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ECONOMIC PROBLEMS OF HORTICULTURAL PLANTATIONS IN MAHARASHTRA

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Commercial plantations like tea, rubber and coffee have an important role to play in the national economy and in the foreign trade of India. Similarly, horticultural plantations have occupied a prominent place in Indian agriculture and in recent years, their importance has increased. Some of the horticultural products earn foreign exchange. They constitute a specialised form of farm business of a highly commercial nature.

Horticultural plantations require for their success technical knowledge and expert managerial ability. At present, a large extent of land has been brought under the horticultural plantations in Maharashtra State. Of the different horticultural plantations of the State, grapes, banana and mango are the most important crops.

The growth of horticultural plantations has however been hindered by a variety of economic problems, such as the uneconomic size of plantations, improper use of lands for the fruit crops, selection of inferior varieties, faulty growth of trees, insufficient manuring and inadequate irrigation, non-availability of capital, wide gap between plantation and harvest, severe attacks of pests and diseases, non-availability of markets for efficient and prompt disposal of the produce, irregular and heavy seasonal supplies, heavy marketing costs, perishable nature of the products, absence of organized marketing services, lack of market intelligence, price fluctuations, absence or inadequate facilities of storage and processing. Besides, information on costs of establishment and maintenance, gross and net income is not available. Because of these complex problems, the cultivators do not get economic returns, and as a result, in many cases, the growers are forced to uproot the horticultural plantations. In farm business, knowledge of cost concepts enables the cultivators to adjust and co-ordinate production resources for their profitable use. Reliable data on the components of costs, and input-output relationship of the perennial horticultural crops are not available in many cases for efficient cultivation and management of the plantations.

In this paper an attempt is made to study the economics of introduction of grape cultivation in the Sangli district and economics of production and marketing of mango in the Ratnagiri district of the Maharashtra State on the basis of a survey undertaken during the years 1966-67.

Sample

Forty-six representative cultivators having very small, small, medium and big vineyards were selected to study the economics of grape cultivation. For the study relating to mango, two stage random sampling with village as primary unit and cultivator as secondary unit, was adopted. A total sample of 50 growers spread over ten villages were selected. The cultivators were interviewed with the questionnaires specially prepared for the purpose.

ECONOMICS OF CULTIVATION OF GRAPES

The study revealed that a large number of small farmers has now taken up grape cultivation. Grape is a perennial crop. When once established, it continues to bear for a number of years. It requires very high investment in the initial stage of its growth particularly during the first year of its planting. The major portion of investment is of non-recurring nature mainly to erect iron pandal, for planting and for fertilizers, insecticide, etc., required during the first year. Most of the grape varieties give full bearing after 18 months from its planting. From the second harvest onwards, cultivators get a normal outturn every year over a period of 30 years for a well managed garden. The cost of establishment of a garden is apportioned on the basis of full bearing period. The per acre cost and the components of costs were worked out and are given in Table I.

TABLE I—PER ACRE COST OF GRAPE CULTIVATION

(*in Rs.*)

Sr. No.	Item	Up to first harvesting	Second harvesting	Third harvesting and succeeding harvests
1.	Hired human and bullock labour	714.65 (16.67)	713.07 (15.24)	617.59 (20.22)
2.	Manures	320.35 (7.47)	252.21 (5.39)	298.24 (9.76)
3.	Fertilizers	804.32 (18.76)	941.91 (20.13)	344.50 (11.28)
4.	Irrigation	119.60 (2.79)	120.12 (2.37)	70.47 (2.31)
5.	Plant protection	374.08 (8.73)	342.91 (7.53)	170.25 (5.57)
6.	Packing	143.58 (3.53)	175.48 (3.75)	43.52 (1.42)
7.	Marketing	52.29 (1.22)	127.48 (2.72)	87.90 (2.88)
8.	Land revenue	23.65 (0.59)	24.13 (0.52)	23.60 (0.77)
9.	Imputed non-recurring costs	173.14 (4.04)	185.53 (3.96)	172.07 (5.63)

