

ESTIMATION OF THE COST OF CULTIVATION OF MAIZE IN JALGAON DISTRICT OF MAHARASHTRA STATE

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ABSTRACT

In Maharashtra state, Jalgaon district is major maize growing district. Jalgaon and Chopada tahsils as a topper maize grower in Jalgaon district had an area of 72,701 ha with the productivity of 2,687 kg/ha during 2012-13, hence Jalgaon and Chopada tahsils was purposively selected for research to estimate the cost of cultivation of maize. In all, 90 farmers were selected from both tahsils of Jalgaon district. The sample farmers were classified into three size groups of holdings i.e. small, medium and large. The data related to the Agricultural year 2013-14 was taken for the present study. The findings of the study showed that at the overall level, the area under kharif maize per farmer was increased. The per hectare gross income received from maize was Rs. 73215.00, Rs. 75075.00 and Rs. 74528.00 in small, medium and large size groups, respectively, while it was worked out to Rs. 74265.00 at the overall level. The per hectare total cost (i. e. Cost 'C₂') was Rs. 50594.23, Rs. 50747.54 and Rs. 49400.65 in small, medium and large size groups, respectively. The profit at Cost 'C₂' was Rs. 22620.77, Rs. 24327.46 and Rs. 25127.35 in small, medium and large size groups, respectively. The B: C ratio worked out 1.47 for overall level.

KEY WORDS: B:C ratio, Cost, Farmer, Maize

INTRODUCTION

Maize is globally a top ranking cereal not only in productivity, but also as human food, animal feed and as a source of large number of industrial products. This crop is being considered as a "Queen of cereals" because of its special characteristics that include its carbon pathway (C₄), wider adaptability, higher multiplication ratio, desirable architecture, superior transpiration efficiency, high versatile use, etc. The maize

productivity in India has been increased from 547 kg/ha during 1950-51 to a present productivity of (2010-11) 2507 kg/ha.

Considering economic importance of maize attempts is being now made to bring more under its cultivation. Moreover, it must be taken into account that maize has proved its profitability over other many crops. The study area, which belongs to Jalgaon & chopada tahsil in Jalgaon district identically suitable to large scale of maize cultivation

and farmers of this area, are cultivating maize crop on large scale.

METHODOLOGY

In order to achieve the objectives of the study, the sampling technique adopted was multi-stage sampling (Sukhatme and Sukhatme. 1980). Jalgaon and Chopada talukas of Jalgaon district were selected purposively for in depth study. At the next stage, three villages from Jalgaon and three villages from Chopada taluka were selected randomly. At the last stage, a random sampling technique was used for the selection of farmers. Farmers was classified into different categories *i.e.*, small (0 to 2.0 ha), medium (2.01 to 4.0 ha) and large (4.01 to above ha) based on their land holding capacity. From each category, five farmers from each village were selected randomly. Sample of 15 farmers from all six villages were selected randomly. Thus, the sample consists of 90 farmers from six villages. The data collected from different sources through various schedules. The data collections from different sources through various schedules were subjected to statistical analysis for evaluating the objectives of the study. The data were collected regarding the cost of cultivation of maize for the year 2013-2014 from selected samples of farmers. The techniques used in calculating the cost of cultivation was simple average and tabular analysis adopted for identifying and comparing output, price and net profit of selected farmers, according to their size of farms and for the whole district.

The cost concept that was used in farm management studies such as Cost-A, Cost-B, Cost-C₁ and Cost-C₂ was followed in the analysis. The input items included for various cost concepts were as under.

Cost-A : it is an operational cost.

Cost-B : Cost-A + Rental value of own land + Interest on own fixed capital.

Cost-C₁ : Cost-B + Value of family

laborers.

Cost-C₂ : Cost- C₁ + 10 % of Cost-C₁ (managerial charges of farmer)

RESULTS AND DISCUSSION

Per hectare cost of cultivation of maize on the sample farms during 2013-14 has been estimated and the same is represented in the Table 1. The cost of cultivation studies in an area not only furnishes information on the relative profitability of the enterprises, but also serves as a guide for better choice and combinations of farm input for maximizing returns. The cost of cultivation of maize mainly depends on the major inputs used, techniques for cultivation, yield and prices for major inputs. Profit would depend on sale price, yield obtained, and cost incurred. Generally, farmers do not take into account their fixed costs such as interest on owned fixed capital, depreciation use of own implements, farm yard manure and family labour in the total cost of production and thereby, he had relevance of Cost-A only, which includes only operational cost. However, in this study, the Cost-A, Cost-B, Cost-C₁ and Cost-C₂ were found from the Jalgaon district of Maharashtra State, where the farmers possess more knowledge about the maize crop.

