Original Research Article

Economic Analysis of *kharif* Tomato Production in Nashik District of Maharashtra State

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A B S T R A C T

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Tomato (*Lycopersicon esculentum mill.*) is a significant *Solanaceae* family crop it is also known as "Love Apple". It is originated by local of tropical America. It is spread to other part of world in the sixteenth century and become mainstream inside most recent nine decades. It is world biggest vegetable crop, cultivated for its fleshy fruit. It is considered as a significant business nutritional vegetable crop. Considering the importance, in the present study entitled "Economics of production and marketing of *kharif* tomato in Nashik district of Maharashtra State" was undertaken with the specific objective like the Cost, returns and profitability of *kharif* tomato production. Multistage sampling design was adopted in selection of district, tehsils, villages and tomato growers. In the first stage, Nashik district will be selected purposively for the study, because of maximum area of tomato crops are found in the district. In the second stage, two tehsils Viz. Kalwan and Dindori will be selected. In third stage from each tehsil six villages will be selected. In forth stage, from each village eight tomato growers was selected. Thus, forty-eight tomato growers were selected from each tehsil, ie. Total sample size was 96. The analytical techniques like tabular analysis, frequency and percentage method were used to analyse the data. Average size of holding of *kharif* tomato growers was 0.94 hectares of which net sown area was 2.70 hectares. The cropping intensity was 111.44 per cent. The average area under *kharif* tomato was 0.94 hectare. The gross cropped area was 2.92 hectares. Per hectare quantity of seed used in *kharif* tomato cultivation was 145.23 gram. Per hectare cost of cultivation of *kharif* tomato was Rs 116581.41, whereas per hectare yield was 154.66 quintals, which was valued at Rs 166340.89. The share of cost-A and Cost-B in the total cost worked out to 70.08 per cent and 95.34 per cent, respectively. Input-output ratio was found to be 1.46.

Introduction

Vegetables are significant constituents of Indian agriculture and nutritional security due to their short duration, high yield, healthful richness, economic viability and capacity to create on-farm and off-farm employment.

India with vegetables production of 181 million tonnes is the second biggest producer of vegetables contributing 14 percent of world's vegetables production. India proceeds to the second biggest producer of vegetables in the world next to china. Tomato (*Lycopersicon esculentum mill.*) is a

significant *Solanaceae* family crop it is also known as "Love Apple". it is originated by local of tropical America. it is spread to other part of world in the sixteenth century and become mainstream inside most recent nine decades. It is world biggest vegetable crop, cultivated for its fleshy fruit. It is considering as a significant business nutritional vegetable crop. The area, production and productivity of Tomato in India was about 814 thousand hectares, 20515 thousand MT and 25.20 MT/ha, respectively, in the year 2018-19 (Source: Horticulture statistics at a glance). Major states producing tomato in India are Uttar Pradesh, West Bengal, Bihar, Gujarat, Punjab, Madhya Pradesh and Assam. Area under tomato cultivation I n Nashik district was 16.99 thousand hectares and Production 560.07 thousand metric tonnes and Productivity 32.9 metric tonnes per hectares. (2018-19) (source: District Statistical Office, Nashik).

Materials and Methods

Multistage sampling design was adopted in selection of district, tehsils, villages and tomato growers. In the first stage, Nashik district will be selected purposively for the study, because of maximum area of tomato crops are found in the district. In the second stage, two tehsils Viz. Kalwan and Dindori will be selected. In third stage from each tehsil six villages will be selected. In forth stage, from each village eight tomato growers was selected. Thus, forty-eight tomato growers were selected from each tehsil, i.e. Total sample size was 96.The data was collected from cultivars with the help of pre-tested schedule through personal interview method. Cross sectional data were collected from the sampled tomato growers by personal interview method with the help of presented schedule. The data were collected during the year 2019-2020. The analytical techniques like tabular analysis, frequency and percentage method were used to analyze the data. To estimate Input use, cost structure and profitability of Tomato crop were achieved by tabular analysis in which arithmetic with cost concept of Cost-A, Cost-B, Cost-C, percentage and output input ratio will be emphasized.

Results and Discussion

Agriculture is the backbone of Indian economy. Its production is very much dependent upon agro-climatic and geographic conditions as they govern the nature of farming which directly affect the economy of the farmers. There are other factors which have considerably influences on the structure of farming indirectly. These factors are age, family size, and educational status of family, occupation, cropping pattern, production and consumption. Therefore, an attempt was made to explain the salient features of the farm business economy of the sample farm families under study.

Use of annual physical inputs and outputs in *kharif* tomato production

Per hectare physical inputs and output of tomato production were workout and are presented in Table.1 Labour is an important input in crop production. In case of tomato cultivation human labour was used extensively by the cultivators because operation like raising seedlings, transplanting and mainly picking of fruits are carried out by the human labours. It was observed that for tomato production, per hectare use of hired human labour was 52.87 mandays whereas total family human labour used was 31.29 mandays. Use of per hectare utilization of bullock labour was 10.47 pair days and use of machine labour was 15.38 hours in tomato production. Per hectare quantity of seed used in *kharif* tomato cultivation was 145.23 gram. It implied that tomato growers were

transplanting tomato seedlings at broad spacing. In regard to manure there were 26.71 qt. uses of manures. Per hectare quantity of fertilizer used for *kharif* tomato crop was 200.14 kg nitrogen, 100.07 kg phosphorous and 100.07 kg potash. Plant protection chemicals are used to control the attack of pest and diseases. Use of plant protection was in *kharif* tomato crop was 5.89 litres. The application of irrigation was 466.92 m^3 in tomato crop. In respect to cost of production in tomato staking use of bamboo, wire and sutali was 1792.97 number of pieces, 50.32 kg and 26.52 kg, respectively. It was also observed that per hectare tomato yield in *kharif* season was 154.66 quintals. It implied that there was proper utilization of physical inputs in tomato cultivation.