(*Contd.*)

TABLE I (*Concld.*)

(*in Rs.*)

10. Miscellaneous	27.67	63.40	30.75
	(0.65)	(1.35)	(1.01)
Cost A	2,753.33	2,962.71	1,858.89
	(64.24)	(63.31)	(60.85)
11. Rental value	152.00	139.55	142.00
	(3.55)	(2.94)	(4.65)
12. Implement charges	58.49	57.53	57.00
	(1.36)	(1.94)	(1.87)
13. Interest on capital	232.78	222.20	152.22
	(5.43)	(4.76)	(5.18)
Cost B*	3,196.60	3,381.66	2,216.11
	(74.58)	(72.25)	(72.55)
14. Family labour	293.24	112.12	198.50
	(6.84)	(2.41)	(16.50)
Cost C*	3,489.84	3,493.79	2,414.61
	(81.42)	(74.66)	(79.05)
15. Managerial labour	796.30	185.58	639.84
	(18.58)	(23.54)	(20.95)
Cost D*	4,286.14	4,679.37	3,054.45
	(100.00)	(100.00)	(100.00)

Cost A*: Actual expenditure incurred in cash and kind plus apportioned non-recurring expenditure.
Cost B*: Cost A plus rent, rental value on own land plus interest on fixed and working capital.
Cost C*: Cost B plus charges of farm family labour.
Cost D*: Cost C plus managerial labour.

The expenditure on the third harvest and thereafter was found to be lower as the garden once established incurred comparatively less expenditure on fertilizers, manures, insecticides and on other items of recurring nature. The cost per annum at the first and second harvest does not differ much.

Cost per Kilogramme of Grapes

The cost per kg. of grapes of different harvests in different size-groups was also worked out on the basis of Cost D (total cost). As the yield per acre and the cost of cultivation of grapes per acre varied in different size-groups, the cost per kg. of grapes was estimated for different size-groups as shown in Table II.

TABLE II—PER ACRE YIELD AND COST PER KILOGRAMME OF GRAPES

Sr. No.	Size-group	Yield per acre (kgs.)	Cost per acre (Rs.)	Cost per kilogramme (Rs.)
			At first harvest	
1.	Very small	8,411.55	5,468.93	0.65
2.	Small	3,694.13	3,473.55	0.94
3.	Medium	5,392.00	3,668.70	0.68
4.	Average	5,878.00	4,286.34	0.78
			At second harvest	
1.	Small	7,349.14	4,704.42	0.64
2.	Medium	9,392.75	3,951.41	0.42
3.	Big	4,650.90	5,382.28	1.46
4.	Average	6,797.00	4,579.97	0.69
			At third harvest and thereafter	
1.	Very small	2,704.00	3,433.76	1.27
2.	Small	3,350.00	2,415.87	0.72
3.	Medium	4,171.73	2,591.80	0.62
4.	Big	7,650.90	3,776.40	0.54
5.	Average	6,035.00	3,054.45	0.59

It is revealed that the per acre yield varied from 2,704 kgs. in the very small size-group at third harvest to 9,392.75 kgs. in the medium size group at second harvest. The per acre yields were low at the first harvest and were lowest for the oldest age-groups. This has reflected in the cost per kg. of grapes which appeared to decline gradually from the first harvest to the third harvest. It showed that established gardens can sell grapes at the rate of 60 paise per kg.

Net Income and Input-Output Relationship

Gross income was worked out on the basis of receipts from sale of grapes received by the cultivators, the value of produce consumed and exchanged by him, valued at the prevailing market rates (Table III).

