AN ECONOMIC ANALYSIS OF PRODUCTION OF TOMATO IN VARANASI DISTRICT OF UTTAR PRADESH

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ABSTRACT: The present study entitled "An Economic Analysis of Production of Tomato in Varanasi District of Uttar Pradesh" was conducted in the year 2018-19 with a sample of 120 respondents. The results indicated that the number of respondents who had Graduation education were more in Large size farms followed by medium and Small, and it was also observed that the number of illiterates were more in Large size farms followed by medium and Small size of farms. The average area per hectare holding in small size farms was 0.71ha, medium size was 1.53 ha and in large size farms were 2.55 ha. Total cost of cultivation of Tomato for small, medium and large size farms were (Rs.47392/ha, Rs 46596.75/ha and Rs 46699.25/ha) respectively. The Gross Returns obtained per hectare by Large size farms were high (Rs.162240/ha) as compare to medium and small size farms (Rs.155745/ha and Rs.147100/ha) respectively, and the Net returns per hectare were highest in Large size farms (Rs.116131/ha) as compare to the medium and Small size farms (Rs.109148.25/ha and 99708//ha) respectively. Input-output ratio per hectare was highest in large size farms (1:3.51) compare to medium and small size farms (1:3. 34 and 1:3.10).
Key words: Tomato production cost and returns.

Tomato *(Lycopersicon esculentum*) belongs to the genus Lycopersicon under Solanaceae family. Tomato is an herbaceous sprawling plant growing to 1-3 m in height with a weak woody stem. The flowers are yellow in color and the fruits of cultivated varieties vary in size from cherry tomatoes, about 1–2 cm in size to beefsteak tomatoes, about 10 cm or more in diameter. Most cultivars produce red fruits when ripe. Indeterminate tomato plants are perennials in their native habitat but are cultivated as annuals.

The marketing component is important to ensure remunerative prices to the farmers ' which will eventually work as an incentive for them to bring more area under cereals. Marketing can also help in inducing an element of incentive to fanner through participation in processing and distribution of Pearl millet through direct marketing, farmers market or cooperative marketing to get higher share in the consumer's price. Marketing innovations like group marketing will help in improving the bargaining powers of small and marginal farmers.

Tomato is one of the major horticulture crops of the country. With an estimated production of 20.51 MT in 2017-18, India is one of the largest producers of tomatoes in the world, second only to China. Around 11 % of the total world production of tomatoes is cultivated in India.

The major Tomato producing States in the country are Andhra Pradesh, Madhya Pradesh, Karnataka, Gujarat, Odisha, West Bengal, Chhattisgarh, Maharashtra, Bihar, Haryana, Uttar Pradesh, Telangana, and Tamil Nadu. These States are account for 91% of the total production of the country. The production of Tomato during the year 2017-18 (First Advance Estimate) is estimated to be 2% (20.51 MT) higher as compared to the previous year(19.76 MT). However, as compared to the past 5 year's average production, it is 20% higher.

Tomato is one of the essential commodities of the Indian market. The total area under tomato cultivation in India is about 4.97 lakh hectares, which is about 7.3% of the total cropped land under vegetables. The annual production of tomatoes in India is 16,826.38 thousand tons. India is ranked 3rd after China and the US as far as the production of tomatoes is concerned. India has experienced a considerable increase in the production of tomatoes over the past 10 years.

Research Methodology

The data on area, production and productivity was collected from Varanasi District. Out of which The Harhua and Baragaon Mandals from Varanasi district are the major tomato growing Mandals. Therefore these two Mandals were purposively selected for the present study. For selection of respondents were categorized into three groups on the basis of area under tomato cultivation in all the selected villages. Small size farm group -having area of cultivation less than 1 ha, Medium size farm group- having area of cultivation of 1-2 ha Large size farm group-having area of cultivation more than 2ha. Of the total 10 per cent respondents were selected under three size farm groups in each selected village. The total respondents were 120 viz., 40 small respondents, 40 medium respondents and 40 large respondents respectively.

The interview method used for data collection. Interview schedule was divided into major parts. First section included profile of respondents and second section was I question related to economic analysis of production of tomato. Data were analyzed

by using Input Output Ratio (B.C Ratio), Gross income, Marketing cost, Marketable surplus.

RESULTS AND DISCUSSIONS

Size of land holding of selected respondents

Below table no. 1 explains about Size of land holding. Land holding divided into 3 categories they are small (up to 1 hectare) and medium (1-2 hectare) and large (above 2 hectare)

Table-1: Details about land holdings of different size groups

S.No	Land holding(ha)	Small	Medium	Large	Sample Average
1	Up to 1 hectare	40(100)	0	0	33.33
2	1-2 hectare	0	40(100)	0	33.33
3	Above 2 hectare	0	0	40(100)	33.33
TOTAL		**40(100)**	**40(100)**	**40(100)**	**120(100)**

Table no. 2 average land holding of selected respondents

S. No	Particulars	Small	Medium	Large	Sample Average
1	Sample Respondents	40	40	40	120
2	Average Land Holding	0.71	1.53	2.55	1.59

Table -3: Resource use and Cost of cultivation of Tomato per hectare in different size of farm groups: Number of respondents= 120, S M L= 40+40+40= 120 (Value in Rupees/ha.)

