



E-ISSN: 2278-4136
P-ISSN: 2349-8234
JPP 2019; 8(6): 928-931
Received: 13-09-2019
Accepted: 15-10-2019

Dronak Kumar

Ph. D, Scholar, Agricultural
Economics, Indira Gandhi Krishi
Vishwavidyalaya College of
Agriculture, Raipur,
Chhattisgarh, India

Naresh Kumar

Indira Gandhi Krishi
Vishwavidyalaya College of
Agriculture, Raipur,
Chhattisgarh, India

Tameshwari Dohare

Indira Gandhi Krishi
Vishwavidyalaya College of
Agriculture, Raipur,
Chhattisgarh, India

Benefit-cost analysis of hybrid rice producer in Dhamtari district of Chhattisgarh state

Dronak Kumar, Naresh Kumar and Tameshwari Dohare

Abstract

A comparative study was conducted for benefit-cost ratio analysis of small, medium and large scale Rice producer in Dhamtari district of Chhattisgarh, India. In this study almost all type of farmers were involved in different activities where Rice farming was a major occupation. A sample of 60 respondents in the ratio of 20: 20: 20 was selected randomly. The respondents were classified into three groups viz., small (>2.00 hectares), medium (2.01-4.00 hectares) and large (4.01 hectares and above) farms. The maximum operational cost was found to be Rs. 18414 for small type farmers and was from family labour. The minimum per hectare operational cost was found from bullock labour for medium type farmers i.e. Rs. 17171. In case of material cost, the highest cost was involved in plant protection i.e. Rs. 8200 for large type of farmers. The highest fixed cost was recorded from rental value of owned land for large scale farmers i.e. Rs. 9779. The total cost involved for hybrid Rice production was maximum of small type farmers i.e. Rs. 27313. The net return was found maximum (Rs. 98632) for small type of farmers whereas minimum (Rs. 93304) was for large type of farmers according to availability of land area utilized for hybrid Rice cultivation. The Benefit-Cost ratio were found maximum (2.53:1) for small type of farmers whereas large type of farmers hold minimum (1.96:1) cost-benefit ratio.

Keywords: Variable cost, benefit, fixed cost, production, benefit

Introduction

Rice (*Oryza sativa* L.) is the world's most important crop and the primary source of food for more than half of the world's population. More than 90 per cent of world's rice is grown and consumed in Asia, where 60 per cent of the earth's people live. Chhattisgarh is popularly known as "rice bowl of India" because maximum area is under rice cultivation during *kharif* and contribute major share in national rice production. It has geographical area of 13.51 million hectares of which 5.9 million hectares is under cultivation. Rice occupies an area of 3.61 million hectares, with annual production 5.48 million tones and productivity of 15.17 q ha⁻¹ (Anonymous, 2013). In Chhattisgarh state, hybrid rice is growing area of 3.48 million hectare with a production of 6.15 million tones and productivity of 1517 kg per hectare during 2013-14 and area, production and productivity reduced in the subsequent year 2013-14. Looking to the above facts, it is essential to conduct a study, which could say something about cost of cultivation of hybrid rice in the Dhamtari district of Chhattisgarh state.

Materials and Methods**Collection of data**

The study is based on both primary and secondary data. The primary data was collected from the selected respondents with the help of pre-tested interview schedule by the personal interview method and secondary data was collected from Chhattisgarh agriculture statistics, land record office, annual districts statistics and other published and unpublished reports.

Methodology

Sampling technique Dhamtari block of Dhamtari district was purposively chosen as the study area because, it has the larger area under Hybrid Rice cultivation in the district. A multistage simple random sampling technique (SRS) was adopted to select the block, villages and the respondents, market and different farmer involved in hybrid Rice production and marketing in Dhamtari district. The details of the sampling techniques at various stages are given as under:

Profitability concept

Gross income = (Quantity of main product X price of main product) + (Quantity of by product X price of by product.)
Gross income/cost C₃

Net income = Gross income - Cost C₃

Corresponding Author:**Dronak Kumar**

Ph. D, Indira Gandhi Krishi
Vishwavidyalaya College of
Agriculture, Raipur,
Chhattisgarh, India

Family labour income = Gross income - Cost B₂
 Family business income = Gross income - Cost A₁

Benefit cost ratio = Gross income/Cost C₃

Results and Discussion

Cost concept

All most every day in farm organization and operation cost consideration enters. It is an important tool for measuring

farm business activities. The farm management specialists have specified cost of cultivation into cost A₁, A₂, B₁, B₂ cost C₁, C₂ and C₃. These cost concepts have already been taken up in the methodology chapter. In this section efforts have been made to discuss according to (various costs concepts) cultivation of rice sample farmers and different size groups of land holdings.

