



Research Paper

Economics of orange production in Nagpur district of Maharashtra

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ABSTRACT : An attempt has been made in the relevant objectives of the research study an economic analysis of orange production in Nagpur district of Maharashtra. The result pertaining to this aspect was based on primary data collected through survey method from villages viz. Sawangi, Ghorad and Ubali of Kalmeshwar tahsil of Nagpur district for the year 2010-11. 30 orange growers were selected for the study. Farmers were distributed according to age of the orange orchard which was group I (6-10 year old), group II (11-15 year old), group III (16-20 year old), respectively. Per hectare establishment cost during five year and cost of cultivation during the year 2010-11 of orange orchard were Rs./ha 207604 and Rs./ha. 107824. Average gross return was Rs. 2042094. The highest net return obtained from the age group (II) of 11-15 year Rs. 165935. The benefit: cost ratio on the sample as a whole was 2.24.

KEY WORDS : Cost of cultivation, Cost concepts

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INTRODUCTION :

India is an agricultural country and in the context of its under developed economy, agricultural development becomes vitally important. Though production processes are beyond human control, marketing of commodities is a matter of human resourcefulness. Production is one side of the coin while the marketing is another one. The fruit constitute is an important aspect in the field of nutrition. Fruit is the important source of Vitamins and minerals. These are either available in fresh or preserved condition. On the basis of nutrition target in case of fruit consumption per day per capita availability is 80 g and needed 137 g. Fruit production in India, which is the second largest in the world (10 %), is growing at a significant growth of 3.74 per cent per annum from 28.63 million tonne in 1991-92 to 63.50 million tonne in 2007-08. In India, the fruit like oranges, mango and banana every year potentially to be a foreign earner. India rank third in orange production followed by mango and banana. It occupies about 10 per cent of the total area under fruit, next to mango and banana. Oranges have a great economic importance. It is a rich source of vitamin-A, B and phosphorus.

Oranges is consumed in fresh or in the form of juice, jam, squash and syrup. It is the main source of citric acid and cosmetics which have international market value. Citrus is one of the most important fruit crop in India which cover about 0.62 million ha. area with the total production of 4.72 million tonne. In India common citrus fruits are mandarin orange (*Citrus reticulata*), sweet orange (*Citrus sinensis*) and acid lime (*Citrus aurantifolia*) sharing about 41, 23, and 23 per cent, respectively of all citrus fruits produced in India. Orange occupies about 40 per cent of the total area under citrus cultivation in India (Database of National Horticulture Board, Ministry of Agriculture of India in year 2007-08). Orange (*Citrus reticulata*) locally called as Santra belong to the family Rutaceae. In India, Maharashtra rank, first in area and production of oranges followed by Andhra Pradesh, West Bengal, Assam, Punjab, Karnataka and Tamil Nadu. The area, production and productivity of mandarin orange in Maharashtra state is 1,21,495 ha., 7,21,217 million tonnes, 9.2 mt/ha, respectively (Agricultural statistical information Maharashtra state, 2007-08 Part –II).

In Maharashtra state orange production is concentrated in Nagpur and Amravati district in Vidarbha region and hence,

its area is known as California of Maharashtra state. Nagpur district have a largest area, production and productivity, that's why this city is known as orange city. Nagpur district comprises of 15,205 ha. Area under orange crop and with the production of 1,35,613 tonnes of oranges (Agricultural statistical information Maharashtra state, 2001-08 Part-11). Orange has, not only important place in internal market, but has its place in international market too (Nighot *et al.*, 1986 and Sapate, 1993). It has assumed a discernible significance with wider precepts and better potential. Hence, effort must be made for boosting the production of oranges in the country which has high potential for export. (Bhende, 1965; Gangawar and Singh, 1998; Gangawar *et al.*, 2005; Gupta and George, 1974 and Ingley, 1983). In view of growing demand for Nagpur oranges for domestic consumption and export various agencies recognized the urgent need for increasing production in Nagpur oranges.

MATERIALS AND METHODS :

The sampling design adopted for the study was multistage sampling. In the first stage, Nagpur district was purposively selected taking into consideration the higher area under cultivation of orange orchards. In second stage, one Tahsil *viz.*, Kalmeshwar was selected purposively selected because concentrated area in orange cultivation and availability of data. In third stage, three villages were selected purposively, considering sizable area under orange orchard. The villages selected were Sawangi, Ghorad and Ubali. In fourth stage, 10 per cent orange growers from each village were selected randomly from the list of orange orchards. All the selected orange growers were undertaken for the study making the total of respondents 30. Information on the area of holding, number of trees and age of garden was noted for each cultivator. The

cultivators so obtained have been regrouped under the category group I, group II and group III on the basis of age of garden. Group I consist of orange orchard having age from 6 to 10 years, group II consist of orange orchard having age from 11 to 15 years and group III consists of orange orchard having age from 16 to 20 years.

