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RESEARCH PAPER

Comparative analysis of production and marketing constraints of tomato growers in Karnataka - with special reference to Kolar and Belagavi districts

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Abstract: The present study was conducted to identify the constraints in production and marketing of tomato in the study districts**.**The study was conducted during the agricultural year 2020-21. The multi-stage purposive sampling procedure was adopted to select the tomato growing farmers in the study districts. The study was purely based on primary data related to both production and marketing constraints, were identified based on the opinion survey from 96 sample respondents. Garett's rankingtechnique was used to evaluate the problems encountered by respondents of tomato growers. In this method, the farmers were asked to rank the given constraint according to the magnitude of the problem. In Belagavi district, major production constraints were requirement of better management practices (I) followed by high expenditure on plant protection chemicals (II) and severe incidence of pest and disease (III). While, in case of Kolar district severe incidence of pest and disease ranked first with mean garret score of 66.64 followed by high expenditure on plant protection chemicals with mean garret score of 60.79 and timely non-availability of labours and high wage rates with mean garret score of 57.79. Whereas, in case of marketing constraints high price fluctuations stood first in both the districts.

Key words: Constraints, Marketing, Production, Tomato

Introduction

Vegetables are important constituents of Indian agriculture and nutritional security because of their short duration, higher yield, nutritional richness, economic viability and ability to generate on-farm and off-farm employment. India is blessed with diverse agro-climate with distinct seasons, making it possible to grow wide array of vegetables and it is the second major producer of fruits and vegetables in the world. Total area under horticultural crops was 27.74 million hectares and production was 341.63 million tonnes in 2020-21 (Anonymous, 2020a). Fruits and vegetables together contribute about 92 per cent of the total horticultural production in the country.

Tomato (*Solanum Lycopersicon*) is a hermaphrodite vegetable crop belonging to the family Solanaceae. Tomato is one of the "protective food" among the vegetables, that is most often grown in India due to its higher production and wide ecological amplitude.Tomato is a native of Tropical America spread to other parts of the world in the 16th century and it became popular in India in the last six decades. It is the worlds' third largest vegetable crop after potato and sweet potato. Tomatoes have been used as food by the in habitants of Central and South Americas in cepre-historic times.

Tomato occupies a significant position in vegetable production of the country. India is the second largest producer of tomato after China, produced 20.57 million tonnes of tomatoes on 0.81 million hectares and average yield of 25.3 million tonnes per hectare in 2020 (Food and Agriculture Organization statistical year book 2021). Tomato ranks third next only to potato and brinjal in the production of vegetables in the country. There has been a gradual increase in the area under tomato while the production has been fluctuating due to weather related factors. In India, Andhra Pradesh is the leading state producing 2,744.32 MT of tomatoes followed by, Madhya Pradesh with 2,419.28 MT. Where as, Karnataka stood third with a production of 2,081.59 MT (Anonymous, 2020b).

In Karnataka, tomato is produced through out the year among vegetables and it occupies first position in the total vegetable production in the state. The major tomato growing districts in Karnataka are Kolar with production of 9,30,417 MT, followed by Belagavi with production of 1,93,958 MT, Mandy with production of 1,78,702 MT, Haveri with production of 1,33,295 MT and Chikkaballapura with production of 1,29,604 MT. The total area under tomato in Karnataka is about 19,07,407 hectares in which Kolar is having highest area of about 16,328 hectares, followed by Belagavi with 6,141 hectares, Davanagere with 5,016 hectares, Chamarajanagar with 4,911 hectares and Tumakuru with 3,094 hectares respectively (National Horticulture Board Annual Report, 2020-21).

Objective of the study

To identify the constraints in production and marketing of tomato in the study districts

Materials and method

The multi-stage purposive sampling procedure was adopted to select the tomato growing farmers. In the first phase, Kolar and Belagavi districts were selected based on highest area and production in Karnataka. In second phase two predominately tomato growing taluks were selected from each district. In third phase three villages from each selected taluk were selected. In fourth phase, from each village eight sample farmers were selected randomly for the study. Thus, total sample size was 96 respondents.

The study was conducted during the agricultural year 2020-21. In the study area both production and marketing constraints were identified based on the opinion survey from sample respondents. Garett's rankingtechnique was used to evaluate the problems encountered by respondents of tomato growers. In this method, the farmers were asked to rank the given constraint according to the magnitude of the problem. The orders of merit given by respondents were converted into ranks by using the following formula,

Percentage position = $100 (R_{ij}-0.5) \div N_j$

Where,

R_{ij} = Rank given for i^{th} item by j^{th} individual

N_j = Number of items ranked by j^{th} individual

By referring to the table given by the Garrett and Woodworth (1969), percentage position of each rank thus obtained was converted into scores. Then for each factor, the scores of individual respondents were added together and divided by total number of respondents for whom the scores were added. These mean scores of all the factors were arranged in the order of their ranks and inferences were drawn out of it.

Results and discussion

Production constraints faced by tomato growers in study districts

The following eight major problems were identified in production of tomato in the study districts, namely severe incidence of pest and disease, high expenditure on plant protection chemicals, timely non-availability of labours and high wage rates, insufficient water for irrigation, adverse weather conditions, lack of better management practices, high cost of planting materials, lack of availability of quality seedling and which were ranked based on the Garretts' score (Table 1).

