

Original Research Article

Economic Analysis of Production, Marketing and Constraints of Paddy in Dantewada District of Chhattisgarh, India

Neha Lakra*, A. K. Gauraha and K. N. S. Banafar

Department of Agricultural Economics, IGKV, Raipur (CG), India

**Corresponding author*

ABSTRACT

The study aims to examine the cost, returns, marketing pattern and constraints of paddy in Dantewada district of Chhattisgarh. Primary data were collected from 80 farmers from four villages of two blocks through personal interview method with the help of pre-structured schedule for the year 2013-14. Overall on an average per hectare cost of cultivation of paddy were estimated to be Rs. 13533.63. Variety wise cost of cultivation of paddy crop revealed that the highest cost of cultivation was observed in case of variety-MTU-1010 i.e. Rs. 14436.76 per hectare while the lowest cost was observed at Rs. 12150.61 per hectare for variety-Chudhi (Local). It was observed that the, farmers of the study area used chemical fertilizers in very low quantity in all the Kharif & Rabi crops. Overall on an average yield of paddy were 28.67 quintals, however, it was highest (29.80 qtl/ha) at medium farm and lowest (26.06 qtl./ha) at marginal farms in the district. Average cost of production per quintal of paddy was worked out to Rs. 456.31. The input-output ratio of paddy was worked out to be 1:3.45. The per farm average marketed surplus of paddy were observed to be 27.93 quintal (85.54 per cent) of the total quantity produced. Major constraints pertaining to cultivation of these crops were lack of soil testing facility (82.00 per cent) and scarcity of labour during peak season (81.25 per cent). Long distance of regulated market from the crop growing area (81.25 per cent) and lack of transportation facilities (77.80 per cent) were some of the major constraints which were faced by the producers of the study area. Looking to the very low use of agro-chemicals, organic farming should be promoted in the study area through subsidies, which should be available for organic manures like farm yard manure, compost and bio fertilizers and bio pesticides also. Farmers engaged in organic farming should be linked to niche markets where they will obtain a premium price, in order to compensate for any loss in yield.

Keywords

Cost of Cultivation, Economics of Production and Marketing pattern

Introduction

Rice is a staple food for more than half of the world population and in Asia alone more than 2000 million people obtain 60-70 percent of their calories from rice and its products (FAO, 2004). Rice cultivation is the principal activity and source of income for millions of households around the globe, and several countries of Asia and Africa are highly dependent on rice as a source of

foreign exchange earnings and government revenue. In Asia, more than 80% of the people live on rice, and their primary food security is entirely dependent on the volume of rice produced in this part of the world. However, rice production increases are now lagging behind population growth. Overall, the total global rice is declining gradually even with the extensive use of the modern

varieties such as high yielding and hybrid varieties. Over 90 per cent of the world's rice is produced and consumed in the Asian region comprising 80 per cent of the world's production and consumption. Growth in Asian population (1.8 % per annum) in this region means an increase on demand for rice. Although the net availability of food grains has increased in 2013 at 229 million tonnes, but there will be a shortage of rice due to increased domestic needs coupled with export demand for rice in future. The growth rates of food grain production in India have declined to 2 per cent during the period 1996-2008 as compared 1986-97 and rice production in India is questionable on economic and ecological grounds (Shergill, 2007). It was projected that India will face a shortage of food in the future where prevalence of undernourishment of 12.7 per cent in Asia. Under these circumstances, increasing rice production is an imperative to sustain self-sufficiency and food security in India.