RESULTS AND DATA ANALYSIS :

The results obtained from the present investigation as well as relevant discussion have been summarized under the following heads :

Input/materials used in orange cultivation at sampled group of farms :

The details Input/ material used in orange cultivation is presented in Table 1. Table clearly revealed that the FYM and fertilizer are the basic components and needed at very initial stage of orchard establishment. The quantity of FYM and manure was calculated overall 29.80 CLS. The amount of fertilizer applied in the orange orchard was 65.30, 66.30 and 9.50 kg. of urea, SSP and MOP, respectively. The use of hired labour days was observed about 162 man days in which share of male and female labour was 61.00 per cent and 39.00 per cent, respectively in the orange cultivation. The use of power in terms of bullock labour and machine power were calculated about 27 hours in orange cultivation in the study area.

Cost of cultivation of orange orchard for the year 2010-11 :

Table 2 depicted the units wise inputs required in the per year cost of cultivation of all the groups all of these inputs are in physical terms. It revealed that most of the inputs are required are hired human labour followed by bullock labour. Table 2

Table 1: Inputs/Materials used for orange cultivation under sampled orange farms

Sr. No.	Particulars	Sample household			Overall
		Group I	Group II	Group III	
A	Inputs/ material cost				
a.	Farm yard manure CLS	32.5	30	26.9	29.8
b.	Fertilizers (kg.)	-	-	-	-
i.	Urea	59.8	73.8	62.4	65.3
ii.	Single super phosphate	67.5	62.6	70.7	66.9
iii.	Murate of potash	12.2	7.7	8.6	9.5
B	Hired labour				
i.	Male	103	99.8	92.5	98.4
ii.	Female	65	62.7	60.6	62.8
	Total	168	162.5	153.5	161.3
C	Power use (hrs.)				
i.	Bullock labour	25	23.7	20.4	23
ii.	Machine power	4.1	3.7	3.2	3.7
	Total	29.1	27.4	23.6	26.7

Note: - CLS= Cartloads

shows the cost of cultivation for the year 2010-11 and showed that cost A for group I, group II and group III was computed to Rs. 66081.6, Rs. 63355.3 and Rs. 57094.30, respectively. On overall basis Rs. 62176.8 were incurred in the current year. It reveals that again share of human labour (34.42 %) was higher followed by bullock labour, 14.48 % (Anonymous, 1991). The use of bullock is very popular in the area as machinery cannot be used in the fully grown orchard as it causes the damage to the trees flowering and fruiting. The use of manure (11.98 %) is again found to be higher in all the age group of orchard. The other items of expenditure were machine labour (2.95 %), chemical fertilizers (Nitrogen 0.74 %, phosphorus 0.97 %, Potash

0.28 %), Irrigation (1.24 %), Plant protection (2.19 %), Bamboo for staking and fencing (2.79 %) in the cost of cultivation of orchard in the study area. Table 3 reveals that in overall cost of cultivation per year cost of establishment is included in cost A, cost B includes rental value of land and interest on fixed capital and cost C includes cost A, cost B and cost of family labour. Table concluded that on an average 36.13 tonnes of production is obtained from the orange cultivation which amounts Rs. 242093.3 with the benefit cost ratio of 1:2.24 which shows that cultivation of orange is profitable business share *i.e.* 65.85 per cent, followed by bullock labour which was 20.17 per cent. The proportion of other items of expenditure *viz.*,