Table 1: Cost of cultivation on hybrid rice according to cost concept on sample farms. (Rs./ha.)

Cost	Size group			
	Small	Medium	Large	Overall
Cost A ₁ and A ₂	22883	31590	32939	31834.67
Cost B ₁	23692	32404	33828	32673.67
Cost B ₂	30952	39664	41088	39933.67
Cost C ₁	28092	35154	36028	35790.34
Cost C ₂	35352	42414	43288	43049.67
Cost C ₃	38887.20	46655.40	47616.80	47354.63

(Figures in brackets indicate percentage to the total)

The table 1 and figure 1 clearly shows that on an average total cost of (cost C₃) Rs. 47354.63 per hectare was required to produce this crop of which 54.87 per cent comprised for the variable cost commonly known as cost A₁ and A₂. After adding interest on fixed capital to cost A₁, the cost went up to 56.31 per cent as cost B₁ and when imputed value of land was further added it was increased up to 82.26 per cent. Thus, the

10 per cent cost of the cost C₂ when added in this cost, it form total cost or cost C₃. Table further inferred that cost A₁ to cost C₃ decreases with the increase in size of holding. The per cent of various costs to cost C₃ did not show any significant difference among different farms in cultivation of hybrid rice on sample farm.

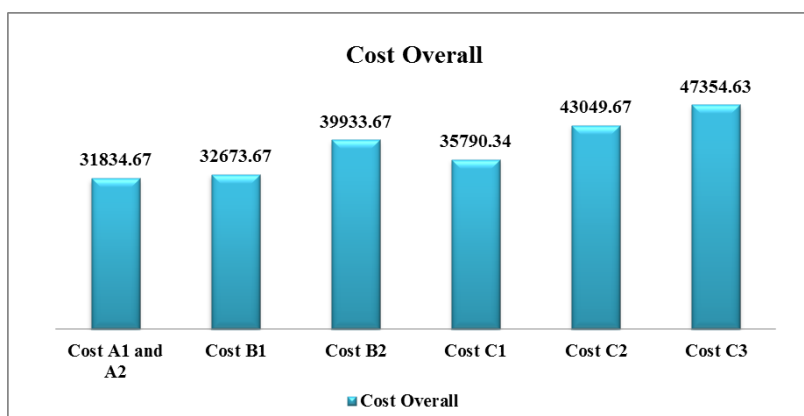


Fig 1: Cost of cultivation on hybrid Rice according to cost concept on overall farms

Profitability concepts

In any field of business activity profit is the prime consideration. Thus, how much a farmer earns as net income and family labour income as a producing unit and how much satisfaction he and his family derives as a consuming unit are

the major deciding factor in organization and operation of farm. Hence, in this section efforts have been made to discuss the gross income, net income over operational and total cost, family labour income, and input-output ratio and cost of production of hybrid rice.

Table 2: Profitability of hybrid rice production on sample farm (Rs./ha.)

Economic parameter	Size group			
	Small	Medium	Large	Overall
Total operational cost	18414	17171	16500	17361.67
Total cost	38887.20	46655.40	47616.80	47354.63
Main produce	96200	93600	91000	93600
By produce	2432	2400	2304	2378.56
Gross income	98632	96000	93304	95978.56
Net income over				
Operational cost	30044.30	28798	28906.9	29249.73
Input output ratio	2.53	2.05	1.96	2.02
Family labour income	67680	56336	52216	56044.89
Farm business income	75749	64410	60365	64143.89
Cost of production (Rs./qu.)	492.63	614.65	647.32	627.16

(Figures in brackets indicate percentage to the total)