In India it the most important cereal food crop, which occupies about 24 per cent of gross cropped area of the country. It contributes 42 per cent of total food grain production and 45 per cent of total cereal production of the country. Rice production in India has increased during last 60 years by about 3.5 times from 250.3 lakh tons during the first 5-yr plan period to 857.3 lakh tons during the tenth plan period. The average productivity of rice in India, at present, is 2.2 tons/ha, which is far below the global average of 2.7 tons/ha. The productivity of rice is higher than that of Thailand and Pakistan but much lesser than that of Japan, China, Vietnam and Indonesia. The supply projections have been made at two historical growth rates, i.e. 1.34% for the period 2000-2009 and 1.14% for the period 2006-2010. India is expected to surpass its demand by the year 2030, if

the rice production grows at 1.34% per annum. But it will remain in deficit of around 2.5 million tons, if the present growth rate of 1.14% continues up to the year 2030. The average trend in rice area for major rice growing states of the country from ninth plan (1997-98 to 2001-02) to tenth plan (2002-03 to 2006-07). Among the major states, rice had the largest area coverage in West Bengal followed by Uttar Pradesh. There was a sharp decrease in the area during the average period from ninth plan to tenth plan in Tamil Nadu (23.2 lakh ha) and Andhra Pradesh (17.8 ha). Like the rice area, the production in West Bengal was also found to be highest followed by Uttar Pradesh. Also, there was a sharp decrease in production during the average period from ninth plan to tenth plan in Tamil Nadu (54.1 lakh tons), Andhra Pradesh (11.0 lakh tons) and Uttar Pradesh (9.3 lakh tons). West Bengal, Punjab and Odisha revealed an upward trend.

The productivity of rice was found to be highest in Punjab followed by Andhra Pradesh and West Bengal. Tamil Nadu showed a negative trend in rice production during the average period of tenth plan as compared to that of ninth plan period. The states of Assam and Odisha indicated positive trend in productivity. There has been considerable increase in productivity of rice in India during the recent past. The productivity of rice has reached to 2.2 tons/ha at present compared to 0.8t/ha in the first plan. The trends in increase in productivity of rice in states has been almost identical to production, which is mainly due to introduction of high yielding varieties coupled with improved package of practices. Though there is considerable increase in area, production and productivity of rice in the country from 1950- 51 to 2006-07, a lot of variations exist especially in production and productivity of rice.

In Chhattisgarh state the area under paddy cultivation is 3.80 Mha (8.61 Per cent) having 6.30 Mt (5.97 per cent) of production during the year of 2014-15 (DES, 2014-15).

To enhance more export quantity, quality and export earning in the future, we need to know how about the constraints faced in rice export at different stages, in different levels, and different stakeholders involving in the exporting process to find out the suitable solutions for overcoming the constraints.

This paper aims at understanding problems and constraints faced by farmers in rice production and export. The main constraints towards farmers are focused in three problems viz. agro-ecological constraints, technological constraints and socio-economic constraints for understanding the real situations in rice production and export of India and Vietnam, which are useful to find out the suitable solutions for overcoming the constraints and promoting rice production and exports.

Materials and Methods

Chhattisgarh state consist 27 districts, out of which Dantewada district was selected purposively for the present study. Out of four blocks in the district, blocks were selected randomly further with two villages was considered from each of the selected blocks for the present study. A sample of 80 respondents (i.e. 10% of the total farmers) was selected randomly, subject to condition that at least 5 respondents shall be included on sample from each of the four categories of farms i.e. marginal up to (>1.0 ha.), small (1-2 ha.), medium (2-4 ha.) and large farmers (above 4 ha.). Finally 34, 23, 15 and 8 respondents were selected from marginal, small, medium and large size categories of farms using probability proportionate to size technique.

Results and Discussion

Economics and production of paddy at sample farms

Economics and production of paddy at sample farms is given in Table 01. The average total input cost was estimated to be Rs. 13533.63 per hectare which varied from Rs. 12415.46 per hectare at marginal farms to Rs. 14897.31 per hectare at large farms. The yield of this crop shows an increasing trend with the increase in farm size.