Table 2 : Cost of cultivation of orange on the age groups of orchard

Particulars	Group-I	Per cent	Group-II	Per cent	Group-III	Per cent	Overall	Per cent
Cost of inputs								
Manures	8125	12.30	7500	11.84	6725	11.78	7450	11.98
Urea	418.6	0.63	516.6	0.82	436.8	0.77	457.3	0.74
SSP	607.5	0.92	563.4	0.89	636.3	1.11	602.4	0.97
MOP	219.6	0.33	138.6	0.22	154.9	0.27	171	0.28
Irrigation	800	1.21	770	1.22	750	1.31	773.3	1.24
Plant protection	1320.6	2.00	1400	2.21	1360	2.38	1360.2	2.19
Bamboo and fencing	2000	3.03	1709	2.70	1500	2.63	1736.3	2.79
Hired human labour								
Male	16480	24.94	15968	25.20	14795.2	25.91	15747.7	25.33
Female	5850	8.85	5643	8.91	5456.7	9.56	5649.9	9.09
Bullock labour	9775	14.79	9266.7	14.63	7976.4	13.97	9006	14.48
Machinery labour	2050	3.10	1850	2.92	1600	2.80	1833.3	2.95
Fixed cost								
Interest on W.C @ 7% estbt. cost	17769.2	26.89	17330	27.35	15036.1	26.34	16711.8	26.8
Land revenue	150	0.23	147.3	0.23	145.4	0.23	145.4	0.
Depreciation	310.4	0.47	327	0.52	300	0.53	312.5	0.50
Miscellaneous expense	205.7	0.31	225.7	0.36	221.5	0.39	217.6	0.3
Total cost A	66081.6	100.00	63355.3	100.00	57094.3	100.00	62176.8	100.00

Table 3 : Cost structure of orange cultivation on the age groups of orchard

Particulars	Group I	Group II	Group III	Overall
Establishment cost interest	14434	14157.3	12138.8	13576.7
Cost A	66081.6	63355.3	57094.3	62176.8
Cost B	109465.1	111164.9	92164.6	104264
Cost C	113521.1	114695.9	95255.6	107823.3

Table 4 : Economics of orange cultivation on the age groups of orchard

Particulars	Group I	Group II	Group III	Overall
Total cost	113521.1	114695.9	95255.6	107823.3
Production (tonnes)	37.2	41.20	30	36.13
Gross returns (Rs.)	249240	276040	201000	242093.3
Net return over cost A	183158.4	212684.7	143905.7	179916.5
Net return over cost B	139774.9	164875.1	108835.5	137829.3
Net return over cost C	135718.9	161344.1	105744.4	134270
B:C ratio	1:2.19	1:2.40	1:2.11	1:2.24

seedling machinery labour, manures, fertilizer, irrigation and plant protection were also included. Cost of cultivation of orange was Rs./ha. 107823.3 irrespective to the groups of different ages of plantation. The cost A was Rs./ha 62176.8 which contributed highest rental value of land 38.99 per cent followed by hired human labour 34.39 per cent in this hired male labour was 25.33 per cent and hired female labour was 9.09 per cent. The Power use was 10.47 per cent, farmyard manures 7.20 per cent, total yield was obtained 36.13 tonne and income generated was Rs. 242094 per ha. Average per hectare gross return for the sample as a whole was Rs. 242094. Highest income was obtained from the group II (11-15 year age) followed by group I (6-10 year age) while lowest income obtained from group III (16-20 year age), and it was accounted Rs. 161344.1 while lowest net return was obtained from age group of 16-20 years was Rs. 105744.4 Benefit : cost ratio was found to be 2.24 for the sample farm as a whole. Highest ratio was obtained from the orange orchard of age group 11-15 year *i.e.* 2.40. Study revealed that the, orange cultivation is profitable than that of other crops and that profits are higher for orange orchards of age group of 11-15 years (Table 4). Similar work related to the present investigation was also carried out by Chaudhari and Patil (2009) on custard apple, David (1978) on orange, Tawade and Gophane (1990); Undirwade *et al.* (1992) on grapes; Vitonde *et al.* (2006) and Yasir and Shafiq (2010).

Conclusion :

The foregoing study indicates that the quantity of FYM and manure was calculated overall 29.80 CLS. The amount of fertilizer applied in the orange orchard was 65.30, 66.30 and 9.50 kg. of urea, SSP and MOP, respectively. The use of hired labour days was observed about 162 man days followed by the use of power in terms of bullock labour and machine power were calculated about 27 hours in orange cultivation in the study area. Per hectare establishment cost during five year and cost of cultivation during the year 2010-11 of orange orchard were Rs./ha 207604 and Rs./ha. 107824. Average gross return was Rs. 2042094 and the highest net return obtained from the age group (II) of 11-15 year Rs. 165935. The benefit: cost ratio on the sample as a whole was 2.24. The study suggests that, the share of human labour in expenditure should be minimized by the use of mechanization and improved technology which are less time consuming and cost effective. Net worth of the orange cultivator can also be increased by adopting the new technology developed by the National Research Centre for Citrus (NRCC) and Israel method of planting. Irrigation facilities should be developed in the proper way to give the irrigation in proper time. The government should provide a good support price for the orange. There is a need to develop orange grower organizations in the region. Processing of oranges need to be developed in the study area.

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