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COST-BENEFIT ANALYSIS OF MAJOR OILSEED CROPS OF SAURASHTRA (GUJARAT)

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ABSTRACT

Annual growth rates in production and productivity of the crops were found positively significant however, the rate of increase in the yield of groundnut was relatively less. Higher variability in area, production and yield was observed in case of castor crops. Human labour, bullock labour, manures and chemical fertilizers were the main items of operating cost in all the crops, moreover, seed played important role in the total cost of groundnut cultivation and irrigation charges had greater effect on the cost of cultivation of castor crop. Castor crop was found more remunerative to growers as compared to other oilseed crops under study.

The need for increased oilseeds production in India is well recognised. Indian farmers have been growing a variety of oilseeds and the major ones are groundnut, castor, sesamum, rape and mustard. Much of the instability in production of oilseeds is derived from the predominantly rainfed nature. Expansion of oilseeds in these areas would thus not only pave the way for optimum utilisation of water but also help import substitution. So, it is now time to assess the magnitude of major oilseeds crops and to work out its cost-price structure which

will be useful to the policy makers as well as researchers.

MATERIALS AND METHODS

The secondary data related to area, production and yield of groundnut, sesamum and castor for all the six districts of Saurashtra were obtained from the Directorate of Agriculture, Gujarat State, Ahmedabad for the period from 1960-61 to 1986-87. The annual compound growth rates (r) in relation to area, production and yield per hectare were computed by the exponential formula. Co-efficients of variation (CV%) of

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area, production and yield were also computed to know the variability that existed in the observations. The data on cost and returns were obtained from the selected farmers of the Saurashtra for the period of 3-years (1984-85 to 1986-87), using three stage stratified random sampling technique. The component-wise weighted averages of these data were computed. The cost concepts used in the farm management studies were applied to work out the various cost components.

RESULTS AND DISCUSSION

With a view to examine the trend in area, production and productivity of major oilseed crops in Saurashtra, compound growth rates have been computed for the period from 1960-61 to 1986-87. The results are presented in Table 1. As can be seen from the table, the area under all the three crops increased. However, it was significant only in case of groundnut crop. The annual compound growth rate of the production was observed to be highest in case of castor (9.50%), followed by sesamum (4.70%), and groundnut (1.70%). It is evident from the table that there had been a significant increase in the yield per hectare of oilseed crops. the rate of increase in yield was the highest in respect of castor (10.50%), followed by sesamum (3.10%) and the lowest in case of groundnut (1.30%).

The table also reveals that the variability in area, production and productivity was the highest in case of castor, followed by sesamum and groundnut. This was mainly due to the increasing trend of area, production and productivity of castor crop.

The main objective of the farmers is to maximise the returns from the crop enterprises. The data pertaining to the cost of cultivation are required to judge the

profitability of the crop and cropping pattern to be adopted. Hence, the details of three yearly weightage average data on cost of cultivation per hectare are presented in Table 2. It can be observed from the table that the average total cost of cultivation (cost C) per hectare of groundnut was the highest (Rs.4606/-), followed by castor (Rs.4344/-) and sesamum (Rs.2292/-). The share of operating cost in the total cost of cultivation was more than 60 per cent in all the crops. The break-up of operating cost of groundnut cultivation indicates that among the different items of expenditure, the percentage share of seed ranked first (24.16 %) followed by human labour (15.65 %), manures (10.23 %), bullock labour (9.34 %), chemical fertilizers (7.82 %), etc. In case of sesamum, the percentage share of human labour was the highest constituting 28.10 per cent, followed by bullock labour (18.50 %), chemical fertilizers (9.73 %), manures (9.25 %), etc. The share of human labour was also highest in respect of castor crop which was 21.87 per cent of the total cost. The percentage share of irrigation ranked second (18.78 %), followed by bullock labour (10.84 %), manures (7.39 %), chemical fertilizers (7.02 %), etc. This indicated that the share of seed in the total cost of sesamum and castor was negligible as compared to that of groundnut. The expenses incurred towards plant protection measures was quite negligible in the total cost of cultivation of all the crops under study.

To examine the profitability of the crops, the information on yield, farm harvest price and the returns is of immense importance. The details of such information are given in Table 3. It is obvious from the table that the per hectare average yield of groundnut was 7.92 quintals while it was

Table 1: Growth rates and coefficients of variation of major oilseed crops in Saurashtra (1960-61 to 1986-87)

(1960-61 to 1962-63 = 100)

Crop	Average yield kg/ha		Area			Production			Productivity		
	r	R ²	R ²	C.V.%	r	R ²	C.V.%	r	R ²	r	C.V.%
Groundnut	0.70**	0.2709	0.2709	10.85	1.70*	0.2027	40.31	1.30*	0.1557	37064	37064
Sesamum	0.50NS	0.0347	0.0347	23.26	4.70**	0.9924	45.50	3.10**	0.5469	41.71	41.71
Castor	0.90NS	0.0387	0.0387	57.83	9.50**	0.6983	94.05	10.50**	0.7945	59.41	59.41

Legend : * 5 per cent level of significance ** 1 per cent level of significance NS - Non-significant.

