COST ANALYSIS AND PROFITABILITY OF DIFFERENT CROPS IN REWA DISTRICT OF MADHYA PRADESH

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Abstract

The present study is conducted in Rewa district of Madhya Pradesh. Respondent were selected from five villages on randomly based on group size of farmers and secondary data were collected from department of agriculture and other statistical data were year 2010-11. The result shows that the maximum members (73.33%) are literate. It is also found that level of education increases with the size group of the farmers respectively. The average size of farm holding representing marginal (0.88 hectare), small (1.92 hectare), semi-medium (3.6 hectare), medium (5.0 hectare), and large size (7.4 hectare) respectively. The total average irrigated area through all sources is 1.57 hectare *i.e.* on an average 81 per cent of *rabi* cropped area. The average benefit cost ratio of paddy cultivation found to 1.87 and the minimum benefit cost ratio was with marginal size of group (1.81). The figure shows that the economy of production of paddy is higher with the size of the farm respectively. It is finally concluded that crop production alone shown the scale of economy with the size group and it was found that with the increase in the size group, the total net income, benefit cost ratio also found to increase.

Key words: Profitability, crops, land holding, farm size group, farm income.

Introduction

Indian agriculture is a diversified farming system in which crop production and animal husbandry devoted for efficient and economic utilization of land, labour and capital "In agriculture sixty-five seventy percent of the population of India is directly or indirectly associated with agriculture and animal husbandry". In the farm economics that are typically characterized by increasing population pressures, declining land-man ratio, small and fragmented holdings, highly iniquitous land distribution structures, etc., the traditional form of agriculture can not provide a viable solution to the problem of rural unemployment and under-employment. Therefore, diversification in rural employment has gained significant importance over time. The nature, extent and speed of rural employment diversification in India have been studied by several researchers over the past two decades (Basant and Kumar, 1989, Chaddha, 1993). Most of them have

concluded that the share of no-farm sector was increasing over time and the capacity of the farm sector to absorb additional labour had almost reached its upper limit. However, some studies have shown that there are strong possibilities of enhancing labour absorption in the agricultural sector itself through introduction of appropriate technological, institutional and organizational innovations promoting agricultural diversification. Not many studies have detailed analysis of the profitability of different crops in relation to cost of cultivation over a period of time. Without using temporal data on cost of cultivation, some recent studies have observed that stagnation in real income and relatively higher rise in input prices, than the prices of the agricultural produce could be the reasons for farmers suicides (Kalamkar and Narayanamoorthy, 2003; Deshpande and Arora, 2010). These are the characteristics of the farmers which directly and indirectly affecting the efficiency of farm, level of resource use, income and level of profitability from farm enterprise. Hence, it is very important to study these

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characteristics of the sample farmers.

Materials and methods

The study is conducted in Rewa district of Madhya Pradesh. In five villages, total strength of 75 respondents were selected from Kachhawara, Beeda, Lainbadhari, Khaira, Ragauli on random based on the basis of area under cultivation. Farmer's then grouped them into marginal small, semi medium, medium and large farmers respectively as per the size of land holding. Primary data were collected from sample farmers. The primary data were recorded regarding general information of the respondents, cropping pattern, farm resource structure. The specific and detail information on cost incurred and returns obtained in the cultivation of major crop. Secondary data were collected from department of agriculture and other statistical data were year 2010-11 collected from published record of Statistics. The cost of cultivation classified as recommended by, "Special expert committee on cost estimates, GOI, New Delhi", was used in this study. Profitability is find out with help of formula given below: -

(i) **Gross income:** It is defined as: total value of main product +by product.

(ii) **Farm business income:** It is the gross value of output at farm harvest prices (Main product + by product) – cost 'A_1'

(iii) **Farm investment income:** It is defined as: net farm income + interest on fixed capital + rental value of owned land.

(iv) **Family labour income:** it is defined as: gross income- cost 'B_2'

(v) **Net farm income:** It is defined as: gross income – cost 'C_2'

Input – output ratio

$$\text{Input- output ratio} = \frac{\text{Gross income}}{\text{Cost of cultivation}}$$

(vii) Diversification index for farming system

$$D_i = 1 - \frac{(\Sigma\ S_i)^2}{(\Sigma\ S)^2}$$

D_i = Diversification index.

S_i = Share of net income of the ith enterprise in per farm net income.

S = per farm net income of a farming system.

