The Pharma Innovation Journal 2022; 11(12): 5217-5219

www.ThePharmaJournal.com

The Pharma Innovation

ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2022; 11(12): 5217-5219

www.thepharmajournal.com
Received: 22-10-2022
Accepted: 25-11-2022

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Comparative economics of constraints and suggestions of *kharif* and *rabi* tomato production in Latur district of Maharashtra

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Abstract
About 96 tomato growers were selected from eight villages from the list was stratified into two groups i.e. *kharif* 48 and *rabi* 48 of Latur district of Maharashtra for comparative study for the year of 2012-2013. In analytical techniques, frequency and percentage method was used. The result revealed that in general, tomato growers faced many problems like timely unavailability of labour, timely unavailability of fertilizers and particularly biopesticide HANPV, timely unavailability of loan, lack of technical knowledge about seed from public sector, unavailability of water at stress situation. It implied that the provision of labour through employment guarantee scheme by government, district administration should make necessary arrangement to get timely fertilizers to tomato grower and at the time of distribution 7/12 record compulsory for consumer of fertilizer, NABARD and other banks make the provision to supply credit availability at minimum interest and loan before start of season wise plantation of crop to farmer, arrange training by agricultural department and universities, use water conservation practices must be followed by ridges and furrows opening before planting means such protective measures were suggested by tomato growers in minimizing such problems.

Keywords: Tomato, constraints, suggestions

Introduction
Tomato (*Lycopersicon esculentum*) is an important vegetable crop in India. It is also called 'lo ve apple' is an herbaceous plant belonging to the genus *Lycopersicon* under *Solanaceae* or Nightshade family. Tomato is the second most important vegetable crop next to potato but it tops the list of canned vegetables. Tomato is native to South America. It is one of the most important "protective foods" because of its special nutritive value. The major tomato producing states are Bihar, Karnataka, Uttar Pradesh, Orissa, Andhra Pradesh, Maharashtra, Madhya Pradesh and West Bengal. It is one of the most important vegetable crops cultivated for its fleshy fruits. It is considered as important and dietary vegetable crop. It is protective supplementary food. As it is a short duration crop and gives high yield, it is important from economic point of view and hence area under its cultivation is increasing day by day. The tomatoes are broadly classified in four groups on the basis of the period of their harvesting. Immature green stage, mature green stage, pink or half ripe and red or over ripe stage. It is utilized for fresh consumption in ketchups or sauces, in salads or cooked vegetables.
Tomatoes are directly used as raw vegetables in sandwiches, salad etc. Several processed items like paste, puree, syrup, juice, ketchup, drinks, whole peeled tomato etc. are prepared on large scale. It is used as appetizer and its soup for patients suffering from constipation. Green tomatoes are also used for pickles and preserves. It has many other uses, tomato seeds contain 24 percent oil used as salad oil and in the manufacture of margarines. Tomato is rich source of vitamins A, C, potassium, minerals and fibres and adds variety of colours and preserves. Tomato is also rich in medicinal value. The pulp and juice are digestible, mild aperients, a promotes of gastric secretion and blood purifier.
In the year 2012-13 area of tomato in Maharashtra was 50 thousand ha with production of 1050 thousand million tonnes and with productivity of 21 metric tonnes/ha (Anonymous, 2013) [9]. The crop is mostly grown in Marathwada region. In Latur district total area under tomato in the year 2012-13 is 778.58 ha with production of 16.39 metric ton with the productivity of 21.06 metric ton/ha (Source: District Agriculture Office, Latur). The commonly grown varieties of tomato in survey area was in kharif season US-440, Laxmi-5005 and in rabi season Alankar.

Materials and Methods

Multistage sampling design will be adopted in selection of district, tehsil, villages and tomato growers. At first stage, the Latur district will be purposively selected for study on the basis of highest area under tomato crop. In second stage, Chakur and Ausa tehsil will be selected on the basis of higher area under tomato growers. In third stage, the list of villages growing tomato in Chakur and Ausa tehsil was obtained from Tehsil offices. In fourth stage, eight villages from tehsil were selected randomly. The selected villages were namely Wadwal, Latur road, Mohnal, Kadmuli in Chakur tehsil and Bheta, Borgaon, Sirsal, Killari in Ausa tehsil. From each selected village twelve tomato growers will be selected in such a way that six tomato growers from each of the two season on the basis of higher area under tomato growers. The list was stratified into two groups i.e. *kharif* 48 and *rabi* 48. Thus, from 8 villages, 96 growers will be selected. In analytical techniques, that is to study constraints and suggestions of *kharif* and *rabi* tomato production were achieved by applying frequency and percentage method.