From the table 2 it is clear that when physical output and by product are converted into monetary terms the total cost from hybrid rice are Rs. 29,104.9 Rs. 27,701.70 and Rs. 27,109.08 in case of small, medium and large farm with an average of Rs. 27,971.89 on sample farm. Thus, total cost hybrid rice decrease with an increase in farm size. Input-output ratio in other words can be termed as the return per rupee of investment. The minimum operational cost was found from human labour for small type farmers i.e. Rs. 4400. In case of material cost, the highest cost was involved in plant protection i.e. Rs. 1800 for large type of farmers. The highest fixed cost was recorded from rental value of owned land for large scale farmers i.e. Rs. 9779. The total cost involved for hybrid rice production was maximum of large type farmers i.e. Rs. 30044.30 (table 3 and Figure 1). The net return were found maximum (Rs. 68587.70) for small type of farmers whereas

minimum (Rs. 64397.10) was for large type of farmers according to availability of land area utilized for hybrid rice cultivation. The Benefit – Cost ratio were found maximum (2.53:1) for small type of farmers whereas large type of farmers hold minimum (1.96:1) benefit - cost ratio (Table 5). By getting this type of result we can say that there is an inverse relationship between net benefit and benefit - cost ratio. The type of farmers who were having small land area have better benefit - cost ratio because they can manage their all the needs and requirement for hybrid rice cultivation in better way within less involvement of cost than the farmers having large area. This result show that farm management practice is very important factor for better production of hybrid rice which is not up to the mark in large type of farmers in Dhamtari district of Chhattisgarh.

Table 3: Cost of hybrid rice cultivation (Rs./ha.)

Cost involved	Small	Medium	Large	Overall
Operational cost	8540	7750	7800	8029.98
Material cost	8200	7860	7200	7753.36
Fixed cost	8899	9009	9779	9229
Managerial cost	2731.3	2618.0	2627.9	2659.06
Total cost	30044.3	28798.1	28906.9	29249.73

Table 4: Gross income for hybrid rice production

Particular	Small	Medium	Large	Overall
Grain production (qu./ha.)	74	72	70	72
By product (qu./ha.)	76	75	72	74.33
Value of main product (Rs./ha.)	96200	93600	91000	93600
Value of by product (Rs./ha.)	2432	2400	2304	2378.56
Gross return (Rs)	98632	96000	93304	95978.56
Net returns over total cost (Rs.)	68587.7	67201.9	64397.1	66728.3

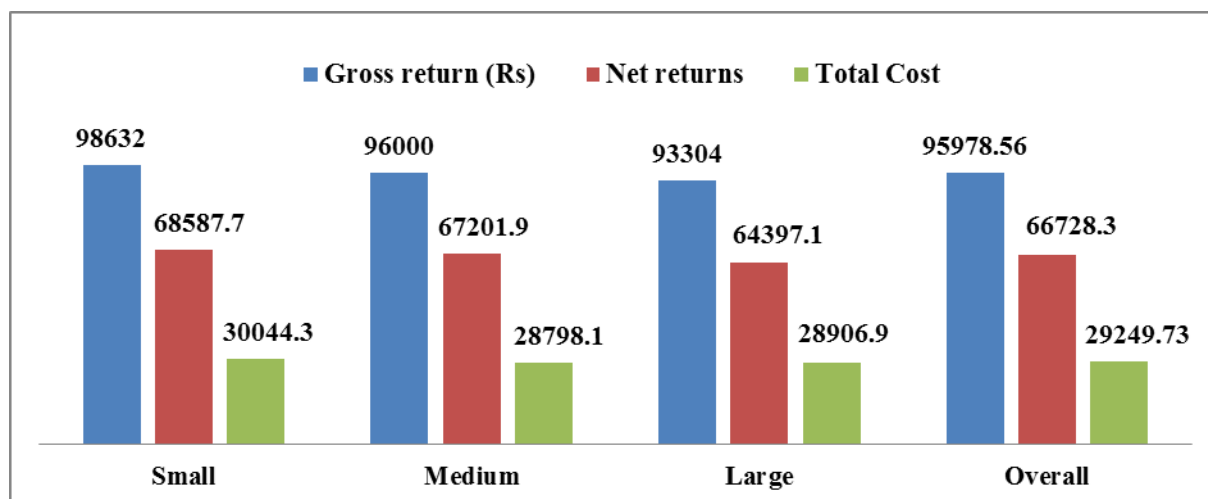


Fig 2: Gross income for hybrid rice production

Table 5: Cost-benefit analysis of rice production for all type of hybrid rice growers

Particulars Grover's	Total cost Involved (Rs.)	Gross return (Rs.)	Net benefit (Rs.)	Cost-benefit Ratio
Small	38887.20	98632	68587.7	2.53
Medium	46655.40	96000	67201.9	2.05
Large	47616.80	93304	64397.1	1.69
Overall	47354.63	95978.56	66728.3	2.02

