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An economic study of marketing of tomato in Durg district of Chhattisgarh

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Abstract
Tomato has become one of the most popular and widely grown vegetables in the world. The present study is carried out in the year 2015-2016 to access cost, return, marketable surplus and marketed surplus of tomato in Durg District in Chhattisgarh because Durg district is one of the major tomato growing areas in the state. A sample of 60 farmers' cultivating tomato (marginal 25; small 20; medium 5; large 10) has been selected on population proportionate to sample size sampling technique. The average yield of tomato in the study area was found to 230.30 Qt ha^{-1}. The maximum yield (251.30 Qt ha^{-1}) was found on large size of farmers and it was due to efficient use of inputs by these groups. In fact, the average yield showed lowest with the small farm that was 211.40 Qt ha^{-1}. The marketable surplus was 222.26 Qt ha^{-1} (96.50%) after retaining 8.04 quintal (3.49%) for family consumption, religious payment and gift to friends and relatives. Marketed surplus was 217.48 Qt ha^{-1} (94.43%). Losses due to mishandling, breakage and spoilage were 2.08 percent.

Keywords: Tomato, cost, marketable surplus and marketed surplus

Introduction

Tomato (*Solanum lycopersicon*) is the world's largest vegetable crop and known as protective food, both because of its special nutrient value and also because of its wide spread production. Tomato is one of the important vegetable crops cultivated for fleshy fruit. Tomato is also considered as "poor man's orange" in India. Tomato is considered as important commercial and dietary vegetable crop. Tomato is used in preserved product like ketchup, sauce, chutney, soup, paste, puree etc. It is an important cash-generating crop to small-scale farmers and provides employment in the production and processing industries.

In Chhattisgarh, it is grown in 50.38 thousand hectares area with the production of 814.22 thousand million tones and productivity is 16.2 tones ha^{-1} *(*National Horticulture Board database, 2013-14) which hold 10th rank in the total tomato production in India. In Durg [1] district tomato is grown in 3785 ha with the production of 94663 million tones approx and productivity is 25 tons ha^{-1}.

The study was conducted in Durg district of Chhattisgarh. Durg district is one of the densely populated districts of the Chhattisgarh state of India. Durg district is located in the west central part of Chhattisgarh State. Area of district Durg is 8535.00 Sq. Km. The total geographical area of the district is more than 2.32 lakh hectare. The district lies between 20°54' and 21°32' north latitude & 81°10' and 81°36' east longitude. District is 317 meters above mean sea level.

Research Methodology

The respondents were classified into four categories viz. marginal (up to 1.0 Ha) small (> 1.0-2.0 Ha.), Medium (>2.0 – 4.0 Ha.) and large (>4.0 Ha.)

Sources Data Collection

Both the primary and secondary data were collected for this study. Primary data have been collected from a total of 60 households those who have been selected by randomly from the three villages in population proportionate to sample size. The primary data was collected during the period of 2015-16 *rabi season.*

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Methods of Data Collection
Primary Data
The data was collected using survey method. The data on different aspects was collected through pre-tested interview schedule. Each of the selected sample Tomato growers were approached personally for recording relevant data.

Secondary Data
The secondary data was collected from Directorate of Horticulture, Directorate of Land record, Directorate of Economics and Statistics, and annual horticultural statistics, Raipur Chhattisgarh. The annual area, production and productivity of Tomato in Durg district is collected from Deputy Directorate of Horticulture Raipur, Chhattisgarh.

Period of the Study
All the collected primary data was related to the agricultural year 2015-16 Rabi season.

Marketable surplus
Marketable surplus is defined the residual left with the producer - farmer after meeting his requirement of his family consumption, farm need, payment of wages of labours and social religious payment etc.
The following function will be used to estimate the marketable surplus.

$$MS = P - \{C + C_f + W + S\}$$

Where:
MS - Marketable Surplus.
P - Total Production.
C - Family Consumption.
C_f - Quantity use for cattle feed.
W - Quantity use for wage.
S - Quantity kept for Gift.

Marketed surplus, on the other hand, implies only that portion of marketable surplus which is actually sold in the market. The entire marketable surplus does not reach the market. This is due to loss during transit, loading and unloading, absence of effective distribution system.

Result and Discussion
Socio-Economic Profile of Households
The survey data indicates that the total family members was 474 comprising 60 families. Average family size ranged between 6.40 to 9.10 on different farm with an average of 7.90 in sample farm. Thus, positive relation with family size and farm size was observed on sample farm. Highest average family members of 9.10 were in the category small size of land holding and lowest of 6.40 were in medium category of land holding in the study area.