The figure of yield was observed as 26.06 quintal per hectare, 28.38 quintal per hectare, 29.80 quintal per hectare and 29.73 quintal per hectare at marginal, small, medium and large farms respectively with an average of 28.67 quintal per hectare in the study area. The average total value of paddy production was observed as Rs. 46703.50 per hectare. It was also observed from the table that farmers are spent Rs. 447.39 to Rs. 501.09 to produce the one quintal of paddy in the district.

Marketing pattern of paddy at sampled farms

Marketable Surplus

Marketable surplus of paddy crop at different farms are presented in Table: 02.

The average quantity produced of paddy was observed to be 32.65 quintal per farm which varied from 106.87 quintal per farm at large farms to 10.65 quintal per farm at marginal farms.

Per farm paddy production shows an increasing trend as the farm size increase. The marketed surplus at different farms was observed to be 27.93 quintal per hectare (85.54 per cent).

Table.1 Economics and production of Paddy at sample farms

S. No	Particulars	Marginal	Small	Medium	Large	Overall
1.	Input cost (Rs./ha)	12415.46	12750.71	13332.09	14897.31	13533.63
2.	Yield (Qtl/ha)					
	a. Main product	26.06	28.38	29.80	29.73	28.67
	b. By-product	34.03	36.14	37.40	37.71	36.32
3.	Value of production (Rs./ha)					
	a. Main product	41956.60	45691.80	47978.00	47865.30	46158.32
	b. By-product	510.45	542.10	561.09	565.65	544.80
Total value of production (Rs./ha)		42467.05	46233.90	48430.95	48430.95	46703.50
4.	Cost of production (Rs./qtl)					
	a. Main product	476.42	449.29	447.39	501.09	472.05

Table.2 Marketable surplus of major paddy at sampled farms (Quintal/farm)

S. No.	Particulars	Marginal	Small	Medium	Large	Overall
A.	Paddy					
1.	Total quantity produced	10.65 (100.00)	26.39 (100.00)	52.53 (100.00)	106.87 (100.00)	32.65 (100.00)
2.	Quantity retained for seed	1.82 (17.08)	2.17 (8.22)	3.67 (6.99)	1.25 (1.17)	2.21 (6.77)
3.	Consumption	2.20 (20.66)	2.82 (10.69)	3.33 (6.34)	1.38 (1.29)	2.51 (7.69)
4.	Total quantity utilized	4.02 (37.75)	4.99 (48.91)	7.00 (13.33)	2.63 (2.46)	4.72 (14.46)
5.	Marketed surplus	6.63 (62.25)	21.40 (81.09)	45.53 (86.67)	104.24 (97.54)	27.93 (85.54)

Note: Figures in parenthesis indicate percentages to total quantity produced.

Table.3 Price received by producers from different intermediaries (Rs/quintal)

S. No.	Particulars	Marginal	Small	Medium	Large	Average
1.	Village trader	1220	1350	1400	1400	1343
2.	Wholesaler	1250	1370	1550	1550	1430
3.	PACS	1610	1610	1610	1610	1610
Average		1360	1443	1520	1520	1461

Table.4 Marketing cost incurred by different agencies in different channels

Particulars	Intermediaries in channel-I			Intermediaries in channel- II	
	Producer	Village trader	Wholesaler	Producer	PACS
Transportation	-	17.33 (58.59)	70.00 (69.31)	8.01 (61.10)	-
Loading/ unloading	-	4.50 (15.21)	12.75 (12.62)	5.10 (38.90)	-
Packaging	-	2.75 (9.30)	4.75 (4.70)	-	-
Mandi fees	-	-	2.50 (3.47)	-	-
Miscellaneous	5.00	5.0 (16.90)	10.00 (9.90)	-	-
Total cost	5.00 (100.0)	29.58 (100.0)	101.00 (100.0)	13.11 (100.0)	-

