SHORT COMMUNICATION

PADDY PRODUCTION ECONOMICS IN MAHASAMUND DISTRICT OF CHHATTISGARH

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Abstract: This study was on the Rice Production Economics in Mahasamund District of Chhattisgarh. Primary data were collected using pre structured survey schedule administrated to 123 paddy producers which consists of 47.97 percent marginal, 26.02 percent small , 13.01 per cent medium and 13.01 percent 13.01 large farmers using Three stages stratified random sampling technique. Tabular analysis was used to calculate cost and returns in paddy cultivation in district. Study come up with findings that cost of cultivation increases as farm size increases. Labour cost was the main component of operational cost covering 35.85 percent of total operational cost for all farm sizes. While Rental value of owned land and rent paid for leased in land was the dominating cost item in fixed cost items covering 40.62 percent of the total fixed cost. Net income, Family labour income, Farm business income, Farm investment income were maximum in case of small farm size *i.e.* Rs. 21703.20, Rs.31259.92, Rs. 44359.85 and Rs. 37775.57 respectively. Calculated net return per rupee of investment was also higher (1:1.66) in small size farm while it was 1:1.55 for all farm size.

Keywords: Paddy, Production, Cost of cultivation, Economic analysis, Farm Size, Input- Output ratio, Farm income

INTRODUCTION

Paddy is the major staple, which can provide a nation's population with the nationally required food security minimum of 2,400 calories per person per day (FAO, 2000). It is grown as principal crop under rainfed condition during Kharif in whole Chhattisgarh. Chhattisgarh popularly known as "rice bowl of India" occupies an area around 3.60 m ha with the production of 6.16 mt of paddy (Urkurkar et.al. 2007 and Krishi Karman Award 2010-11). Average productivity of paddy in state is still lower than the national productivity with wide variation in the productivity among different districts (Diwakar 2009 and Pandey et.al. 2010). Rice cultivation is major agricultural activity of the farming community of Mahasamund district sharing 5.61 and 7.82 per cent of total area and production of the rice grown in the state respectively. More than 80 percent of working population of the district is engaged in agriculture. The productivity of rice in the district is 1.97 tons per hectare. Keeping the economic importance of paddy in district's economy present study was conducted with primarily objectives of calculation of cost of cultivation and analysis of profitability in paddy production in Mahasamund district.

METHODOLOGY

Three stages stratified random sampling technique was adopted for conducting the present enquiry. y At first stage, out of the total 5 developmental blocks in this district, Mahasamund block was selected randomly. At second stage, 8 villages were selected randomly from selected block. At third stage, list of all the farmers were prepared from the selected villages with their net cultivated area. Thereafter farmers/paddy growers were classified into four farm size group, viz. Marginal (Less than 1 ha), Small (1 to 2 ha), Medium (2 to 4 ha) and large (Above 4 ha). Then a sample of 59 marginal, 32 small, 16 medium, 16 large size paddy growers (10 percent of total population size) were selected randomly from the universe of 08 selected villages making the sample size of 123 paddy growers.

The primary data pertaining to crop year 2010-11 were collected from the selected farmers/ paddy growers with the help of a pre structured schedule by personal interview method.

Analytical Frame work

Economics in paddy production was calculated by subtracting the Total Cost (TC) from Total Revenue (TR). The cost concepts approach to farm costing is widely used in India (Raju and Rao, 1990., Nirmala and Mathuraman, 2009). These cost concepts include Cost A1, Cost A2, Cost B1, Cost B2, Cost C1, Cost C2 and Cost C3. Various costs have been worked out by applying following methods :

Cost A1 = All actual expenses in cash and kind incurred in production

Cost A2 = Cost A1+ Rent paid for leased in land

Cost B1 = Cost A1+ Interest on value of owned capital assets

Cost B2 = Cost B1+ Rental value of owned land and rent paid for leased in land

Cost C1 = Cost B1+ Imputed value of family labour

Cost C2 = Cost B2+ Imputed value of family labour

Cost C3 = Cost C2+10% of Cost C2 on account of managerial functions performed by the farmer

Total Revenue was calculated by total quantities of Paddy were multiplied by its price. Similarly for estimation of profitability in paddy production various income measures *viz*. Gross income, Net income, Family labour income, Farm business income, Farm investment income, Input : Output ratio were worked out.

RESULTS AND DISCUSSION

Cost of Cultivation of Paddy

Table 1. shows the cost of cultivation per hectare for various farm sizes and table 2 exhibited various Cost concept in paddy production. These were increasing with increasing size of farms, witnessing a positive correlation of cost of cultivation with the size of farms. Cost of fertilizer was costliest item in each category of farm size. It was also observed that hierd labour cost was increasing with increasing farm size while family labour cost was increasing only upto medium farm size but it was decline in case of large farm size showing less interest to work at outside of home as their status doesn't allow them to work at farm. Share of family bullock/ machinery cost was increasing while share of hierd bullock/machinery cost was decreasing indicating farmers maintained their own farm implements as farm size increases.