Table 2: Details of cost of cultivation of groundnut, sesamum and castor crop per hectare in Saurashtra (Average of 1984-85 to 1986-87)

Sr.No. (1)	Item (2)	Groundnut (370)		Sesamum (175)		Castor (115)	
		Value Rs. (3)	% to total cost (4)	Value Rs. (5)	% to total cost (6)	Value Rs. (7)	% to total cost (8)
1.	Human labour						
	A. Family	361	7.84	372	16.23	549	12.64
	B. Hired	360	7.81	272	11.87	401	9.23
2.	Bullock labour	430	9.34	424	18.50	471	10.84
3.	Seeds	1113	24.16	38	1.66	105	2.42
4.	Manures	471	10.23	212	9.25	321	7.39
5.	Chemical fertilizers	361	7.82	223	9.73	305	7.02
6.	Insecticides/pesticides	71	1.54	50	2.18	23	0.53
7.	Irrigation	131	2.84	30	1.30	816	18.78
8.	Miscellaneous cost	164	3.56	41	1.79	142	3.27
9.	Depreciation	111	2.41	116	5.06	57	1.31
10.	Interest on working capital	128	2.78	56	2.44	238	5.48
11.	Rent	-	-	-	-	-	-
12.	Rental value of owned land	848	18.41	393	17.15	884	20.35
13.	Interest on owned fixed capital	58	1.26	65	2.84	32	0.74
14.	Cost A	3339	72.49	1462	63.79	2879	66.28
15.	Cost-B	4245	92.10	1920	83.77	3795	87.36
16.	Cost C	4606	100.00	2292	100.00	4344	100.00

Note : Figures in brackets indicate the average number of selected farmers for the particular crop

Table 3: Returns and Input-output ratios per hectare and cost of production per quintal of Groundnut, Sesamum and Castor crops in Saurashtra (Average of 1984-85 to 1986-87)0

Sr. No.		Main product		By product		Return per hectare over different costs			Cost of production per quintal in Rs. (for main produce)			Input-output ratio per hectare over different costs		
		Yield in quintal	Average harvest price per qn.in Rs.	Value of by product in Rs	Gross returns in Rs	Cost-A	Cost-B	Cost-C	Cost-A	Cost-B	Cost-C	Cost-A	Cost-B	Cost-C
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1.	Groundnut	7.29	606.86	1080	5504	2165	1259	898	368.15	468.04	507.85	1:1.65	1:1.30	1:1.19
2.	Sesamum	3.07	811.00	73	2563	1101	643	271	452.44	601.63	722.60	1:1.75	1:1.34	1:1.12
3.	Castor	12.80	427.27	77	5546	2667	1751	1202	218.91	290.47	333.36	1:1.93	1:1.46	1:1.28

3.07 quintals and 12.00 quintals for sesamum and castor respectively. The average gross returns per hectare of groundnut crop was to the tune of Rs.5504/- which includes the value of by product also. The gross returns were Rs.2563/- and Rs.5546/- for sesamum and castor respectively. Higher returns in the cultivation of castor crop was mainly due to its higher productivity. The net return over total cost per hectare was the highest in case of castor (Rs.1202/-), followed by groundnut (Rs.898/-) and sesamum (Rs.271/-). This indicates that the cultivation of castor crop was more remunerative to their growers as compared to groundnut as well as sesamum. It can be noticed here that the relatively less remuneration in the cultivation of groundnut was mainly due to the un-even distribution of rainfall during the study period. The indepth investigation

in regard to the adoption of castor cultivation as a substitute of groundnut is essential so as to enable the farmers in study area to change the cropping pattern for getting maximum profit. The average total cost of production per quintal was amounted to Rs.507.85 for groundnut, Rs.722.80 for sesamum and Rs.333.36 for castor. It is also apparent from the table that the average farm harvest price per quintal was higher than those of cost of production per quintal in all the three crops, indicating the profitability of these crops. The input-output ratio indicates that the investment of rupee one in the cultivation of groundnut yielded Rs.1.19, it was Rs.1.12 for sesamum and Rs.1.28 for castor. This is in support of our earlier conclusion of profitability of the crops.