Resultand discussion

Results depicted from table 1. Majority of the farmers found to about 45 years of age. Regarding literacy position, the illiterate members found to an average 26.67 per cent of total respondents. The result shows that the maximum members (73.33%) are literate. It is also found that level of education increases with the size group of the farmers respectively. The percentage of literate to total respondents in case of large farmer found to highest *i.e.* 93.33 per cent. The maximum illiteracy found in small size of group *i.e.* 46.67 per cent to total respondents. Occupational structure of farm family the table reveals that the highest proportion of farmers in all the size groups (accept marginal group) found to engaged in agricultural activities *i.e.* on an average 66.66 per cent. This is due to maximum annual work availability in crop production and other allied agricultural activities. The land use pattern for different size group of holdings is presented in table-2 the average size of farm holding representing marginal (0.88 hectare), small (1.92 hectare), semi-medium (3.62 hectare), medium (5.0 hectare), and large size (7.4 hectare) respectively. On an average farm size, it is 3.76 hectares. The cultivated area, which vary with 0.88 with marginal farmers to 1.92, 3.56, 4.95 and 7.18 hectare for small, semi- medium, medium and large farmers respectively. The area under other use according to size of holdings found to 0.05, 0.06 and 0.14 hectare, for semi-medium, medium and large size groups respectively. The gross cropped area also varied and found to 1.23, 3.10, 4.69, 6.9 and 9.38 hectare for marginal, small, semi-medium, medium and large size group respectively. The average area under *kharif* and *rabi* crops found to be 3.18 and 1.93 hectare respectively.

It is depicted from table 2 irrigated area in *rabi* season cultivated found to maximum with large size group (92%) and in case of medium group (91%) followed by the semi-medium, small and marginal size groups respectively. The total average irrigated area through all sources is 1.57 hectare *i.e.* on an average 81 per cent of *rabi* cropped area. Data shows table-3 that cropping pattern of *kharif* crops are the major cropping components growing in the area and among them paddy is the popular crop growing more than 64 per cent of the area under total *kharif* crop. The important *rabi* crops on the area are wheat and gram growing on an average area 46.87 and 39.58 per cent of the area under *rabi* crops respectively. It is important to note as per the data on cropping pattern that the small farmers are vary much cautious about the cropping pattern and coverage more area under *kharif* season due to lack of irrigation facilities. Data shows table 4. for profitability from different crops

Table 1: General information of sample farmers on different size of groups.

S.No.	Particular	Size group					
		Marginal	Small	Semi-medium	Medium	Large	Total/Average
1.	Total Respondents	15	15	15	15	15	75 Total /15%
2.	Age of respondents years	50.7	45.1	42.2	44.2	43.9	45.2
3.	Education						
	a. Illiterate	7	5	5	2	1	20
	b. Primary	5	7	6	5	2	25
	c. Upto H.S.S.C	3	3	3	5	8	22
	d. Collage	-	-	1	3	4	8
4.	Percentage literate	53.33	66.66	66.66	86.66	93.33	73.33
5.	Percentage illiterate	46.67	33.34	33.34	13.34	6.67	26.67
6.	Main occupation						
	a. Agriculture	5	9	11	12	13	50
	b. Agricultural labour	8	4	2	0	0	14
	c. Non agricultural works	2	2	2	3	2	11
7.	Total agriculture works %	33.33	60.00	73.33	80.0	86.66	66.66

Table 2: Land utilization and irrigation pattern of farmers (ha./Farm).

S.No.	Particular	Size group					
		Marginal	Small	Semi-medium	Medium	Large	Average
1.	Size of holding	0.88	1.92	3.62	5.0	7.2	3.76
2.	Cultivated area	0.88	1.92	3.56	4.95	7.18	3.69
3.	Area under other use	00	00	0.05	0.06	0.14	0.08
4.	Area under Kharif	0.88	1.92	3.0	4.16	6.0	3.19
5.	Area under *Rabi*	0.36	1.21	1.96	2.75	3.38	1.93
6.	Gross cropped area	1.23	3.1	4.69	6.9	9.38	5.11
7.	Total irrigated area	0.15	0.6	1.5	2.5	3.1	1.57
8.	Irrigated area *Rabi* (%)	43	50	79	91	92	81
9.	Cropping intensity (%)	140	163	165	166	156	160

Table 3: Cropping pattern of sample farmers on different size of group (ha./farm)

S.No.	Crops Seasons	Size group					
		Marginal	Small	Semi-medium	Medium	Large	Average/ %
	A. *Kharif* crops						
1.	Paddy	0.50	1.19	2.10	2.47	3.90	2.03 (64.04)
2.	Soybean	0.37	0.48	0.58	1.00	1.50	0.78 (24.92)
3.	Urd, moong	00	0.24	0.32	0.58	0.60	0.35 (11.04)
4.	Total *Kharif* crop	0.88	1.92	3.00	4.15	6.00	3.17 (100)
	B *Rabi* crops						
1.	Wheat	0.15	0.50	1.06	1.30	1.50	0.90 (46.87)
2.	Gram	0.21	0.50	0.60	0.95	1.59	0.76 (39.58)
3.	Linseed Mustard	00	0.21	0.30	0.50	0.29	0.26 (13.55)
4.	Total *Rabi* crops	0.36	1.21	1.96	2.75	3.38	1.92 (100)

Note: figure in parenthesis shows the percentage to total *Kharif* as well as total *Rabi* area.

of different size group. The on an average percentage value of land to the total value of assets on the sample farm found to about 90 per cent which are ranged between 88.71 per cent on medium size group of holding and it is the minimum among all the groups followed by 93.56 per cent on the marginal size group which is the

Table 4: Profit from different crops of different size group.(₹/ha.).