Table.5 Problems faced by the growers in production at sampled farms

S. No.	Problems	Number of respondents (N=80)	
		Yes	No
1.	Lack of latest technical knowledge about the crop cultivation	50 (62.50)	30 (37.50)
2.	Lack of knowledge about the recommended doses of different chemical fertilizer, insecticides and pesticides in the crop	60 (72.00)	20 (25.00)
3.	Lack of sufficient soil testing facilities in the nearest area.	66 (82.00)	14 (18.00)
4.	Lack of irrigation water for rabi crops	55 (68.75)	25 (31.25)
5.	Scarcity of labour during peak season for different operations of crop cultivation	65 (81.25)	15 (18.75)
6.	Lack of sufficient fund to purchase the different inputs for crop cultivation	50 (62.50)	30 (37.50)
7.	Problem face in financing from financial institutio	55 (68.75)	25 (31.25)
8.	Lack of availability of improved farm machines on hire basis	30 (37.50)	50 (62.50)
9.	Lack of HYV varieties of different crops as suitability of the study area	62 (77.50)	18 (22.50)
10.	Low yield of this crops in the area	64 (80.00)	16 (20.00)

Note: - Figure in the parentheses indicates percentages to the total

Table.6 Problems faced by the growers in marketing at sampled farms

S. No.	Problems	Number of respondents (N=80)	
		Yes	No
1.	Low price received by farmers of this crops	55 (68.75)	25 (31.25)
2.	Lack of transportation facilities and road from village to market	62 (77.50)	18 (22.50)
3.	Not economical transportation due to small quantity of produce	45 (56.25)	35 (43.75)
4.	Lack of awareness about regulated and Co-operative market for these crops	60 (75.00)	20 (25.00)
5.	Lack of storage facilities in growing areas	45 (56.25)	35 (43.75)
6.	Lack of soon dissemination of news and information related to the market price of the different crops	50 (62.50)	30 (37.50)
7.	Long distance of regulated market from the crop growing area	65 (81.25)	15 (18.75)

Note: - Figure in the parentheses indicates percentages to the total.

Price received by producers from different marketing agencies

The price received by producers from different intermediaries in the district is shown in Table 3. The village traders show their presence just after harvesting the crop. During this period they purchase most of the quantity from producers. Farmers having less quantity of produce sold their produce to the village traders at the rate of Rs. 1343 per quintal after harvesting the crop. However, farmers who have large quantity of produce, sold their produce to the wholesaler directly and receive Rs.1430 per quintal of their produce. Other than these two intermediaries, primary agriculture co-operative society (PACS) purchase the produce from producers after two month of harvesting at the minimum support price Rs. 1610 per quintal in the district. The average price received by producers from these intermediaries is observed as Rs.1360, Rs.1443, Rs.1520 and Rs.1520 per quintal at marginal, small, medium and large farms respectively in Dantewada district of CG state.

Marketing cost and margin of paddy at sampled farms

Marketing cost incurred by different agencies in Dantewada district

The whole quantity of produce sold by the producer in the district is disposed-off through following two marketing channels prevailing in the study area:

Channel-I Producer- village traders-wholesaler

Channel-II Producer- PACS

The marketing charges paid by the producers, village traders and wholesalers are described in Table 4. In marketing channel- I marketing charges paid by the producers, village traders and wholesalers of paddy are estimated as Rs.5, Rs.29.58 and Rs. 101.00 per quintal respectively. Most of the producers sell their produce in the channel-II and incurred very less cost as compared to the channel-I. Producers sell their produce in this channel through PACS

which are situated either in the same village or in other village nearby. The marketing cost in channel II is estimated as Rs. 13.11 per quintal in the district.

Constraints in the production and marketing of crops

Constraints faced by growers during production of crops

The major constraints in production of kharif crop is presented in Table 5. The major problem felt by farmers is lack of sufficient soil testing facilities is perceived by 82 per cent of farmers. Due to this reason farmers of study area were not able to use proper fertilizer does in the crop. Farmer's perception is that the soil testing facilities should be available at least in block level along with recommended dose of fertilizer and manure according to the soil test. This step will help the farmers to increase the production and productivity of major crops.