It is seen from the Table 1 that, at the overall level, per hectare cost of cultivation of maize (*i.e.* Cost 'C₂') was worked out to Rs.50245.67. Among the different items of costs, rental value of land was the highest (24.63 %). The other important items of cost were male labour (15.57 %), female labour (15.34 %) followed by interest on fixed capital (5.23 %), bullock labour (4.73 %) and fertilizer (N) (2.67 %). The cost incurred in respect of land revenue and other taxes and depreciation were negligible in the cost of cultivation. Similar trend was observed among the different size groups of maize growers.

In the total cost of cultivation, the Cost 'A' was Rs.24900.8 (49.55 %), Cost 'B' was Rs.39904.29 (79.41 %), Cost 'C₁' was Rs. 45677.89 (90.91 %) and Cost 'C₂' was Rs.50245.67 (100 %) at overall level and decreasing as well as increasing trend in cost was observed with increase in the size of holding.

Returns to maize producers

An attempt has been made to compare the per hectare gross income, different costs and the profit at different costs with net returns and the benefit cost ratio in maize cultivation in different size groups of maize growers. The details are given in the Table 2. It is seen from the results that, per hectare gross income received from maize was Rs.73215, Rs.75075 and Rs.74528 in small, medium and large size groups, respectively, while it was worked out to Rs.74265 at the overall level. It is indicated that medium size group has obtained more gross income followed by large and small size group, respectively.

Per hectare, Cost 'A' was Rs.24369.66, Rs.26212.85 and Rs.24117.76 in small, medium and large size groups, respectively. Per hectare, profit at Cost 'A' was Rs. 48845.34, Rs. 48862.15 and Rs. 50410.24 in small, medium and large size groups, respectively. Whereas, the profit at Cost B was Rs.33830.64, Rs.34234.47 and Rs.35038.31 in small, medium and large size groups, respectively. Per hectare, total cost, i.e. Cost 'C₂' was Rs. 50594.23, Rs. 50747.54 and Rs. 49400.65 in small, medium and large size groups, respectively. The profit at Cost 'C₂' was Rs. 22620.77, Rs. 24327.46 and Rs. 25127.35 in small,

medium and large size groups, respectively. B:C ratio over Cost-C₂ was the highest for large farmers (1.50 /ha) followed by medium farmers (1.47 /ha) and small farmers (1.44 /ha). The net income over total cost i.e., Cost-C₂ increased with increase in the size of farms. The results are in accordance with the findings of Ramkrishaniah (1992) and Kabir et al. (2005),

CONCLUSION

From the above study, it can be concluded that amongst the different item of the cost, rental value of land and human labour were major item of the cost. The average cost of maize cultivation was Rs. 50245.67 per hectare for the Jalgaon district and cost of production returns over Cost- A, Cost-B, Cost-C₁ and Cost-C₂ was decreased with increase in the size of holdings. Per hectare net income was Rs.24019.33 of average farmer. It was increased with increase in size of holding. The B:C ratio at Cost 'C₂' was 1.44, 1.47 and 1.50 in small, medium and large size groups, respectively.

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Table 1: Details of cost of cultivation of maize crop per hectare in Jalgaon district of Maharashtra state