TABLE III—INPUT—OUTPUT RELATIONSHIP

(*in Rs.*)

Sr. No.	Size-group	Gross income	Total cost	Net returns	Output-input relationship
			At first harvest		
1.	Very small	11,667.61	5,468.93	6,198.68	2.13
2.	Small	4,817.13	3,433.53	1,383.58	1.39
3.	Medium	7,404.29	3,668.70	3,755.59	2.02
4.	Average	8,010.25	4,286.14	2,753.33	1.87
			At second harvest		
1.	Small	12,337.81	4,704.42	7,635.39	2.62
2.	Medium	13,320.38	3,951.41	9,368.97	3.37
3.	Big	9,009.15	5,382.28	4,526.87	1.84
4.	Average	11,855.78	4,679.37	7,676.41	2.53
			At third harvest and thereafter		
1.	Very small	4,042.48	3,433.75	608.73	1.18
2.	Small	4,700.05	2,415.87	2,284.18	1.95
3.	Medium	6,951.31	2,599.80	4,359.51	2.68
4.	Big	9,899.55	8,776.40	6,123.15	2.62
5.	Average	8,908.02	3,054.45	5,843.57	2.58

Gross income and returns indicate wide variations due to fluctuations in yields as a result of failure in bearing. The study of the economics of farm business is concerned with the measurement of the efficiency of the grape enterprise. The efficiency of the farm enterprise is commonly measured in terms of input-output coefficient. This indicates the rate at which gross income would be obtained over the investment. The study showed that the total cost and gross income

appear to move together. Increase in cost had a direct relationship with increase in output. Between the different age-groups of vineyards the average net input ratio shown by the third harvest and thereafter was the highest followed by the second. It may be concluded that fairly higher and steady returns to investment could be obtained from third harvest and thereafter. The average output-input ratio for grape was observed to be 2.40. This indicates that cultivation of grapes serves as a good incentive to the cultivators to improve their farm income.

ECONOMICS OF CULTIVATION OF MANGO

The study on the economics of cultivation of mango revealed that grafted Alphonso and Pairi varieties were grown and maintained carefully. Being a perennial crop, the expenditure on establishment came to Rs. 1,900 for a period of 5 years.

TABLE IV—PER ACRE COST OF ESTABLISHMENT OF MANGO ORCHARD

(*in Rs.*)

Sr. No.	Operations	First year	Second year	Third year	Fourth year	Fifth year	Total
1.	Preparation of land	63.75	—	—	—	—	63.75
2.	Digging pits	60.00	—	—	—	—	60.00
3.	Filling with manures	65.00	37.75	30.75	63.34	63.34	260.18
4.	Grafts	85.00	—	—	—	—	85.00
5.	Planting	15.00	—	—	—	—	15.00
6.	After care	65.00	29.85	25.30	31.25	31.25	182.62
7.	Irrigation	129.65	93.20	76.30	85.25	85.25	469.65
8.	Inter-cutting	24.50	23.63	11.53	11.20	11.20	82.06
9.	Fencing and shedding grafts ..	19.52	—	—	—	—	19.52
10.	Fencing orchard	455.00	—	—	—	—	455.00
11.	Spraying	—	—	—	85.30	85.30	170.60
	Total	982.42	189.43	143.88	279.34	276.34	1,863.41

The per acre cost of cultivation of mango was estimated according to the size-group, mode of sale and age of the orchard. The per acre cost of production showed a decrease with the increase in the size of the orchards. The cost incurred by the small group was observed to be 30 per cent higher. The size of orchard had no influence on cost.