Scarcity of labour during the peak season is also the main problem faced by 81.25 percent due to which, they are performing only one weeding in the crop. As much as 68.75 per cent farmers of the study area faced the problem of lack of irrigation water and problem in financing fund for crop cultivation. About 72.50 per cent and 77.50 per cent farmers of the study area told about the lack of recommended doses of different chemical fertilizers, insecticide and pesticides in the crop, however, they seek help from their relatives, friends and shopkeepers from where they bought these inputs. About 62.50 per cent farmers reported that they faced the lack of sufficient fund to purchase the different inputs for crop. Generally marginal and small categories of farmers are observed this problem in the study area.

Constraints faced by growers during marketing of crops

The major constraints in the marketing of crops is presented in Table 6. The major problems (81.25 per cent) faced by growers during marketing of these crops is observed to be long distance of regulated and PACS market from the crop growing area. Lack of transportation facilities and road from village to market (77.50 per cent) is another important problem in the area. About 75.00 per cent farmers face the problem of lack of awareness about regulated and co-operative market for these crops. Due to these farmers were unable to sell their crops at much remunerative price. About 68.75 per cent farmers were not satisfied with the price they received of their produce.

The study concludes that farmers spent average of Rs. 13553.63 to produce the paddy crop in one hectare of land. Share of major cost in the cultivation of paddy was observed labour and machine power accounting more than 80 per cent of the total variable cost. Average yield of paddy was estimated as 28.67 quintal per hectare. The trend of yield variation was not observed very much at different size groups of farms in the study area. Average cost of production per quintal of paddy was Rs. 472.05. The marketed surplus of paddy was observed to be on an average 27.93 quintals (85.61 per cent) respectively of the total quantity produced. The average marketed surplus is estimated as 26.66 quintal per farm (90.33 per cent) of paddy respectively at different farms. It is suggested from this study that yield potential may be increased by providing technical knowledge and to promote the use of HYV seed of this crop among the paddy producers in the district. Arrangements should be made for the marketing of these crops at least at block levels so that farmers can easily sell their produce at remunerative prices.

References

- Anonymous, 2015. Directorate of Economics & Statistics, New Delhi.
- FAO, 2004. Addressing Marketing and processing constraints that inhibit Agri-food Experts: a guide for policy analysts and planners. FAO Agricultural service Bulletin 160, Rome, Italy.
- Inuwa, I.M.S., *et al.*, 2011. Profitability Analysis of rice processing and marketing in Kano state Nigeria. *Nigerian journal of Basic and Applied Science*.19 (2):293-298.
- Lakshmi Prasanna, P.A., *et al.*, 2009. Rice production in India- Implication of land inequity and market imperfections. *Agricultural Economics Resarch Review*.Vol 22:431-442.
- Sanaullah Noonari, *et al.*, 2015. Analysis of rice profitability and marketing chain: A case study of district sukkur sindh Pakistan.*International Journal of Business and Economic Resarch*. 4(2):133-143.
- Sarvankumar, V., and Kiruthika, N. 2015. Economic analysis of production and marketing of paddy in Tamilnadu. *International Research journal of Agriculture Economics and Statistics*.6 (2):249-255.
- Subramanian, A., 2014. Crossing The Rubicon- Towards a pareto efficient Indian agriculture market with specific focus on rice and wheat markets. Working peper no- 4 DEA (1-33).
- Takele, A., 2010. Analysis of rice profitability and marketing chain: The case of Fogeria Woreda, South Gondar zone Amhara, National regional state Ethopia, M. Sc. Thesis.
- Thanh, N.C., and Singh, B. 2006. Constraints faced by the farmers in rice production and export, *Omonrice* 14:97-110.
- Vishal, S., Giri, and Rai, S.S. 2013. Supply chain management of rice in India: A rice processing company's perspective. *International Journal of Managing Value and Supply chains*.Vol.4 (1): 25-36.