Sr. No	Particulars		Small Farmers			Medium Farmers			Large Farmers			Overall Farmers		
			Physical Unit	Value (Rs)	Per Cent to Total Cost	Physical Unit	Value (Rs)	Per Cent to Total Cost	Physical Unit	Value (Rs)	Per Cent to Total Cost	Physical Unit	Value (Rs)	Per Cent to Total Cost
1	Hired labour	a. Male	22.56	4512	8.92	19.1	3820	7.53	15.09	3018	6.11	18.92	3784	7.53
		b. Female	53.73	6447.6	12.74	45.86	5503.2	10.84	49.82	5978.4	12.10	49.80	5976	11.89
2	Bullock power (pair days)		5.8	1450	2.86	14.72	3682	7.26	8	2000	4.05	9.51	2377.5	4.73
3	Machine power in Rs/Q		53.90	1617	3.20	55.7	1671	3.29	54.88	1646.4	3.33	54.82	1644.6	3.27
4	Seed (Kg)		17.66	2649	5.24	16.1	2415	4.76	18.76	2814	5.70	17.51	2626.5	5.23
5	Manures (Kg)		810	1215	2.40	940	1410	2.78	946.66	1420	2.87	898.89	1348.33	2.68
6	Fertilizers (Kg)	N	120	1305.6	2.58	128	1392.64	2.74	121.90	1326.27	2.68	123.3	1341.50	2.67
		P	60	738	1.46	68	836.4	1.65	69.14	850.42	1.72	65.71	808.23	1.61
		K	40	852.40	1.68	43.77	932.74	1.84	48.35	1030.33	2.08	44.04	938.49	1.87
7	Irrigation Charges (Rs)			980.50	1.94		1218.40	2.40		1420.80	2.88		1206.57	2.40
8	Plant protection charges (Rs.)			199.12	0.39		215.13	0.42		230.18	0.47		214.81	0.43
9	Incidental charges (Rs.)			115.82	0.23		325	0.64		112.60	0.23		184.47	0.37
10	Miscellaneous charges			210.60	0.42		260	0.51		290.74	0.59		253.78	0.50
11	Working capital			22292.64	44.06		23681.51	46.66		22138.14	44.81		22704.78	45.18
12	Interest on working capital			891.70	1.76		947.26	1.87		885.52	1.80		908.19	1.81
13	Depreciation on farm implements			1115.20	2.20		1511.18	2.98		1020.30	2.06		1215.56	2.42
14	Land revenue and other taxes			70.12	0.14		72.90	0.14		73.80	0.15		72.27	0.14
15	Cost-A			24369.66	48.16		26212.85	51.65		24117.76	48.82		24900.8	49.55
16	Rental value of land			12202.5	24.12		12512.5	24.66		12421.33	25.14		12377.5	24.63
17	Interest on fixed capital			2812.20	5.56		2115.18	4.17		2950.60	5.97		2625.99	5.23
18	Cost-B			39384.36	77.84		40840.53	80.48		39489.69	79.93		39904.29	79.41
19	Family labour	a. Male	19.12	3824	7.56	20.12	4024	7.93	21.4	4280	8.66	20.11	4042	8.04
		b. Female	23.22	2786.4	5.51	10.58	1269.6	2.50	9.5	1140	2.31	14.43	1731.6	3.45
20	Cost-C₁			45994.76	90.91		46134.13	90.91		44909.69	90.91		45677.89	90.91
21	10 % of Cost C ₁			4599.47	9.09		4613.41	9.09		4490.96	9.09		4567.78	9.09
22	Cost-C₂			50594.23	100		50747.54	100		49400.65	100		50245.67	100
23	Out-put	a. Main produce(Q)	53.90	61985		55.70	64055		54.88	63112		54.82	63043	
		b. Bye-produce (Q)		11230			11020			11416			11222	
24	Gross income (Rs.)			73215			75075			74528			74265	
25	Net income (Rs.)			22620.77			24327.46			25127.35			24019.33	
26	per quintal cost (Rs.)			730.32			713.24			692.14			711.85	

Table 2: Income from maize over different cost and B:C ratio over different cost in Jalgaon district of Maharashtra state

Sr. No.	Particulars		Size of Group of farmers				
			Unit	Small	Medium	Large	Overall
1	Total cost	i) Cost 'A'	Rs.	24369.66	26212.85	24117.76	24900.8
		ii) Cost 'B'	Rs.	39384.36	40840.53	39489.69	39904.29
		iii) Cost C ₁ '	Rs.	45994.76	46134.13	44909.69	45677.89
		iv) Cost C ₂ '	Rs.	50594.23	50747.54	49400.65	50245.67
2	Profit at	i) Cost 'A'	Rs.	48845.34	48862.15	50410.24	49364.2
		ii) Cost 'B'	Rs.	33830.64	34234.47	35038.31	34360.71
		iii) Cost C ₁ '	Rs.	27220.24	28940.87	29618.31	28587.11
		iv) Cost C ₂ '	Rs.	22620.77	24327.46	25127.35	24019.33
3	Production	i) Main produce	Qtls	53.90	55.70	54.88	54.82
			Rs.	61985	64055	63112	63043
		ii) By produce	Rs.	11230	11020	11416	11222
4	Gross income		Rs.	73215	75075	74528	74265
5	B:C ratio	i) Cost 'A'		3.00	2.86	3.09	2.98
		ii) Cost 'B'		1.85	1.83	1.88	1.86
		iii) Cost C ₁ '		1.59	1.62	1.65	1.62
		iv) Cost C ₂ '		1.44	1.47	1.50	1.47

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