

AN ECONOMIC ANALYSIS OF PRODUCTION, CHANGE IN AREA PRODUCTION AND PRODUCTIVITY AND CONSTRAINTS IN SEED PRODUCTION OF PADDY IN RAIPUR DISTRICT OF CHHATTISGARH

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ABSTRACT

The study and examine the change in area, production and productivity under seed production of paddy in Raipur during *kharif* season in the year of 2016-17. Two blocks were selected *viz.* Arang and Dharsiwa of Raipur district. Sixty farmers from Arang and sixty farmers from Dharsiwa block were selected by using probability proportional to size technique. The primary data were collected from the selected households of the paddy seed producers through personal interview method with the help of well pretested schedule and questionnaire for the year 2015-16. Cost of cultivation of paddy was worked out by using standard method of cost of cultivation adopted by Commission on Agricultural Costs and Prices (CACP). The major findings of this study revealed that the average size of holding of the sample households was 5.31 hectares. The cropping intensity was observed to be 154.89 percent. Cost of cultivation per hectare of paddy come to be Rs.52852.01. Cost of cultivation increased with the increase in farm size. The study suggested that the area, production and productivity is increase by providing require package and practices and other important inputs to the paddy growers or farmers. Production of paddy is increasing from 30346.65qt/ha to 46868.84qt/ha from the year 2010-11 to 2014-15. The area also increases from 1182.32ha to 2051.99ha from the year 2010-11 to 2014-15. Hence, the production of paddy is increasing every year but the productivity is decreasing *i.e.* 25.46kg/ha, 24.36kg/ha, 23.37kg/ha respectively from the year 2010-11, 2012-13, 2014-15 respectively. The percentage change in 2014-15 over 2010-11, change in total area, change in production and productivity is 73.56%, 54.44% and -8.21% respectively. The major constraints in seed production of paddy were non availability of desired seeds at the time of sowing procedure of payment is too long and shortage of labour during key operations. Under major constraints pertaining to cultivation of paddy, lack of labour was the most important problem as reported by 45 percent paddy producer. The second most important constraint faced by the paddy growers was Low adoption of recommended packages of practices of crop (20 percent). The other most important constraints reported by the paddy growers were lack of literacy (6 per cent), time factor (7 per cent), lack of knowledge (20 per cent) and lack of guidance (2 per cent). Looking to the problems faced by paddy growers in the study area, it is pertinent to address these constraints. Accordingly, there is a need to impart training skills to the paddy growers on production aspect through extension support such as on farm training, demonstration *etc.* to enhance the adoption of recommended package of practices for paddy Seed production. The study also suggested that all the growers and dealers must know how to introduce latest scientist technology in the cultivation of seed production of Paddy in the district and the state of Chhattisgarh.

KEYWORDS: Cost of cultivation, seed production, productivity

INTRODUCTION

Rice is the basic grain consumed as a food in India, which is found in almost every Indian kitchen. It is the most common grain and the most common food in India. However, India is not only a big consumer of rice but also it is the second largest producer of rice in the world after China. About 3 billion people, nearly half the world's population, depend on rice for survival. In Asia as a whole, much of the population consumes rice in every meal. In many countries, rice accounts for more than 70% of human caloric intake. In Asia, just over 30% of all calories come from rice. (Source: Directorate of Economics and Statistics, Department of Agriculture and Cooperation).

Rice is primarily a high energy calorie food. The major part of rice consists of carbohydrate in the form of starch, which is about 72-75 percent of the total grain composition. The protein content of rice is around 7 percent.

The protein of rice contains glutelin, which is also known as oryzenin. The nutritive value of rice protein (biological value = 80) is much higher than that of wheat (biological value = 60) and maize (biological value = 50) or other cereals. Rice contains most of the minerals mainly located in the pericarp and germ and about 4 percent phosphorus. Rice also contains some enzymes. Rice is eaten by majority of the people in the world. It is the main food for about half of the world population. About 28 per cent and 24 per cent of the world's rice area and production is in India.

LITRATURE REVIEWED

Several study has been done about the economics of paddy production in India and Chhattisgarh. Some of the seed production and production cost has also been done. In table A revealed the review taken under the study.