The overall age level of sample households 5 grower (8.33%) belonged to young age (22 to 34 year) followed 28 grower (46.67%) in middle age (22 to 34 year) and 27 grower (45.00%) old age group (22 to 34 year).

Most of tomato respondents 35.00 percent growers belonged to illiterate group, 31.67 percent growers who belonged to primary level of education, 16.67 percent tomato grower in the middle school group, 11.66 percent in the higher school group and 5.00 percent in higher secondary and above group.

The overall social group in study area that shared 18.33 percent schedule tribe, 23.33 percent schedule caste, 5.00 percent general and 53.33 percent other backward caste respectively, to the total population of sample household of the study area.

Marketable surplus and Marketed surplus:
As per the theoretical concept, the marketable and marketed surplus is worked out and shown in Table 1.4. Marketed surplus may be more, less or equal to marketable surplus because of cash requirement, hoarding or perishable nature. The overall production of tomato was 230.30 quintals ha^{-1} of which marketable surplus was 222.26 quintals (96.51%) after retaining 8.04 quintal (3.49%) for family consumption, religious payment and gift to friends and relatives. Marketed surplus was 217.48 quintal (94.43%) and losses due to mishandling, breakage and spoilage accounted 2.08 percent of total quantity.

Table 1: Profitability of tomato production on sample farm (₹ha^{-1}).

S No.	Particulars	Marginal	Small	Medium	Large	Average
1.	Gross cost (₹ha^{-1})	73817.07	75469.50	74925.38	74209.57	74605.53
2.	Yield (Qt ha^{-1})	211.40	223.50	235.01	251.30	230.30
3.	Price (₹Qt^{-1})	850.00	850.00	850.00	850.00	850.00
4.	Value of production(₹ha^{-1})	179690.00	189975.00	199758.50	213605.00	195755.00
5.	Net income (₹ha^{-1})	105872.93	114505.50	124833.12	139395.43	121151.74
6.	Cost of production(₹Q^{-1})	349.18	337.67	318.81	295.30	323.94
7.	Input output ratio	1:2.43	1:2.51	1:2.66	1:2.87	1:2.62
8.	Cost: Benefit ratio	1:1.43	1:1.51	1:1.66	1:1.87	1:1.62

Table 2: Marketable and marketed surplus of tomato on sample farm (Qt ha^{-1})

S No	Particulars	Size holding				
		Marginal	Small	Medium	Large	Average
1.	Total quantity produced (Qt)	211.40 (100.00)	223.50 (100.00)	235.01 (100.00)	251.30 (100.00)	230.30 (100.00)
2.	Total quantity farm retention	7.98 (3.77)	8.80 (3.93)	7.58 (3.22)	7.81 (3.10)	8.04 (3.49)
3.	Quantity paid for gift and kind payment	3.96 (1.87)	4.02 (1.80)	3.58 (1.52)	3.70 (1.47)	3.81 (1.66)
4.	Quantity used for home	4.02 (1.90)	4.78 (2.13)	4.00 (1.70)	4.11 (1.63)	4.22 (1.83)
5.	Marketable surplus	203.42 (96.23)	214.70 (96.07)	227.43 (96.78)	243.49 (96.90)	222.26 (96.51)
6.	Losses	5.25	5.07	4.80	4.00	4.78

		(2.49)	(2.27)	(2.05)	(1.60)	(2.08)
7.	Marketed surplus	198.17 (93.74)	209.63 (93.79)	222.63 (94.73)	239.49 (95.30)	217.48 (94.43)

Summary

➢ The average family size was 7.90 and average literacy Percentage was about 65 percent respondent in the study area.

➢ The higher number of the tomato growers (46.67%) was of middle age group followed by old age group (45%) and young age group (8.33%) respectively.

➢ About 53.33 percent of the sample respondents belonged to OBC followed by Scheduled caste 23.33 percent, scheduled tribes 18.33 percent and only 5 percent respondents' belonged to general category.

➢ Tomato followed by paddy was the main crop of kharif and Rabi season. In Zaid tomato was the main crop was grown by the sampled respondents

➢ On an average marketable surplus in tomato was worked out 96.51 percent, to total production.

➢ On an average marketed surplus in tomato was worked out 94.43 percent, respectively of their total marketable surplus.

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