)	19880.0 (22.5)	17161.6 (22.5)
Gross Income (Rs.)	64205.0 (100)	75640.0 (100)	88040.0 (100)	75961.6 (100)

Note: Figures in parentheses shows per cent to Gross Income.

Profitability aspects of improved paddy cultivation at sampled farms

The profitability aspects of improved paddy cultivation are presented in Table 04. The net farm income was estimated as Rs.44153.20 per ha. ranges from Rs.36419.40 per ha. at small farms to Rs. 52127.80 per ha at large farms. Farm business income was estimated on an average as Rs. 60517.10 per hectare followed by income from family labour was estimated as Rs. 47531.60 per ha at different farms of sampled respondent. The average benefit cost ratio was estimated as 2.3 which varied from 2.3 at small farms to 2.4 at large farms.

Table 4. Profitability aspects of improved paddy cultivation at sampled farms Unit: Rs/ha

Particulars	Small	Medium	Large	Overall
Net farm Income	36419.4	43912.4	52127.8	44153.2
Farm Business Income	50961.9	59963.7	70625.8	60517.1
Family Labour Income	39945.7	47036.7	55612.4	47531.6
Benefit Cost Ratio	2.3	2.3	2.4	2.3
Cost of production / quintal	320.3	300.1	282.2	300.8

CONCLUSION

The forgoing analysis of paddy cultivation indicates that the Paddy is the important major kharif crop in the study area. On an average material cost was estimated as Rs.8165.40 per ha in which 45.00 per cent share of total material cost constituted by the fertiliser material. The average cost of cultivation of improved paddy was estimated to be Rs.31808.40 per ha and ranged from Rs. 27785.60 to Rs. 35912.2 in different size groups. The average gross income of paddy was estimated to be Rs. 75961.60 per ha. The average net income and farm business income was calculated as Rs. 44153.20 and Rs. 60517.10 per ha respectively at sampled farms of improved paddy growers in the study area.

REFERENCES

Sarkar, M. S. K.; Hasan, M. R.; Feardous, M. A.; Shuhel, M. M. H.; Moniruzzaman, M. (2010). Comparative economic analsysis of borrower and non-broower Boro rice farmers Bangladesh Journal of Agricultural Research. 2010. 35: 1, 65-76. 5 ref.

Tewatia, R. K.; Biswas, B. C.; Prasad, N. Rice revolution and food security in China and India: a comparative analysis. Fertiliser News. 1992. 37: 12, 61-67. 13 ref.

Haque, T. (2006). Resource use efficiency in Indian Agriculture. Indian Journal of Agri. Econ., 61(2) : 65-75.

Jyothirmai, U.L., Shareef, S.M. and Rao, A.P. (2003). Resource use efficiency of paddy crop in three region of Nagajuna Command area in Andhra Pradesh. Economic Affairs Calcutta, 48(1) : 59-64.

Raghuwanshi, R.S. Awasthi, P.K. and Sharma, P. (1999). Resource use efficiency in wheat cultivation. Indian Journal of Agriculture Research, 33(1) : 6771.

Reddy, P.P. (2002) Farm costs, income, factor shares and price cost relationship: an empirical analysis of paddy in Andhra Pradesh. Journal of Research ANGRAU, 30(1) : 44-55.

Singh, C.M., Sen, C. and Singh, S.K. (2001). Resource productivity and allocative efficiency in crop production in Eastern Region of Uttar Pradesh. Economic Backwardness of Eastern, U.P., pp. 53-61.

Sirohi, S. and Rawat, P.S. (2000). Resource use efficiency in sheep farming : a case study of district Tonk, Rajasthan, *Indian J. Small Ruminants*, **6** (1) : 42-47.

Thakur, Jawahar and D.K. Sinha (1994). An Empirical Analysis of Technological Change and Functional Income Distribution in Rice Production in Bihar Agriculture." *Agricultural Economics Research Review*, **7**(1) : 47-55.