TABLE V—PER ACRE COST, GROSS AND NET INCOME OF MANGO

Sr. No.	Item of cost	Non-selling			Selling		
		Small	Medium	Large	Small	Medium	Large
1.	Orchard manuring ..	147.05	111.12	114.88	110.45	106.27	110.16
2.	Orchard cleaning ..	18.92	18.46	22.46	20.83	18.69	21.11
3.	Plant protection ..	60.67	49.08	46.04	47.11	44.86	43.60
4.	Removing diseased and old twigs	25.69	10.99	15.27	7.51	9.51	10.55
5.	Inter-cutting	17.21	14.36	17.26	18.39	15.96	16.58
6.	Spraying	120.88	104.60	97.10	94.96	86.72	95.00
7.	Watching	377.29	218.03	212.94	—	—	—
8.	Harvesting	523.08	336.29	334.96	—	—	—
9.	Packing	1,466.16	674.74	661.98	—	—	—
10.	Transport	1,016.16	647.69	559.59	—	—	—
11.	Others	39.94	39.69	53.59	34.92	40.32	47.00
12.	Provision for non-recurring cost	37.27	37.27	37.27	37.27	37.27	37.27
	Total	3,850.62	2,262.09	2,164.34	371.44	359.30	380.97
	Gross income	13,322.00	8,272.00	3,958.00	2,526.00	4,956.00	55.41
	Net income	9,471	5,950	5,794	2,164	6,630	5,161

Small orchards showed higher efficiency of crop enterprise due to more expenses on productive items. The gross income showed an increase with a decrease in the size of the crop enterprise. The per acre cost, gross and net returns showed an increase with the increase in age of the garden up to 40 years. Bombay and Poona are the main distributing marketing centres for mangoes. Of the total produce, contractors handled 40 per cent of it and 60 per cent by the cultivators. The co-operative agency has not yet made much headway in this trade. Marketing expenditure on packing and transportation alone was one-tenth of the consumer's price.

The study of price trends for 7 years in the Bombay market showed that the average seasonal price showed sharp fluctuations depending upon the total production. Seasonal variations indicated that lowest price prevailed in May when bulk of the produce arrive at the markets (55 per cent). 52.90 per cent and 50.87 per cent on the consumer's rupee were taken away by different agencies at Bombay and Poona respectively.

TABLE VI—PRICE SPREAD AT BOMBAY AND POONA MARKETS

Item	Bombay			Poona		
	For 6,212 cases	Per case	Percentage	For 2,885 cases	Per case	Percentage
Price received after deducting the expenses	15,15,002.46	20.15	52.95	46,690.30	18.50	50.90
Expenses on						
(*i*) Watching	4,304.61	0.61	1.80	1,886.45	0.70	1.93
(*ii*) Harvesting	6,711.17	1.08	2.83	2,615.40	0.97	2.67
(*iii*) Packing	13,354.44	2.15	5.64	7,330.80	2.73	7.52
(*iv*) Transport	11,883.63	1.91	5.02	5,080.80	1.90	5.22
Total	36,353.85	5.83	15.29	16,913.45	6.30	17.34
Commission						
(87 per cent at Bombay and 70 per cent at Poona)	14,211.52	2.29	6.01	5,026.84	1.88	5.18
Octroi	931.80	0.15	0.38	268.50	0.10	0.28
Market cess	931.80	0.15	0.38	268.50	0.10	0.28
Charity	124.24	0.02	0.05	—	—	—
Total (B)	16,199.36	2.61	6.82	5,563.84	2.08	7.74
Wholesale value	1,77,655.67	28.59	75.06	72,176.59	26.88	73.98
Retail margin	59,014.00	9.50	24.94	25,407.50	9.46	26.02
Consumer's price	2,36,669.67	38.09	100.00	97,584.09	36.34	100.00

The growers grade the mangoes on size basis without prescribed standards. In recent years with the help of air transport, Alphonso and Pairi varieties of mango have been sold at international markets, bringing valuable foreign exchange. The cultivation of mangoes on a large scale in the Konkan will open new avenues to the growers in the region.

Conclusion

Horticultural plantations have become a specialised form of farm business of a highly commercial nature. To stabilize these plantations from the wide seasonal fluctuations in prices and perishable supplies, establishment of processing units is the urgent need of the time. Processing of horticultural products will promote the development of agro-industries which in turn will help the development of horticultural plantations on firm basis.