Table 1: Cost of cultivation of paddy by various size of farms: (Rs./ha)

S. No.	Input factor	Marginal (< 1 ha)		Small (1-2 ha)		Medium (2-4 ha)		Large (>4 ha)		Overall	
A.	**Operational Cost**										
I	Material Cost										
A	Seed	785.00 (2.76)		880.00 (2.96)		1000.00 (3.11)		1087.50 (3.30)		938.13 (3.05)	
B	Manure	540.00 (1.90)		550.00 (1.85)		560.00 (1.74)		600.00 (1.82)		562.50 (1.83)	
C	Fertilizer										
	Urea	1070.85 (3.78)		1215.63 (4.09)		1455.56 (4.54)		1160.00 (3.52)		1225.51 (3.98)	
	Phasphorus	850.00 (3.0)		1005.00 (3.38)		1161.11 (3.62)		937.50 (2.85)		988.40 (3.21)	
	Potash	433.33 (1.52)		418.75 (1.41)		480.55 (1.50)		322.50 (0.98)		413.78 (1.34)	
	Total of fertilizer cost	2354.18 (8.30)		2639.38 (8.88)		3097.22 (9.65)		2420.00 (7.35)		2627.69 (8.54)	
D	Plant Protection Chemical	1091.65 (3.85)		1168.75 (3.93)		1238.89 (3.86)		1300.00 (3.95)		1199.82 (3.90)	
E	Interest on working capital	639.67 (2.25)		728.27 (2.45)		901.07 (2.81)		1055.52 (3.20)		831.13 (2.70)	
	Sub Total	5410.50 (19.08)		5966.40 (20.07)		6797.18 (21.19)		6463.02 (19.63)		6159.28 (20.02)	
II	Labour Cost	Family Labour	Hired Labour	Family Labour	Hired Labour	Family Labour	Hired Labour	Family Labour	Hired Labour	Family Labour	Hired Labour
	Field Preparation	700.25 (2.47)	300.75 (1.06)	695.25 (2.34)	325.75 (1.09)	650.00 (2.02)	385.35 (1.20))	622.50 (1.90)	525.37 (1.59)	667.00 (2.16)	384.31 (1.25)
	Manure/Fertilizer Application	412.00 (0.14)	0 (0.00)	380.00 (1.28)	100 (0.33)	311.11 (0.97)	200.00 (0.62)	302.00 (0.92)	250.00 (0.76)	351.28 (1.14)	137.50 (0.44)
	Sowing/Transplanting	1220.83 (4.30)	450.00 (1.59)	1035.12 (3.48)	525 (1.76)	1007.50 (3.15)	650.00 (2.02)	950.00 (2.89)	835.00 (2.53)	1053.36 (3.42)	615.00 (1.99)
	Intercultural Operation	1062.50 (3.75)	600.00 (2.11)	1087.50 (3.66)	625 (2.10)	1000.00 (3.11)	785.00 (2.48)	965.00 (2.93)	875.00 (2.66)	1028.75 (3.34)	721.25 (2.34)
	Irrigation	708.33 (2.50)	0 (0.00)	812.00 (2.73)	0 (0.00)	745.02 (2.32)	225.00 (0.70)	723.25 (2.19)	512.00 (1.67)	747.15 (2.43)	184.25 (0.60)
	Plant Protection	487.50 (1.72)	0 (0.00)	520.37 (1.75)	0 (0.00)	480.00 (1.50)	250.00 (0.78)	350.00 (1.06)	550.00 (1.67)	459.47 (1.49)	200.00 (0.65)
	Harvesting	737.50 (2.60)	600.00 (2.11)	896.87 (3.01)	900 (3.02)	850.67 (3.81)	1100.00 ()3.43)	810.00 (2.46)	1230.00 (3.73)	823.76 (2.67)	957.50 (3.11)
	Threshing	829.17 (2.92)	550.00 (1.94)	812.00 (2.73)	650 (2.19)	798.00 (2.49)	723.00 (2.25)	550.00 (1.67)	900.00 (2.73)	747.29 (2.43)	705.75 (2.30)
	Transportation	200.17 (0.71)	254.00 (0.89)	245.17 (0.82)	254 (0.85)	580.56 (1.81)	354.00 (1.10)	485.00 (1.47)	150.00 (0.456)	377.73 (1.228)	253.00 (0.822)
	Bullock/ Machinary Labour	100.00 (0.35)	530.00 (1.87)	100.00 (0.33)	530.00 (1.78)	350.00 (1.09))	300.00 (0.93)	450.00 (1.36)	150.00 (0.456)	250.00 (0.81)	377.50 (1.22)
	Sub total	**6458.25 (22.78)**	3284.75 (11.58)	**6584.28 (22.15)**	3909.75 (13.15)	**6772.8 (21.11)**	4972.35 (15.50)	**6207.7 (18.86)**	5977.37 (18.16)	**6505.79 (21.14)**	4536.06 (14.74)
	Total of Labour Cost	**9743.00 (34.36)**		10494.03 (35.30)		11745.21 (36.61)		12185.12 (37.01)		11041.84 (35.85)	
Total of Operational Cost		**15153.50 (53.44)**		**16460.43 (55.37)**		**18542.39 (57.8)**		**18648.14 (56.64)**		**17201.12 (55.90)**	
B.	**Fixed Cost**										
1	Land revenue and	14.00		14.00		14.00		14.00		14	

