



## **Cost, Returns and Profitability of Paddy Production in Chandrapur District of Maharashtra**

**S.R. Dhurve<sup>1</sup> and R.D. Shelke<sup>2</sup> and D.U. Meshram<sup>3</sup>**

Department of Agricultural Economics, College of Agriculture, Latur.

### **ABSTRACT**

*Rice (Oryza sativa) belong to family Gramineae. Rice is one of the major food crop grown on the planet. Two third of the world population eat rice as their staple food. About 80 % of world rice production comes from the cultivation of Oryza sativa. There are over 140,000 varieties of rice known to grown world over. India is supposed to be the center of origin of indica rice of the species O. sativa. For present study multistage sampling design was used in selection of district, tehsils, and village and paddy growers. On the basis of high area under paddy crop Warora, Chimur and Brahmपुरi tehsils were selected. From selected three tehsils 6 villages were selected purposely on the basis of highest area under paddy crop. From each village 15 paddy growers were selected. In this way 90 paddy growers were selected for the present study. The information collected with respect to expenditures and returns were analyzed in tabular form by using cost concept like Cost -A, Cost- B and Cost - C. Data pertain to the year 2017-2018 The result revealed that Cost - A was Rs.38297.28 in which share of Cost -B was Rs.73825.17 while that of Cost - C was Rs.78457.7. Gross return was found to be Rs.101095.27 and net profit was Rs.22637.57. The B:C ratio was 1.28.*

**Key words:** Paddy, Cost, Gross return, Net profit and B:C ratio

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### **INTRODUCTION**

Rice is one of the chief grains of India. Moreover, this country has the biggest area under rice cultivation. India is one of the leading producers of this crop. Rice is the basic food crop and being a tropical plant, it flourishes comfortably in hot and humid climate. Rice is mainly grown in rainfed areas that receive heavy annual rainfall. That is why it is fundamentally a *kharif* crop in India. It demands temperature of around 25 °C and above and rainfall of more than 100 cm. Rice is also grown through irrigation in those areas that receives comparatively less rainfall. Rice is the staple food of eastern and southern parts of India. In 2016-2017, total rice production in India amounted to 110.15 million tonnes, which was much less than production of previous year, 106.29 million tonnes. These are happen due to low rainfall and effect of cyclonic storm at major rice growing region. [1,4-6].

India stands second in rice production with an annual production of 110.15 million tonnes [3]. Rice cultivation takes place in all states of India, but West Bengal, Uttar Pradesh, Madhya Pradesh, Punjab, Orissa and Bihar are the major rice producing states. In India, rice production has increased gradually from 137 to 155 million tonnes. Developing countries account for 95% of the total production, with China and India alone responsible for nearly half of the world output [2]. The major rice importing countries of India are Nigeria, Philippines, Saudi Arabia, Iraq, Iran, Malaysia, Brazil, Persian Gulf countries, Europe, South Africa, Bangladesh and Indonesia .

Today, majority of all rice produce comes from China, India, Indonesia, Pakistan, Bangladesh, Thailand, Myanmar, Philippines and Japan. Asian farmers still account for 92% of the world's total rice production. The population of the state is 80 million which compites of 9.47% of the country's total population. Rice is the 1st important crop after Jowar in Maharashtra State as per census 2016-2017. The total area under rice crop remained stable around 15.13 million hectare and production around 25.49 million tones with 1.68 t/ha productivity during last 10 years in the state. The Agricultural Universities in the state has released total 54 high yielding varieties and scented rice varieties such as SKL 7, PKV Khamang, PKV Makarand, Pusa Basmati, Indrayani etc. The farmers in the state are living in the worst condition compared to the rest of India. And In 2016-2017 area, production and productivity of paddy in

Chandrapur is 1773 (ha), 2935 (MT) and 1656 (kg/ha). To estimate costs, returns and profitability in paddy production.