Cost, returns and profitability of *kharif* tomato

Per hectare item wise expenditure in *kharif* tomato production was estimated and is presented in Table 2. The result revealed that per hectare total cost with regards to *kharif* tomato was Rs 166340.89 while Cost-A was Rs 116581.41 and Cost-B was Rs 158594.25.

The share of Cost-A was 70.08 per cent while Cost-B was 95.34 per cent. Among the various item of expenditure, the per cent share of rental value of land was dominant as 23.98 per cent followed by hired human labour (8.03 per cent), interest on working capital (2.86 per cent), family human labour (4.65 per cent), respectively in tomato cultivation. .

Table.1 Per hectarephysical inputs and output in *kharif* tomato production (Unit/ha)

		Particulars	Unit	Tomato
		INPUT		
	1.	Hired human labour	man day	52.87
	2.	Family human labour	man day	31.29
	3.	Bullock labour	pair day	10.47
	4.	Machine labour	Hour	15.38
	5.	Seeds	Gm	145.23
	6.	Fertilizer		
		Nitrogen	Kg	200.14
		Phosphorus	Kg	100.07
		Potash	Kg	100.07
	7.	Plant protection	Lit	5.89
	8.	Irrigation	m^3	466.92
	9.	Staking		
		Bamboo	No.piece	1792.97
		Wire	Kg	50.32
		Sutali	Kg	26.52
	10.	Manure	Q	26.71
		OUTPUT		
	11.	Main produce	Q	154.66
	12.	Home cons./Gift/Losses	Q	1.22

Table.2 Per hectare cost of cultivation of *kharif* tomato production

	Particulars	Tomato crop	
		Amount (Rs.)	Per cent
1.	Hired human labour	13370.63	8.03
2.	Bullock labour	6283.20	3.77
3.	Machine labour	12309.59	7.40
4.	Seeds	20332.97	12.22
5.	Manure	5342.27	3.21
6.	Fertilizer		
	Nitrogen	1300.92	0.78
	Phosphorus	2401.70	1.44
	Potash	1400.99	0.84
7.	Plant protection	5892.11	3.54
8.	Land revenue	204.72	0.12
9.	Staking(Bamboo/ Wire/Sutali)	38193.21	23.17
10.	Incidental charges	404.15	0.24
11.	Interest on working capital@13%	4761.86	2.86
12.	Depreciation on capital assets@10%	1930.40	1.16
13.	**Cost-A ($\sum$items 1 to 12)**	116581.41	70.08
14.	Rental value of land	39889.39	23.98
15.	Interest on fixed capital@11%	2123.44	1.27
16.	**Cost-B ($\sum$items 13 to 15)**	158594.25	95.34
17.	Family human labour	7746.63	4.65
18.	**Cost-C ($\sum$items 16 to 18)**	166340.89	100.00

Table.3 Per hectare profitability in *kharif* tomato production (Rs/ha)

	Particulars	Physical unit	Physical quantity	Amount (Rs.)
1.	Return from main produce	Q	154.66	241071.50
2.	Home consumption	Q	1.22	1918.19
2.	Gross return ($\sum$ 1 to 2)	_	_	242989.69
3.	Cost- A	_	_	116581.41
4.	Cost- B	_	_	158594.25
5.	Cost –C	_	_	166340.89
6.	Farm business income (Gross return minus cost- A)	_	_	126408.28
7.	Family labour income (Gross return minus cost- B)	_	_	84395.43
8.	Net profit (Gross return minus cost- C)	_	_	76648.80
9.	Output in put ratio (Gross return divided by cost- C)	_	_	1.46
10.	Per quintal cost of production (Cost-C minus value of by produce divided by main produce quantity)	_	_	1063.08

Per hectare profitability of *kharif* tomato was calculated and are presented in Table.3 The results revealed that gross return was obtained Rs 241071.50 per hectare in *kharif* tomato production. It was clear that farm business income, family labour income and Net profit were Rs 126408.28, Rs 84395.43, and Rs 76648.80, respectively in *kharif* tomato production

Output input ratio was found to be 1.46 that mean when 1 rupee spent on *kharif* tomato production, it would lead to give the return of Rs 1.46 which indicated that *kharif* tomato crop was a profitable enterprise.

The average area under *kharif* Tomato was 0.94 ha. The gross cropped area Tomato i.e. cost C was Rs.166340.89 in which contribution of Cost-A was Rs.116581.41 and Cost-B was Rs. 158594.25. The output-input ratio of tomato was 1.46 which indicates that tomato crop is highly profitable enterprise.

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