Year	References	Journal
2013	Kusuma et al	International Research Journal of Agricultural Economics and Statistics
2013	Verma et al	African Journal of Agricultural Research
2010	Uikeyet al	Thesis submitted in the department of Agricultural Economics, IGKV, Raipur
2010	Yadav et al	Thesis submitted in the department of Agricultural Economics, IGKV, Raipur
2005	Marothia et al	Impact Assessment of Technology Interventions and Crop Diversification in Tribal, Backward and Hilly Areas. Project Report submitted
2004	Hirala, et al	Indian Journal of Agricultural Economic
2003	Chengappa et al	Economic and political weekly
2003	Kamal et al	New-Agriculturist
2003	Gopalappa et al	Education, Rural and Agriculture development
2003	Damte et al	Agricultural Situation in India
2001	Ali Farhad et al	Agricultural Today

MATERIALS AND METHODS

The present study is based on an analysis of primary data at the Raipur district of Chhattisgarh. The analysis of primary data is based on a survey of 120 farms of Raipur district. Raipur district having 4 blocks, out of these 2 blocks namely Arang and Dharsiwa were selected because these two blocks contribute highest area of Paddy seed production in Raipur district. Data collected for study pertaining to the period 2016-17. The study required primary as well as secondary data. Primary data was collected from selected paddy seed growers through personal interview method with the help of pre-tested questionnaire. Collected data were tabulated according to need and purpose of study. Simple tabular analysis was made.

To workout economics of seed production of paddy, different cost concept such as cost 'A', cost 'B' and cost 'C' were used. Costs of Cultivation of paddy were workout by using standard method of cost of cultivation. (The committee on Cost of Cultivation, 1981. Directorate of Economics and Statistics Government of India). The detailed specification of costs mentioned as under:

Cost A_1 = All actual expenses in cash and kind incurred in production

Cost A_2 = Cost A_1 + Rent paid for leased in land

Cost B_1 = Cost A_1 + Interest on value of owned capital assets

Cost B_2 = Cost B_1 + Rental value of owned land and rent paid for leased in land
 Cost C_1 = Cost B_1 + Imputed value of family labour

Cost C_2 = Cost B_2 + Imputed value of family labour

Cost C_3 = Cost C_2 + 10% of Cost C_2 on account of managerial functions performed by the farmer

Cost A1 – includes

- (i) Value of hired human labour
- (ii) Value of hired bullock labour
- (iii) Value of owned bullock labour
- (iv) Value of owned machine labour
- (v) Value of hired machine labour
- (vi) Hired machinery charges
- (vii) Value of seed (both farm produced & purchased)
- (viii) Value of insecticides and pesticides
- (ix) Value of manure (owned and purchased)
- (x) Value of fertilizers
- (xi) Irrigation charges
- (xii) Depreciation of implements and farm buildings
- (xiii) Land revenue cesses and other taxes
- (xiv) Interest on working capital

Depreciation: -

Depreciation on the farm implements, machinery, and building was calculated by straight line method and proportionate charges were considered on the basis of area under individual crop. The formula used for computation of depreciation as under:

$$\text{Amount of Annual Depreciation} = \frac{\text{Purchase price - Junk value}}{\text{No. of useful year}}$$

Interest on working capital: Interest on working capital @ 4% was considered on prevailing bank rate of interest on saving.

Interest on fixed capital: Interest on fixed capital @ 7% was considered on prevailing bank rate of interest on fixed deposit.

Income measures:

- a) **Gross income** = (Value of main product + Value of by-product).
- b) **Net income** = Gross income – Cost C₃
- c) **Input – Output Ratio** = Total value of output / Total value of input
- d) **Benefit – cost Ratio** = Gross income / Total cost of cultivation
- e) **Cost of production** = Total cost of cultivation / Yield

RESULTS AND DISCUSSION

The economics of paddy crop is presented in table 01. It clearly shows that the cost of cultivation per hectare of paddy seed production. Over all, on an average the cost of cultivation per hectare of paddy was found to be Rs. 52852.01 per hectare.

Table 1: Cost of cultivation of paddy crop		
S.No.	Input cost	Amount (Rs.)
	Variable Cost	
1	Family Human Labour	1400
		(2.65)
2	Hired Human Labour	8900
		(16.84)
3	Total Human Labour	10300.00
		(19.49)
4	Bullock Labour	0.00
		(0.00)
5	Machine Power	11263.00
		21.31
6	Seed Cost	1662.00
		3.14
7	Manure and fertilizer	4286.00
		8.11
8	Irrigation Charge	300.00
		0.57
9	Plant Protection Chemical	2252.00
		4.26
10	Registration Fees	50.00
		0.09
11	Supervision Fees	1500.00
		2.84
12	Seed Testing Fees	75.00
		0.14
13	Grow Out Fees	350.00
		0.66
14	Interest On Working Capital At 4%	1225.52
		2.32
Sub Total		33263.52
		62.94
Fixed cost		
15	Rental Value Of Land	18000.00
		34.06
16	Land Revenue	7.00
		0.01
17	Depreciation	300.00
		0.57
18	Interest On Fixed Capital At 7%	1281.49
		2.42

Sub Total	19588.49
	37.06
Total Cost (A+B)	52852.01
	100.00

Yield, value of output and cost of production per quintal of Paddy:

The yield, value of output per hectare and cost of production per quintal of paddy on the sample farms have been worked out in table 2. It indicates that the average yield per hectare of paddy was 57 quintals on the sampled farms. The cost of production per quintal of paddy on an average was worked out to Rs.927.23. The cost of production decreased with the increase in the size of farm due to higher yields. The average value of production per hectare came to Rs. 125665.