Marginal

Profitability Aspects	Paddy	Soybean	Urd Moong	Wheat	Gram	Linseed & Mustard	Average
Total cost	10530	10875	9146	10740	10501	8921	10118
Gross income	19838	16172	12305	20448	23324	20510	18766
Net income	9308	5297	3159	9708	12823	11589	8447
Family labour income	11466	7585	4890	12099	15350	13663	10842
Farm business income	13875	10730	7934	15373	14412	16479	13633
B.C. Ratio	1.88	1.41	1.34	1.90	2.20	2.29	1.8

Semi-medium

Profitability Aspects	Paddy	Soybean	Urd Moong	Wheat	Gram	Linseed & Mustard	Average
Total cost	10776	10331	8179	10902	11360	9378	10154
Gross income	20800	15613	11364	21420	24723	21613	19255
Net income	10024	5282	3185	10518	13363	12235	9101.1
Family labour income	12029	7121	4477	12625	15812	14335	11066
Farm business income	14527	10487	7439	16020	18326	17079	13979
B.C. Ratio	1.94	1.60	1.38	1.96	2.18	2.20	1.87

Large

Profitability Aspects	Paddy	Soybean	Urd Moong	Wheat	Gram	Linseed & Mustard	Average
Total cost	10373	9641	7825	10964	10827	10386	1002
Gross income	19071	14943	10664	21962	25142	22500	19047
Net income	8698	5302	2839	10998	14315	12144	9044
Family labour income	10316	6678	3662	12527	16027	14265	10612
Farm business income	13435	10298	6999	16289	18217	17211	13741
B.C. Ratio	1.8	1.54	1.36	2.0	2.32	2.16	1.86

Small

Profitability Aspects	Paddy	Soybean	Urd Moong	Wheat &	Gram	Linseed Mustard	Average
Total cost	10585	10753	8203	11170	10925	9033	10111.5
Gross income	20136	15986	11718	20820	23660	20755	18895
Net income	9851	5233	3515	9650	12735	11722	8784
Family labour income	12064	7310	4822	12045	15248	13800	10881
Farm business income	14473	10601	7701	15593	17526	16546	13740
B.C. Ratio	1.93	1.52	1.42	1.86	2.17	2.10	1.83

Medium

Profitability Aspects	Paddy	Soybean	Urd Moong	Wheat &	Gram	Linseed Mustard	Average
Total cost	10769	9843	8042	10930	11101	9783	10078
Gross income	19556	15263	10991	21646	25052	22050	19093
Net income	8787	5420	2349	10716	13951	12267	9015
Family labour income	10666	7014	4079	12505	16074	14397	7455
Farm business income	13742	10485	7291	15573	18370	17083	13757
B.C. Ratio	1.87	1.56	1.36	1.98	2026	2.25	1.88

Average

Profitability Aspects	Paddy	Soybean	Urd Moong	Wheat &	Gram	Linseed Mustard	Average
Total cost	10606	10288	8279	10941	10942	9500	10092
Gross income	19940	15595	11408	21259	24380	21485	19011
Net income	9333	5306	3697	10318	13437	11985	9012.6
Family labour income	11308	7141	4426	12360	15702	14092	10838
Farm business income	70047	10520	7472	15769	17970	16879	23109
B.C. Ratio	1.88	1.52	1.37	1.94	2.22	2.2	1.85

highest among the all size groups in study. The net profit per hectare on an average found to ($-$9012.6) per hectare and varied in different size of group as increases with the increase in the size group subsequently. The lowest net income was received by marginal size of group ($-$ 8447) and highest was received by large size group farmers ($-$ 9044) per hectare The average value of family labour income and farm business income found to ($-$10838) and ($-$ 23109) per hectare respectively. In general, all these values were higher on the smaller size groups (marginal, small and semi-medium) due to intensive use of family labour and efficient use of material inputs respectively.

After having knowledge of all items related to cost and outputs the farmer much concerned about the real outcome inters of return over per rupees expenditure (benefit cost ratio) to judge the level of economics of this particular enterprise. The study depicted that on an average ($-$1.85) returned over ($-$1) expenses on over all crop production. This is good relation found in input and output economy of crop production. The study also a show there exist positive correlation between size of group and return over per rupees (benefit cost ratio) and was higher in large size group respectively. This is due to the fact, net return increased subsequently as the size group increase and cost of production decreases with the increase of the size subsequently.

Conclusion

It is finally concluded that crop production alone shown the scale of economy with the size group and it was found that with the increase in the size group, the total net income, benefit cost ratio also found to increase. It was simply due to large size holding pusses by large farmer and to get economy in production.

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