	Taxes	(0.05)	(0.04)	(0.04)	(0.04)	(0.04)
2	Depreciation on implements and building	104.17 (0.37)	150.00 (0.50)	275.00 (0.86)	535.00 (1.62)	266.04 (0.86)
3	Interest on fixed capital	584.35 (2.06)	599.93 (2.01)	746.84 (2.33)	1225.00 (3.72)	789.03 (2.56)
4	Rental value of owned land and rent paid for leased in land.	12500 (44.08)	12500.00 (42.05)	12500.00 (38.97)	12500.00 (37.97)	12500 (40.62)
	Total of Fixed Cost	**13202.52 (46.56)**	**13263.93 (44.62)**	**13535.84 (42.20)**	**14274.00 (43.36)**	**13569.07 (44.10)**
	TOTAL (A+B)	**28356.02 (100)**	**29724.36 (100)**	**32078.23 (100)**	**32922.14 (100)**	**30770.19 (100)**

Note: Figures in parentheses indicate percentage to total (A+B).

Table 2: Different cost concepts in paddy cultivation among various categories of farms:

S. No	Particulars	Marginal	Small	Medium	Large	Overall
1	Cost A_1	8813.42	10040.15	12058.53	12989.39	10975.37
2	Cost A_2	8813.42	10040.15	12058.53	12989.39	10975.37
3	Cost B_1	9397.77	10640.08	12805.37	14214.39	11764.40
4	Cost B_2	21897.77	23140.08	25305.37	26714.39	24264.40
5	Cost C_1	15856.02	17224.36	19578.23	20422.14	18270.19
6	Cost C_2	28356.02	29724.36	32078.23	32922.14	30770.19
7.	Cost C_3	31191.62	32696.80	35286.05	36214.35	33847.21

Measures of farm profit by size of farms

The table 3 reveals that per hectare yield was maximum 45 quintals per hectare in case of small farm while yield of by product was maximum i.e. 47 quintals per hectare in small farms. Minimum support price for normal paddy was taken as price of main product. Net income, Family labour income, Farm business income, Farm investment income, were calculated for each category of farms. It was Rs. 18452.79, Rs. 28035.60, Rs. 41324.63 and Rs. 34818.84 respectively at all farm size.

Table 3: Measures of farm profit by size of farms (In Rs./ha)

S. No	Particulars	Marginal		Small		Medium		Large		Overall	
1	**Gross income**	50800		54400		53200		50800		52300	
	a. Main Product (@ Rs.1000/qt)	**Qt.**	**Total Value**	**Qt.**	**Total Value**	**Qt.**	**Total Value**	**Qt.**	**Total Value**	**Qt.**	**Total Value**
		42	42000	45	45000	44	44000	42	42000	43.25	43250
	b. By Product (@ Rs. 200/qt)	44	8800	47	9400	46	9200	44	8800	45.25	9050
2	**Net income (**Net income = Gross income - Cost C_3)	19608.38		21703.20		17913.95		14585.65		18452.79	
3	**Family labour income** (= Gross income – Cost B_2)	28902.23		31259.92		27894.63		24085.61		28035.60	
4	**Farm business income** = Gross income – Cost A_1	41986.58		44359.85		41141.47		37810.61		41324.63	
5	**Farm investment income** = Net income + rental value of own land + interest on fixed capital	35528.33		37775.57		34368.61		31602.86		34818.84	

Net Return per Rupee of Investment

Table 4 gives the per hectare Input : Output ratio on different size of farms. Net return on per rupee investment was maximum on small farms and minimum on large farms.

Table 4: Net Return per Rupee of Investment by Size of Farms

Category	Input (Rs.)	Output (Rs.)	Input-Output ratio
Marginal	31191.62	50800	1:1.63
Small	32696.80	54400	1:1.66

Medium	35286.05	53200	1:1.51
Large	36214.35	50800	1:1.40
Overall	33847.20	52300	1:1.55

CONCLUSION AND POLICY RECOMMENDATION

Labour cost was the main component of operational cost covering 35.85 percent of total operational cost for all farm sizes. While Rental value of owned land and rent paid for leased in land was the dominating cost item in fixed cost items covering 40.62 percent of the total fixed cost. Net income, Family labour income, Farm business income, Farm investment income were maximum in case of small farm size *i.e*. Rs. 21703.20, Rs.31259.92, Rs. 44359.85 and Rs. 37775.57 respectively. Calculated net return per rupee of investment was also higher (1:1.66) in small size farm while it was 1:1.55 for all farm size. Based on the findings and observations it can be suggested that the government should pay attention on the problems of fragmentation and scattered holding by initiating consolidation of holdings and land reforms. The cooperative farming should be encouraged to increase the production and eliminate all forms of exploitation and social injustice in order to provide security to the tillers and to assure equality of status. The findings of the study also reveal that though paddy cultivation in the study area, is economically viable but their profitability may further improved by increasing the capacity utilization.

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