S. No.	Particulars	Amounts (Rs)
1	Yield(qt)	57
2	Yield of by product(qt)	70
3	Value of Main Product@2045 Rs. / qt.	116565.00
4	Value of by Product@130 Rs. /qt.	9100.00
5	Gross return	125665.00

Cost and returns on the basis of cost concept:

The cost and returns on the basis of cost concept in the production of paddy have been presented in the table 3. It is evident from table that, the per hectare Cost-A₁, Cost-A₂, Cost-B₁, Cost-B₂, Cost C₁, Cost-C₂ and Cost-C₃ at the overall level were Rs. 32170.52, Rs. 32170.52, Rs. 33452.01, Rs. 51452.01, Rs. 34852.01, Rs. 52852.01 and Rs.58137.21 per hectare, respectively on the sample farms. The average income per hectare over Cost-A₁, Cost-A₂, Cost-B₁, Cost-B₂, Cost C₁, Cost-C₂ and Cost-C₃ were worked out to Rs. 93494.48, Rs.93494.48, Rs. 92212.99, Rs. 74212.99, Rs.90812.99., Rs. 72812.99 and Rs. 67527.79 respectively. The income over different costs also increased with the increase in the farms size because of higher output in relation to total input cost.

A. Break-up total cost		
S. No.	Particulars	Amounts (Rs)
1	Cost A1	32170.52
2	CostA2	32170.52
3	CostB1	33452.01
4	CostB2	51452.01
5	CostC1	34852.01
6	CostC2	52852.01
7	CostC3	58137.21
B Net income over difference cost		

S. No.	Particulars	Amounts(Rs)
1	Income over cost A1	93494.48
2	Income over cost A2	93494.48
3	Income over cost B1	92212.99
4	Income over cost B2	74212.99
5	Income over cost C1	90812.99
6	Income over cost C2	72812.99
7	Income over cost C3	67527.79

Table 4: Major constraints of production of paddy

S.No.	Constraints	Total	
1	Lack of labour	54	(45%)
2	Time factor	8.4	(7%)
3	Lack of knowledge	24	(20%)
4	Lack of guidance	2.4	(2%)
5	Lack of literacy	7.2	(6%)
6	Low adoption of recommended package and practices of crop	24	(20%)

The major constraints in seed production of paddy were non availability of quality seeds, procedure of payment is too long and shortage of labour in key operations. Reveals the constraints faced by major paddy growers in the study area. Under major constraints pertaining to cultivation of paddy, lack of labour was the most important problem as reported by 45% per cent paddy seed producer. The second most important constraint faced by the paddy seed growers was Low adoption of recommended package and practices of crop (20 percent). The other most important constraints reported by the paddy growers were lack of knowledge (20 per cent), time factor (7 per cent), lack of literacy (6 per cent), and lack of guidance (2 per cent) Looking to the problems faced by paddy seed growers in the study area, it is pertinent to address these constraints. Accordingly, there is a need to impart training skills to the paddy grower on production aspect through extension support such as on farm training, demonstration etc. to enhance the adoption of recommended package and practices for paddy cultivation and technical knowledge.

CONCLUSIONS

The foregoing analysis concludes that the total cost of cultivation of paddy per hectare was observing Rs.52852.01. It is evident from table that, the per hectare Cost-A₁, Cost-A₂, Cost-B₁, Cost-B₂, Cost C₁, Cost-C₂ and Cost-C₃ at the overall level were Rs. 32170.52, Rs. 32170.52, Rs. 33452.01, Rs. 51452.01, Rs. 34852.01, Rs. 52852.01 and Rs.58137.21 per hectare, respectively on the sample farms. The average income per hectare over Cost-A₁, Cost-A₂, Cost-B₁, Cost-B₂, Cost C₁, Cost-C₂ and Cost-C₃ were worked out to Rs. 93494.48, Rs.93494.48, Rs. 92212.99, Rs.74212.99, Rs.90812.99., Rs. 72812.99 and Rs. 67527.79 respectively. The income over different costs also increased with the increase in the farms size because of higher output in relation to total input cost.

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