

Cost, Returns and Profitability of Waingani Paddy cultivation in Sindhudurg District of Maharashtra

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Abstract: The present study entitled, 'Economics of waingani paddy cultivation in Sindhudurg District.' was undertaken with 120 farmers randomly selected from Sindhudurg district (M.S.). The data collected pertained to agricultural year 2014-2015. The selected sample farmers were classified into two groups according to methods of paddy cultivation. These two groups were categorized as rahoo method and transplanting method.

Per hectare cost of cultivation was also found more in transplanting method (Rs. 60946.85) than rahoo method (Rs.51504.20). Per hectare gross returns obtained from wainganipaddy cultivation were Rs.43525.60 and Rs.48608.90 in rahoo method and transplanting method, respectively. Benefit cost ratio observed was 1:0.84 and 1:0.80 in rahoo and transplanting method respectively. Thus, the rahoo method of paddy cultivation was found profitable in Sindhudurg District.

Keywords: Cost, Returns, Profitability

INTRODUCTION

Paddy (*Oryza sativa* L.) commended recognition as a supreme commodity to mankind, because paddy is truly life, culture, a tradition and a means of livelihood to millions of people all over the world. It is not only a cereal crop but also a way of life in Asian countries. It contributes about 40 to 70 per cent of total calorie intake to the population. Hence, sustained production and increased productivity of paddy crop is critical for food and nutritional security in Asia. In India, paddy is the only promising crop to acquire self sufficiency in food grains production for the increasing population. Paddy crop occupies the largest cultivated land in the country. Technology breakthrough in the field of agriculture has resulted in the spectacular performance in paddy production in the country, but with regards to average productivity, compared to other Asian countries, the production of paddy per unit of land (productivity) is very low in India.

METHODOLOGY

The maximum area under summer paddy cultivation is concentrated in Sindhudurg district of Konkan region therefore; Sindhudurg district was selected purposively. Malvan, Kudal and Sawantwaditahsils of Sindhudurg district were selected, having maximum area under summer paddy cultivation. For the selection of villages, from each tahsils two villages were selected purposively having maximum area under summer paddy. The list of summer paddy cultivators was obtained from revenue records of selected villages. From each village 20 sample farmers were selected randomly. The data were collected from the selected paddy growers by personal interview method. In Sindhudurg district, it is observed that summer paddy is cultivated near river and nallas where natural water logged condition exist during November to February. If necessary protective irrigation is given. The farmers were cultivating

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paddy by two method namely rahoo method and transplanting method. Therefore, farmers were grouped according to method of cultivation of paddy to know the economics of both the method. In rahoo method the seed of paddy is soaked in water for 2-3 days and then directly broadcasted in the field. After broadcasting of sprouted seed the standing water level about 1 to 2 cms is maintained to set the seedlings of paddy. In transplanting method, seedlings are raised on nursery bed and after 35 to 40 days seedlings are uprooted and transplanted in field. The summer paddy in Sindhudurg district locally called as *Wainganipaddy*

Analysis of data

Simple statistical tools such as arithmetic mean, percentage and ratios were worked out. For working out cost of cultivation, standard cost concepts viz., cost-A, cost-B, cost-C were used.

Different cost concept used in working out cost of cultivation

1. Cost- 'A'
2. Cost -'B'
3. Cost-'C'

Cost-Benefit Ratio: Cost-Benefit or input-output ratio was calculated by using following formula.

$$\text{Cost benefit ratio} = \frac{\text{Gross return (Rs)}}{\text{Total cost (cost - C)}}$$

Per quintal cost of was worked out using following formula

$$\text{Per quintal cost} = \frac{\text{Total cost - Value of by- product}}{\text{Grain yield in quintal}}$$

Estimation of cost and their valuation

- i) Labour: The hired human labour as well as bullock labour was evaluated on the basis of actual wage rates paid by the farmers at the time of farm operations. The valuation of family human Labour was also considered with same wage rate.
- ii) Purchased inputs: The valuation of purchased inputs like seed, fertilizer,

insecticides, manures etc. was done on the basis of actual expenses.

- iii) Farm produces inputs: The farm produced inputs like seeds, manures, were evaluated on the basis of market price prevailing in study area.
- iv) Depreciation: The depreciation on farm building, implements, and machinery and hand tools used in paddy cultivation was worked out by adapting straight line method of depreciation. While calculating depreciation, following formula was used.

$$\text{Annual depreciation (Rs.)} = \frac{\text{Purchase price-Junk value}}{\text{Expected life in years}}$$

The depreciation cost for area under paddy was obtained by apportionment of total depreciation on gross cropped area.