## MATERIAL AND METHODS

Multistage sampling design was adopted for selection of the district, tehsil, village and paddy growers. In first stage, Chandrapur district was purposively selected on the basis of highest area under paddy crop. In the second stage, Warora, Chimurand Bramhapuri tehsils were selected on the basis of highest area under paddy crop. In the third stage, 6 villages were selected from each selected tehsils. In the fourth stage, from each of the selected villages, 15 paddy growers were randomly selected. In this way 90 paddy growers were selected for the present study. Data were collected from the with the help of presented schedule by personal interview method for the year 2017-2018. Data were converted to per hectare basis in tabular form; statistical tools like arithmetic mean, percentage and ratio were used for accounting the cost and returns in paddy production.

The cost concept like Cost -A, Cost -B, and Cost -C were used for cost evaluation and to estimate profitability in paddy production. Cost - A include the item namely, hired human labour, bullock labour, machine labour, seed, fertilizer, plant protection, irrigation, land revenue, incidental charges, interest on working capital and depreciation on assets. Cost-B comprises of the cost-A plus rental value of land and interest on fixed capital. Cost-C includes the cost-B plus family labour cost. The terms and concepts used in present study were as fallows. Interest on working capital included by charging interest at the rate of 13 per cent items of expenditure as hired human labour, bullock labour, machine labour, seed, fertilizers, manures, plant protection, land revenue an incidental charges for crop duration. Depreciation is the decrease in the value of asset and 10 per cent on the present value at the beginning of the year of farm implements and machinery was taken and only the proportionate charges were taken for the estimate as 1/6<sup>th</sup> the value of gross produce that is value of main product plus value of by product minus land revenue. Interest on fixed capital by charging interest at the rate of 11 per cent on investment on commonly used assets like wooden implements, iron implements which were distributed on cropped area.

## RESULT AND DISCUSSION

### Per hectare physical inputs used and output obtained in paddy production

Per hectare physical input utilized for production of paddy and output are given in Table 1. Physical input included hired human labour, family human labour bullock labour, seed, manure, fertilizer, plant protection.

Table 1: Per hectare physical input and output of paddy farm (Unit/ha)		
Particulars	Unit	Paddy farm
<b>INPUT</b>		
Hired human labour	man day	121.97
Family human labour	man day	25.63
Total human labour	man day	147.60
Bullock labour	pair day	2.29
Machine labour	hour	40.87
Seed	kg	55.56
Manure	qtl	5.50
Fertilizer		
N	kg	104.78
P	kg	64.86
K	kg	64.86
Plant protection	Liter	1.21
Irrigation	m <sup>3</sup>	1298.56
<b>OUTPUT</b>		
Main produce	qtl	44.56
By-produce	qtl	2.63

Labour is an important input in crop production. In case of paddy 121.97 man days of hired human labour and 25.63 man days of family human labour were utilized on paddy farm i.e. in total 147.60 man days human labour were utilized for paddy crop. The use of hired human labour is maximum on farm. On the farms 2.29 pair days of bullock labour were utilized per hectare. About 40.87 hours of machine labour were utilized per hectare on paddy farm. Use of seed per hectare for paddy crop was 55.56 kg. Use of

manure per hectare for paddy crop was 5.50qtl. In regards to fertilizer, it is observed that nitrogen, phosphorous and potash was the common fertilizers utilized in study area. Use of N,P& K was maximum i.e. 104.78, 64.86 and 64.86 kg per hectare on paddy farm. The use of plant protection chemicals were 1.21 liter per hectare for paddy crop. The use of irrigation were 1298.56 m<sup>3</sup>. The combined effect of above inputs was reflected in output and it is observed that per hectare 44.56 qtl main produce and 2.63 qtl by produce of paddy was harvested by the grower.

#### Per hectare cost of cultivation of paddy

The item wise detailed per hectare cost of cultivation for paddy is given in Table 2. It is observed from table that, per hectare total cost of cultivation i.e. cost-C was Rs.78457.7 for paddy cultivation, in which the share of cost A, cost-B and cost-C was 48.87 per cent and 94.15 and 100 per cent respectively.