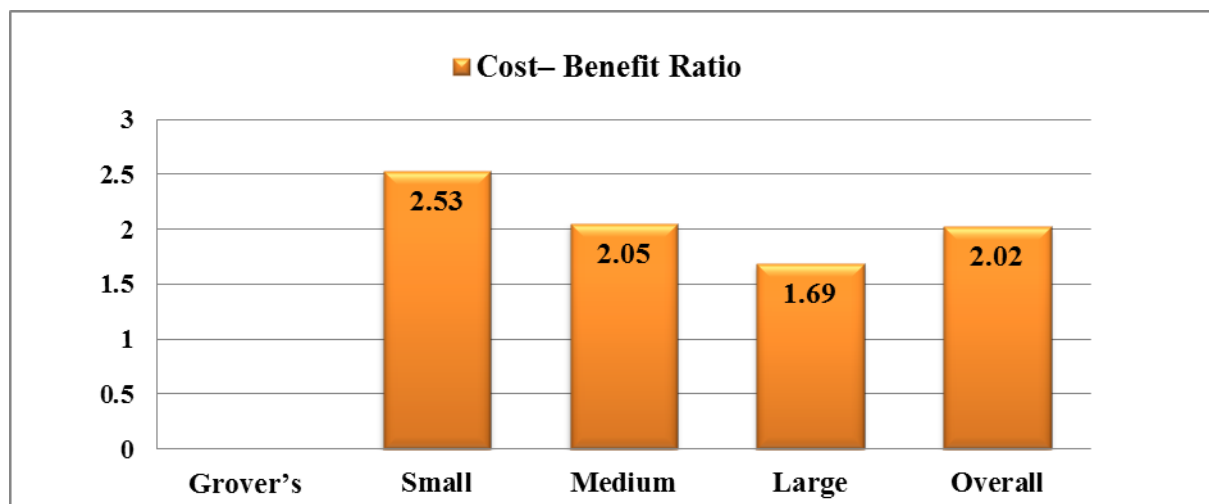


Fig 3: Cost-benefit analysis of rice production

References

1. Baig SU. "Hybrid rice seed scenario in India: problems and challenges." Accessed June 2010, 2009. [www.apsasee.d.org/docs/00b9aab6/ASC2009/SIG/HybridRice/Rice India.pdf](http://www.apsasee.d.org/docs/00b9aab6/ASC2009/SIG/HybridRice/Rice%20India.pdf).
2. Dewangan, Singh DK, Eshu Sahu Toppo AS, AR. Effect of integrated Weed management on weed flora distribution, weed dynamics and performance of rice (*Oryza sativa* L.) under system of rice intensification (SRI) in Chhattisgarh. *Research Journal of Crop Improvement*. 2013; 4(1):79-84.
3. Dhekale, Mahdi BS, Garde SS, Sahu Ya, PK. Parametric and nonparametric regression models for area, production and productivity trends of rice (*Oryza sativa*) crop. *International Journal of Agricultural and Statistical Sciences*. 2014; 10(1):211-216.
4. Gauraha *et al.* Economics of paddy production in Dantewada district of Trends Chhattisgarh. In *Bio Sciences*. 2014; 7(18):2750-2754.
5. Ohajianya DO, Onyenweaku CE. Analysis of costs and returns in ricefarming by farm size in Ebony! State. *Journal of Agriculture and Social Research, (JASR)*. 2003; 23(1):29-39.
6. Ohen, Ajah SB, EA. Cost and return analysis in small scale rice production in Cross River State, Nigeria. *International Research Journal of Agricultural Science and Soil Science*. 2015; 5(1):22-27, 21.
7. Santha AM. A comparative analysis of cost and returns of paddy cultivation for different seasons in Trichur, Kerala *Madras Agricultural Journal*. 2002; 80(2):41-44
8. Thiyagarajan, Ranganathan TM, Bhaskaran CR, Mathan A, Karivaradaraaju KK, TV. Trends in rice area, production and productivity in the different agro-climactic zones of Tamil Nadu. *Madras Agricultural Journal*. 2001; 87(4/6):287-290.
9. Visalakshi, Sirees M. Evaluation of rice production technologies for higher monetary returns and water use efficiency. *Research Journal of Research ANGRAU*. 2014; 42(2):51-53.