- v) Interest: Interest on working capital in paddy cultivation activity was calculated @ 6 per cent for six months period, whereas, interest on fixed capital was worked out @ 10 per cent per annum on the fixed investment made in the farm assets, utilized for paddy cultivation.
- vi) Rental value of owned land: Rental value of owned land was estimated by considering 1/6th part of the gross value of produce minus land revenue.
- vii) Supervision charges: A supervision charges were worked out @ 10 per cent of input cost.

Estimation of returns

Returns from paddy production were estimated by considering the value of main as well as by produce. For estimating the value of produce prices at harvest season were considered.

RESULT AND DISCUSSION

Cost of cultivation of *wainganipaddy*

The per hectare item wise cost incurred for *wainganipaddy* cultivation was studied and the information is presented in Table 1 and 2for rahoo method and transplanting method respectively.

Rahoo method of paddy cultivation

It is seen from the Table 1 that the per hectare total cost of *waingani* paddy cultivation in rahoo method was worked out to Rs 51504.20, of which share of Cost- 'A' was 57.08 per cent and that of Cost- 'B' was 74.54 per cent.

As regards, item wise cost, it was found that maximum cost (28.28 per cent) was incurred on hired human labour. Contribution of other items in Cost- 'A' were 1.69 per cent machine hours, 10.07 per cent bullock labour, 3.82 per cent seeds, 5.77 per cent fertilizers, 3.16 per cent manures, 0.87 per cent

plant protection, 1.60 per cent interest on working capital, 0.95 depreciation and 0.17 per cent on land revenue. In Cost-'B' item wise cost included 14.07 per cent on rental value of owned land and 3.39 per cent on interest on fixed capital. In Cost-'C' item wise cost incurred 21.09 per cent family labour and 5.43 per cent supervision charges.

Out of the total of cost Rs 51504.20 incurred on *waingani* paddy cultivation, the proportion of Cost-'A' and Cost-'B' was Rs29088.12, respectively. It was Rs. 37985.96. It is observed from the Table 5.10 that, per hectare yield was found to be 26.08 quintals of main

Table 1
Per hectare item wise cost of cultivation of Rahoo method of paddy cultivation

Sr. No.	Particulars	Qty.	Rate (Rs.)	Value (Rs.)	Percentage
1.	Hired human labour				
	a) Male	42.37 (days)	254.76	10794.18	21.18
	b) Female	32.86 (days)	110.15	3619.53	7.10
	Total human labour	75.23(days)		14413.71	28.28
2.	Bullock labour	8.38 (days)	612.19	5130.15	10.07
3.	Machine (hrs)	2.46 (hrs)	350.00	861.00	1.69
4.	Seed	95.90(kg.)	20.29	1945.81	3.82
5.	Fertilizers				
	i) Nitrogen	96.45	18.37	1771.79	3.48
	ii) Phosphorus	23.68	36.43	862.66	1.69
	iii) Potash	18.12	16.92	306.59	0.60
6.	Manures	5.36 (C.L.)	300.74	1611.97	3.16
7.	Plant protection	0.89 (Lit)	500	445.00	0.87
8.	Irrigation charges			340.80	0.67
9.	Interest on working capital (6% for 6 month)			830.68	1.63
10.	Depreciation on implements and farm buildings			482.96	0.95
11.	Land revenue			85.00	0.17
	COST 'A'			29088.12	57.08
11.	Rental value of own land (1/6 of gross return -LR)			7169.27	14.07
12.	Interest on fixed capital (@ 10 % of fixed investment)			1728.57	3.39
	COST 'B'			37985.96	74.54
13.	Family labour				
	a) Male	29.79 (days)	256.88	7652.46	15.02
	b) Female	27.12 (days)	114.19	3096.83	6.08
	Total	56.91 (days)		10749.29	21.09
14.	Supervision charges (@ 10 % of input cost)			2768.95	5.43
	COST 'C'			51504.20	100
15.	Yield				
	a) Main produce	26.08 (q)	1320	34425.60	79.09
	b) By-produce	32.50 (q)	280	9100	20.91
	Total returns			43525.60	100.00

produce and 32.50 quintals of by-produce. The average total returns obtained from rahoo method were Rs. 43525.60/ha in which main produce contribute 79.09 per cent and contribution by-produce 20.91 per cent.

Transplanting method of paddy cultivation

It is seen from the Table 2 that per hectare total cost of cultivation of paddy in transplanting method was

worked out to Rs. 60946.85 of which share of Cost- 'A' was 60.91 per cent and that of Cost- 'B' was 77.74 per cent.