Analysis and Interpretation

Constraints of tomato production

Constraints of *kharif* and *rabi* tomato production in the frequency and percent were calculated and presented in Table 1. It was observed that one of the most important problem faced by tomato growers was timely unavailability of labour greater in *rabi* as compared to *kharif* season because, mostly intercultural operations as well as insect and pest control operations, irrigation operations giving the irrigation more required in *rabi* as compared to *kharif* season that's why more shortage of labour i.e. 91.67 percent in *rabi* season where as in *kharif* season 87.50 percent. The next important problem faced by the farmers was timely unavailability of fertilizers and particularly biopesticide HANPV which was reported greater in *kharif* season i.e. 81.25 percent as compared to *rabi* season i.e. 75.00 percent this was happen due to most of the farmers total fertilizers purchase at the beginning of the *kharif* season that's why there was a shortage of fertilizer in *kharif* season as compared to *rabi* season where as insecticide and pesticide problem was serious in *kharif* season as compared to *rabi* season because, infestation problem was more occurred in *kharif* season due to favourable environmental condition for the insect and pest that's why more infestation problem in *kharif* season as compared to *rabi* season. For cultivation of tomato it requires high investment, the timely unavailability of loan, which was greater in *kharif* season 79.17 percent as compared to *rabi* season 75.00 percent because, most of the farmer crop loan were borrowed at the beginning of the *kharif* season and repay the loan at the end of April that's why the more problem was occurred in *kharif* season as compare to *rabi* season. The problem such as lack of technical knowledge about seed from public as well as private sector was reported greater in *kharif* season 77.08 percent as compared to *rabi* season 70.83 percent because, most of the farmers inquire regarding seed material or technical knowledge required for a particular crop were discussed before start of the unavailability of water at stress situation was greater in *rabi* season 66.67 percent as compare to *kharif* season 54.17 percent because, more water season that's why lack of technical knowledge was greater in *kharif* as compare to *rabi*. It was observed that requirement in *rabi* season as compared to *kharif* season that's why unavailability of water at stress situation was greater in *rabi* as compared to *kharif* season.

Table 1: Constraints and suggestions of tomato production

	Particular	*Kharif* tomato		*Rabi* tomato	
	Constraints	**Frequency (n=48)**	**Percent**	**Frequency (n=48)**	**Percent**
1.	Timely unavailability of labour	42	87.50	44	91.67
2.	Timely unavailability of fertilizer and particularly biopesticide HANPV	39	81.25	36	75.00
3.	Timely unavailability of loan facilities	38	79.17	36	75.00
4.	Lack of technical knowledge about seed from public as well as private sector	37	77.08	34	70.83
5.	Unavailability of water at stress situation	26	54.17	32	66.67
	Suggestions				
1.	Provision of labour through employment guarantee scheme by government	42	87.50	44	91.67
2.	District adminstration should make necessary arrangement to get timely fertiliser to tomato grower and at the time of distribution 7/12 record	39	81.25	36	75.00
3.	NABARD and other banks make the provision to supply credit availability at minimum interest and loan before start of season wise plantation of crop	38	79.17	36	75.00
4.	Arrange training by agricultural department /university	37	77.08	34	70.83
5.	Use water conservation practices must be followed by ridges and furrows opening before planting	26	54.17	32	66.67

Suggestions of tomato production

Suggestions of *kharif* and *rabi* tomato production in the frequency and percent were calculated and presented in Table 1. It was observed that suggestion of provision of labour through employment guarantee scheme by government was 91.67 percent in *rabi* season followed by 87.50 percent in *kharif* season. The suggestion of district administration should make necessary arrangement to get timely fertilizers to tomato grower and at the time of distribution 7/12 record compulsory for consumer of fertilizer was 75.00 percent and 81.25 percent in *rabi* and *kharif* season respectively. The suggestion about NABARD and other banks make the provision to supply credit availability at minimum interest and loan before start of season wise plantation of crop to farmer was 79.17 percent and 75.00 percent in *kharif* and *rabi* season, respectively. The next suggestion was the arrange training by agricultural department and universities was 77.08 percent in *kharif* followed by 70.83 percent in *rabi* season. The suggestion of the use water conservation practices must be followed by ridges and furrows opening before planting was 66.67 percent in *rabi* followed by 54.17 percent in *kharif* season, respectively.

Conclusions

The important problems faced by tomato producers were timely unavailability of labour, fertilizer, particularly

biopesticide HANPV, and loan facilities, lack of technical knowledge about seed from public sector and unavailability of water at stress situation.

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