From the Table 1, it was observed that, majority of the tomato growers in Belagavi district were opined that, tomato cultivation required more better management practices as and was ranked -I with mean score of 66.25, followed by high expenditure on plant protection chemicals ranked - II with mean score of 64.75, severe incidence of pest and disease ranked -III with a mean score of 60.72, timely non-availability of labours and high wage rates ranked - IV with a mean score of 50.06, adverse weather conditions ranked -V as a constraint with a mean score of 49.09, lack of availability of quality seedlings ranked -VI with mean score of 41.83, high cost of planting materials ranked -VII with mean score of 37.18 and insufficient water for irrigation ranked -VIII with mean score of 25.16. Whereas, in case of Kolar district, severe incidence of pest and disease as a major production constraint ranked -I with mean score of 66.64, followed by high expenditure on plant protection chemicals (II), timely non-availability of labours and high wage rates (III), required more management practices (IV), insufficient water for irrigation (V), adverse weather conditions (VI), high cost of planting materials (VII) and lack of availability of quality seedling (VIII).

As a tomato crop is a commercial crop which requires high timely management practices to bear good quality of fruits. This problem may be addressed by providing the suitable technologies and facilities to tomato growers at a subsidized rate. Another important problem was the incidence of pest and diseases during the peak period in the study area since tomato is a succulent crop which is more prone to pest and diseases, this problem may be tackled by adopting integrated pest management practices. Similar results were observed by Lokapur (2013) and Rashmi *et al*. (2020).

Marketing constraints faced by tomato growers in study districts

From the Table 2, it could be seen that, the major marketing constraints faced by the growers in the study districts as follows, high price fluctuations, involvement of middlemen, high cost in loading and unloading of the produce, high commission charges, improper market price, high cost of transportation, lack of storage facilities and irregular payments from market intermediaries.The sample respondents opined that, high price fluctuations ranked-I with a mean score of 73.12, followed by involvement of middlemen (mean score of 68.04, rank-II), high cost in loading and unloading of the produce (mean score of 55.83, rank -III), high commission charges (mean score of 54.27, rank -IV), improper market prices (mean score of 45.12, rank -V), lack of availability of quality seedlings (mean score of 40.39, rank -VI), lack of storage facilities (mean score of 37.20, rank - VII), and irregular payments from market intermediaries (mean score of 55.83, rank -VIII) were the major constraints in the Belagavi district.

Table 1. Production constraints faced by tomato growers in study districts

Belagavi district (n=48)			Kolar district (n=48)		
Production constraints	Mean (Garretts'score)	Rank	Production constraints	Mean (Garretts'score)	Rank
Lack of better management practices	66.25	I	Severe incidence of pest and disease	66.64	I
High expenditure on plant protection chemicals	64.75	II	High expenditure on plant protection chemicals	60.79	II
Severe incidence of pest and disease	60.72	III	Timely non-availabilityof labours and high wage rates	57.79	III
Adverse weather conditions	50.06	IV	Insufficient water for irrigation	53.85	IV
Timely non-availabilityof labours and high wage rates	49.09	V	Adverse weather conditions	50.00	V
Lack of availability of quality seedlings	41.83	VI	Required more management practices	44.56	VI
High cost of planting materials	37.18	VII	High cost of planting materials	34.37	VII
Insufficient water for irrigation	25.16	VIII	Lack of availability of quality seedlings	26.97	VIII

Table 2. Marketing constraints faced by tomato growers in study districts

Belagavi district (n=48)			Kolar district (n=48)		
Marketing constraints	Mean (Garretts'score)	Rank	Marketing constraints	Mean (Garretts'score)	Rank
High price fluctuations	73.12	I	High price fluctuations	87.76	I
Involvement of middlemen	68.04	II	High commission charges	76.82	II
High cost in loading and unloading of the produce	55.83	III	Lack of storage facilities	71.09	III
High commission charges	54.27	IV	Irregular payments from market intermediaries	58.85	IV
Improper market price	45.12	V	Involvementof middlemen	40.65	V
High cost of transportation	40.39	VI	High cost of transportation	39.58	VI
Lack of storage facilities	37.20	VII	Improper market price	17.66	VII
Irregular payments from market intermediaries	21.00	VIII	High cost in loading and unloading of the produce	13.73	VIII

In case of Kolar, high price fluctuations ranked -I with a mean score of 87.76 as same as Belagavi followed by high commission charges ranked -II with mean score of 76.82, lack of storage facilities ranked-III with mean score of 71.09, irregular payments from market intermediaries ranked -IV with mean score of 58.85, involvement of middlemen ranked -V with mean score of 40.65, high cost of transportation ranked -VI with mean score of 39.58, improper market price ranked -VII with mean score of 17.66, and high cost in loading and unloading of the produce ranked -VIII with mean score of 13.73.

The arrival of a large quantity of tomato to the market at the same time, bad climatic conditions, unscrupulous activities such as hoarding by the traders and suspension of trade were the reasons for such fluctuation in prices. Similar results were observed by Prasannakumaran *et al*. (2018) and Gohain and Bhangu (2021).

Conclusion

The production of vegetables especially tomato was well suited to the agro-climatic condition of the Belagavi and Kolar districts. These two districts were traditional and leading tomato producing districts in the state. Majority of the respondents reported that major constraint was lack of better management practices and severe incidence of pest and disease in production of tomato. So that, labour saving techniques can save the time and cost of production. Research efforts need to be focused on development of pest and disease resistant varieties and hybrids of tomato. Whereas, in marketing, problem of tomato was high price fluctuation. Hence,cold storage facilities and processing units needs to be encouraged in tomato producing areas in order to minimize heavy price fluctuations and post-harvest losses. In this regard,Government needs to provide subsidy to farmers for installation of cold storage facilities.

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