Among the different items of the cost, rental value of land stood at first position i.e. 42.07 per cent, followed by seed cost is 12.83 per cent of total cost, hired human labour cost which was 9.62 per cent on farms. Since both the costs are indirect cost, producer enjoyed more profit in the paddy crops. Among the different items of working capital, on paddy farm the family human labour is 5.90 per cent, machine labour cost (4.70 %), Interest on working capital (4.65%), Interest on fixed capital (3.21 %), phosphorus (3.17%), depreciation on capital assets (2.91%), manure cost (2.20 %), potash (2.06%), bullock labour cost (1.84 %), nitrogen dose (1.74%), Irrigation charge (1.28 %), plant protection (1.26 %), Incidental charges (0.37%), land revenue (0.19%).

**Table 2: Per hectare cost of cultivation of paddy production (Rs/ha)**

Sr. No	Particulars	Unit	Quantity	(Amount	Per cent
1.	Hired human labour	man day	121.97	7552.71	9.62
2.	Bullock labour	pair day	2.29	1447.79	1.84
3.	Machine labour	hour	40.87	3692.7	4.70
4.	Seed	kg	55.56	10040.16	12.83
5.	Manure	qtl	5.50	1716.87	2.20
6.	Fertilizer	kg			
7.	N		104.78	1366.33	1.74
8.	P		64.86	2492.56	3.17
9.	K		64.86	1621.05	2.06
10.	Plant protection	liter	1.21	985.39	1.26
11.	Irrigation	m <sup>3</sup>	1298.56	1000.00	1.28
12.	Land revenue	-	-	150	0.19
13.	Incidental charges	-	-	291.20	0.37
14.	Interest on working capital @13%	-	-	3654.51	4.65
15.	Depreciation on capital assets @10	-	-	2286.01	2.91
<b>16.</b>	<b>Cost A (1-15)</b>	-	-	<b>38297.28</b>	<b>48.87</b>
17.	Rental value of land	-	-	33008.01	42.07
18.	Interest on fixed capital @ 11%	-	-	2519.88	3.21
<b>19.</b>	<b>Cost B (13-15)</b>	-	-	<b>73825.17</b>	<b>94.15</b>
20.	Family human labour	man day	25.63	4632.53	5.90
<b>21.</b>	<b>Cost C (16-17)</b>	-	-	<b>78457.7</b>	<b>100</b>

#### Profitability of paddy cultivation

The profitability of paddy cultivation is show in Table 3. It is seen from table that per hectare return from paddy cultivation were Rs 100500.40 while, total cost of cultivation was Rs 101095.27. The share of cost-A and cost-B in cost-C was Rs. 38297.28 and Rs. 73825.17 in paddy.

The various measures of income were worked out at particular cost level and are also presented in Table 3. Farm business income (gross return-cost A) on the farm was Rs. 62797.99. The farm business income is more because of high cost of family human labour. Family labour income i.e. (gross return- cost-B) was estimated to Rs. 27270.01 on paddy. The net profit i.e. (gross return- cost-C) was arrived at Rs. 22637.57in paddy. With B: C ratio of 1.28. It indicated that cultivation of the crops is profitable. Per quintal cost of cultivation in case of paddy was Rs. 784.42.

**Table 3: Per hectare profitability of paddy production (Rs/ha)**

Sr. No	Particulars	Amount
1.	Returns from main produce (Seed)	100500.40
2.	Returns from by produce	594.87
3.	Gross returns (item 1+2)	101095.27
4.	Cost-A	38297.28
5.	Cost-B	73825.17
6.	Cost-C	78457.7
7.	Farm business income (Gross return minus cost-A)	62797.99
8.	Family labour income (Gross return minus cost-B)	27270.01
9.	Net profit (Gross return minus cost-C)	22637.57
10.	Output Input ratio (Gross return divided by cost-C)	1.28
11.	Per cost of production (Cost-C minus by produce value divided by main produce quantity)	784.42

**CONCLUSION**

Use of hired human labour was 121.97 man days. It inferred that, as farm size increased it shows the positive relationship. On the contrary, use of family human labour was 25.63 man days. Use of machine labour was increased with an increase in farm size. Net profit of paddy crop was Rs. 22637.57. It was clear that paddy crop was profitable crop. It is observed that, there is scope to increase in use of machine labour area and family human labour for paddy crop.

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