As regards, item wise cost, it was found that maximum cost (36.34 per cent) was incurred on hired human labour. Contribution of other items in Cost- 'A' bullock labour 7.45 percent, machine hours 2.62 per cent, plant protection 0.72 per cent,

Table 2
Per hectare item wise cost of cultivation of transplanting method of paddy cultivation

Sr. No.	Particulars	Qty.	Rate (Rs.)	Value (Rs.)	Percentage
1.	Hired human labour:				
	a) Male	66.59(days)	257.23	17128.95	28.36
	b) Female	42.51(days)	113.45	4822.76	7.98
	Total human labour	109.1 (days)		21951.71	36.34
2.	Bullock labour	7.25 (days)	620.33	4497.39	7.45
3.	Machine (hrs)	4.51 (hrs)	350	1578.50	2.61
4.	Seed	80.67 (kg.)	18.87	1522.24	2.52
5.	Fertilizers				
	i) Nitrogen	108.14	17.68	1911.92	3.17
	ii) Phosphorus	26.79	35.78	958.55	1.59
	iii) Potash	19.36	18.32	354.68	0.59
6.	Manures	5.38 (C.L.)	300	1614.00	2.67
7.	Plant protection	0.87 (Lit)	500	435.00	0.72
8.	Irrigation charges			368.16	0.61
9.	Interest on working capital (6% for 6 month)			1055.76	1.75
10.	Depreciation on implements and farm buildings			462.78	0.77
11.	Land revenue			80.00	0.13
	COST 'A'			36790.68	60.91
11.	Rental value of own land (1/6 of gross return -LR)			8021.48	13.28
12.	Interest on fixed capital (@ 10 % of fixed investment)			2140.04	3.54
	COST 'B'			46952.20	77.74
13.	Family labour				
	a) Male	28.67 (days)	256.32	7348.69	12.17
	b) Female	27.88 (days)	112.15	3126.74	5.18
	Total	56.55 (days)		10475.44	17.34
14.	Supervision charges (@ 10 % of input cost)			3519.21	5.83
	COST 'C'			60946.85	100.00
15.	Yield				
	a) Main produce	29.06 (q)	1315	38213.90	78.62
	b) By-produce	38.50 (q)	270	10395	21.38
	Total returns			48608.90	100.00

seeds 2.52 per cent, fertilizers 5.35 per cent, manures 2.67 per cent, interest on working capital 1.75 per cent, depreciation 0.77 per cent and land revenue 0.17 per cent.

In Cost-‘B’ item wise cost included 13.28 per cent rental value of own land and 3.54 per cent on interest fixed capital. In Cost-‘C’ item wise cost included 17.34 per cent on family labour and 5.83 per cent supervision charges.

Out of total cost Rs.60946.85 incurred on paddy cultivation, of Cost-‘A’ was Rs.36790.68 and that of Cost-‘B’, it was Rs.46952.20.

It is observed from the Table-5.11 that, per hectare yield was found to be 29.06 quintals of main produce and 38.50 quintals of by- produce. The average total returns obtained by transplanting method were Rs. 48608.90 in which main produce contributed 78.62 per cent and by-produce 21.38 per cent of total returns.

Yield and returns from waingani paddy cultivation

Considering the differences in input utilization and cost incurred for cultivation of waingani paddy i) Rahoo method and ii) Transplanting method the

yield level and profitability also differed . The comparison regarding profitability of waingani paddy cultivation in different method was studied and results are presented in Table 3.

It is observed from Table 3 that, per hectare net returns at Cost –C were negative in rahoo and transplanting method. However waingani paddy cultivation is profitable at Cost-A and Cost-B level in both the methods. In the rahoo and transplanting method benefit cost ratio were observed 1:0.84 and 1:0.80 indicating negative returns per hector.

CONCLUSIONS

The cost of cultivation was found to be higher in transplanting method (Rs.60946.85) than rahoo method (Rs. 51504.20).In both the methods net loss of Rs. 7978.60 and Rs. 12337.95 at Cost-C level was observed, however the cultivation of waingani paddy in both methods was profitable at Cost-A and cost-B level.The productivity of waingani paddy was lower in rahoo method (26.08 q/ha) than transplanting method (29.06 q/ha).The benefit cost ratio was observed to be 1:0.84 and 1: 0.80 in rahoo method and transplanting method respectively.

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Table 3

Comparative economics of waingani paddy cultivation

Sr. No.	Particulars	Rahoo Method (Rs)	Transplanting Method (Rs)
1	Returns/ha		
	Main produce	34425.60	38213.90
	By-produce	9100	10395
	Gross Return	43525.60	48608.90
2.	Cost of Cultivation (Rs/ ha.)		
	Cost- A	29088.12	36790.68
	Cost- B	37985.96	46952.20
	Cost- C	51504.20	60946.85
3.	Net returns (Rs/ ha.)		
	Cost- A	14437.48	11818.22
	Cost- B	5539.64	1656.40
	Cost- C	-7978.60	-12337.95
4.	Per quintal cost of cultivation	1625.93	1739.53
5.	Benefit : Cost Ratio	1:0.84	1:0.80