S.No	Particulars	Small	Medium	Large	Sample Average
1	Hired labour	4400(9.28)	4600(9.87)	4650(10.08)	4550(9.74)
2	Bullock labour	1200(2.53)	1175(2.52)	1150(2.49)	1175(2.51)
3	Machinery cost	3500(7.38)	3350(7.18)	3300(7.15)	3383.3(7.24)
4	Seed	7900(16.66)	7600(16.31)	7500(16.26)	7666.66(16.41)
5	manure and fertilizer	5500(11.60)	5300(11.37)	5200(11.27)	5333.33(11.42)
6	Plant protection	1800(3.79)	1700(3.64)	1650(3.57)	1716.66(3.67)
7	Irrigation	4500(9.49)	4600(9.87)	4650(10.08)	4583.33(9.81)
8	Interest on working capital@8%	2304(4.86)	2266(4.86)	2248(4.87)	2272.66(4.86)
9	Depreciation on fixed capital	500(1.05)	520(1.11)	550(1.19)	523.33(1.12)
10	Land revenue	1200.25)	120(0.25)	120(0.26)	120(0.25)
11	Rental value of land	8000(16.88)	8000(17.16)	8000(17.35)	8000(17.13)
12	Interest on fixed capital@11%	3168(6.68)	3115.75(6.68)	3091(6.70)	3124.91(6.69)
13	Family labour income	4500(9.49)	4250(9.12)	4000(8.67)	4250(9.10)
14	Total cost	47392 (100)	46596.75(100)	46109(100)	46699.25(100)

Table-4: Cost of cultivation in tomato per hectare in different size of farm groups: Number of respondents= 120, M L= 40+40+40= 120

(Value in Rupees/ha.)

S.No	Cost concepts	Small	Medium	Large	Sample Average
1	Cost A1	31724	31231	31018	31324.33
2	Cost A2	39724	39231	39018	39324.33
3	Cost B	42982	42346.75	42109	42479.75
4	Cost C	47392	46596.75	46109	46699.25

It is depicted in Table no. 2 that the average land holding respondents and small respondents contain 0.71 hectares and medium respondents contain 1.53 hectares and large respondents contain 2.55 hectare and total sample average of respondents is 1.59 hectares.

In above table 3 explains about total cost of cultivation of tomato with different farm sizes and cost incurred up to production. The small size respondent is using 7900 rupees investment on seed and it's consist of 16.66 percentage of total cost of cultivation and total expenditure of small farm respondent is 47392. The medium size respondent is per hectare cultivation using 7600 rupees investment on seed and its consist of 16.31 percentage of total cost of cultivation and total expenditure of medium farm respondent is 46596.75. The large size respondent is per hectare cultivation using 7500 rupees investment on seed and its consist of 16.26 percentage of total cost of cultivation and total expenditure of large farm respondent is 46109.

In above table 4 explains about return and output of small size respondents cost A1 is 31724 and cost A2 is 39724 and cost B is 42982 and cost C is 47392,Medium size respondents cost A1 is 31231 and cost A2 is 39231 and cost B is 42346.75 and cost C is 46596.75. Large size respondents cost A1 is 31018 and cost A2 is 39018 and cost B is 42109 and cost C is 46109. Average sample respondents cost A1 is 31324.33 and cost A2 is 39324.33 and cost B is 42479.75 and cost 46699.25.

Table- 5: Cost and returns in Tomato crop per hectare in different size of farm groups Number of respondents= 120

S M L= 40+40+40= 120
(Value in Rupees/ha.)

S.No	Particulars		Size of farm groups			Sample Average
			Small	Medium	Large	
1	Cost of cultivation(Rs./ha)		47392	46596.75	46109	46699.25
2	Yield(q/ha)	Main product	340	360	375	358.33
		Byproduct	10	10.5	11	10.5
3	Cost of production (Rs./Qtl)		139.38	129.43	122.95	130.58
4	Return(Rs./Qtl)	Main product	430	430	430	430
		Byproduct	90	90	90	90
5	Return(Rs./ha)	Main product	146200	154800	161250	154083.33
		Byproduct	900	945	990	945
6	Gross return		147100	155745	162240	155028.33
7	Net return		99708	109148.25	116131	108329.08
8	Family labour income		4500	4250	4000	4250
9	Farm business income		107376	116514	123222	115704
10	Benefit cost ratio		1:3.10	1:3.34	1:3.51	1:3.31

In above table 5 explains about small size respondents cost of cultivation per quintal 139.38, yield of main product is 340 quintals, yield of byproduct 10 quintals, gross return is 147100 and net return in small size respondents is 99708 and family labour income is 4500 in small respondents and farm business income is107376and benefit cost ratio is 1:3.10. Medium size respondents cost of cultivation per quintal 129.43, yield of main product is 360 quintals, yield of byproduct 10.5 quintals, gross return is 155745 and net return in medium size respondents is 109148.25 and family labour income is 4250 in medium respondents and farm business income is 116514and benefit cost ratio is 1:3.34. Large size respondents cost of cultivation per quintal 122.95 yield of main product is 375 quintals, yield of byproduct 11 quintals, gross return is 162240 and net return in medium size respondents is 116131 and family labour income is 4000 in large respondents and farm business income is 123222 and benefit cost ratio is 1:3.51. Average sample of small, medium and large size respondents are cost of cultivation per quintal 130.58, yield of main product is 358.33 quintals, yield of byproduct 10.5 quintals, gross return is 155028.33 and net return is 108329.08 and family labour income is 4250 in large respondents and farm business income is 115704and benefit cost ratio is 1:3.31.

CONCLUSION

The study shows that the production of Tomato in Varanasi is to analyze, socio economic characteristic

of sample respondents, economics of Pearl millet production and price spread in production of Tomato. The results revealing that the socio economic status of the respondents found to be moderate with primary education, well economic back ground and greater access to all the assets. Economics of tomato production is more profitable in large farms as compared to medium size farms and small size farms.

The study indicated that there is scope to increase the producer's share in consumer's rupee by making the market more effective so that the number of intermediaries is to be restricted and marketing costs and marketing margins to be reduced. This will be the way for making tomato cultivation more lucrative.

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