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Knowledge of Improved Cultivation Practices on Tomato in East Khasi Hills District, Meghalaya

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ABSTRACT

The present study is conducted in the State of Meghalaya, India in order to assess the knowledge level of improved practices. Meghalaya is one of the State of North Eastern Part of India and is known for its cleanliness and popular tourist site in remote part of India. Farmers practice tomato cultivation in large scale and grown commercially due to high return during off-season whichis exported to neighbouring states like, Nagaland, Manipur, Assam and therefore, has a tremendous impact in the income of the farmers exhibiting great potential to be economically strengthened through tomato cultivation. The study concluded that 100 per cent of the respondents had knowledge related to climate in which tomato can be grown and recommended storage facility. More than 90 per cent of the respondents had knowledge regarding land preparation and recommended sowing time of tomato. More than half of the respondents had knowledge about harvesting and average knowledge on soil related to tomato cultivation and intercultural practices required by tomato. Overall, the findings reveals that majority (76.67%) of the respondents had medium level of knowledge regarding tomato cultivation.

KEYWORDS: *Tomato, improved methods, Cultivation, North East, Meghalaya, knowledge.*

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1. INTRODUCTION

Tomato (*Lycopersicon esculentum*) is botanically a fruit which is commonly used as a vegetable because of its nutritional content. India has a diverse climatic condition which ensures availability of all varieties of vegetables. As tomato require hot and warm climate therefore it suits well with the Indian climatic conditions. In addition, in India it is believed that a different variety of tomato was first cultivated by the British. [1](Mehta, 2017)

North eastern region of India comprises of eight states namely, Meghalaya, Assam, Mizoram, Manipur, Nagaland, Arunachal Pradesh, Tripura and Sikkim. It occupies about 7.7 per cent of the geographical area of the country [2](Wikipedia). Tomato is one of the most important economical vegetable crops grown in the plains and hills of north eastern region. It grows well in north eastern India as it can adapt to a wide range of climate and soil condition.

Meghalaya is an agrarian state and is known for a large scale cultivation of vegetables both tropical and temperate. There has been an increasing rate in the area, production and productivity of vegetable crops. The farmers in East Khasi Hills District have the potential to be economically strengthened through tomato cultivation. Despite the fact that tomato is cultivated on a large scale not much study has been done in the field so far. Thus, this research was conducted to know the knowledge level of selected tomato growers in Meghalaya State, India.

[3]Saxena *et al*. (2015) conducted a study in Jaspur district, Chattisgarh found out that majority (66.11%) of the respondents had high level of knowledge and 38.88 per cent had low level of knowledge among tomato growers regarding tomato production

[4]Kumar *et al*. (2016) conducted a study in Karnal district of Haryana found out that majority (66%) of the respondents had acquired medium level of knowledge and only 16 per cent had acquired high level of knowledge regarding tomato production.

[5]Nasrin *et al.* (2017) in their study conducted in Assam on Knowledge Level of Farmers on Recommended Cultivation Practices of Off-season Vegetable Crops under Low Cost Polyhouse Technology revealed that majority (62.50%) had acquired medium level of knowledge, 21.25% of the respondents had acquired high level of knowledge and 16.25% of the respondents had acquired low level of knowledge.

2. MATERIALS AND METHOD

The study was conducted in two blocks i.e, Mawryngkneng and Mylliem of East Khasi Hills, Meghalaya state, India. 3 villages from each two blocks making a total number of 6 villages were

selected randomly from which, a list of all household engaged in tomato cultivation with beneficiaries having varying experiences from the selected villages was prepared. 20 farmers were selected randomly from each village so as to make a sample size of 120 respondents.

3. RESULTS AND DISCUSSION

3.1 Knowledge Level of Respondents regarding improved tomato cultivation

Knowledge level is generally known as the acquisition of information with facts. [6]Sangeetha *et al.* (2012) identify knowledge as the body of information possessed by an individual who is in accordance with the established fact. In order to obtain the knowledge level of the respondents a structured interview schedule was elaborated based on improved practices recommended by the Directorate of Agriculture, Shillong –Meghalaya.

3.1.1 Land preparation, climate, soil and recommended varieties

Table 3.1.1 Knowledge level of the respondents regarding the land preparation, climate, soil and recommended varieties

Sl. No.	Knowledge Dimension	f	%	Overall knowledge (%)
1.	a. Deep ploughing	103	85.83	92.92
	b. Construct furrow and ridges	120	100	
2.	a. Tomato is grown in hot climate	120	100	100.00
3.	a. Tomato is grown in well drain loamy fertile soil	105	87.50	43.75
	b. It required pH level 7-8.5	0	0.00	
4.	a. Vaishali, Avinash, Rohit, Arka, Rocky, Cherranjeevi, Marglove, Shillong Selection-1. are the recommended varieties.	19	15.83	15.83

Table 3.1.1 shows that overall 100 per cent of the respondents had knowledge related to the climate in which tomato can be grown, further the table can be illustrated that 92.92 per cent of the respondents had knowledge regarding land preparation, 43.75 per cent on soil related to tomato cultivation and 15.83 per cent of the respondents had knowledge on recommended varieties of tomato.

All recommended practices were similar to the one performed by the farmers but seedlings were raised in nursery beds and not in boxes and they also lack the knowledge regarding the soil p^H.

3.1.2 Time of sowing, spacing seed rate and manure& fertilizer

Table 3.1.2 Knowledge level of the respondents regarding the time of sowing, spacing seed rate and manure& fertilizer

Sl. No.	Knowledge Dimension	f	%	Overall knowledge (%)
1.	Recommended sowing time	109	90.83	90.83
2.	Recommended spacing	25	20.83	20.83
3.	Recommended seed rate	25	20.83	20.83
4.	15 tonnes FYM, 217 Kg Urea, 312 Kg SSP and 83 Kg MOP is required for one hectare	0	0.00	0.00

Table 3.1.2 shows that overall 90.83 per cent of the respondents had knowledge regarding the recommended sowing time of tomato. In addition 20.83 per cent of the respondents had knowledge regarding the recommended spacing and seed rate and none of the respondents had knowledge regarding manure and fertilizer.

Almost all of the respondents practice the recommended sowing time but in case of recommended spacing and seed rate, only progressive farmers were observed to have knowledge about it while the rest of the farmers had no knowledge but used estimated value. In addition they did not perform any treatment for seeds and seedlings. Manures like cowdung, Urea, DAP and MOP were applied at different time sequence with estimated weight since they lack the knowledge about the quantity of manure and fertilizers required per hectare.

3.1.3 Intercultural operation, irrigation, supporting and diseases

Table 3.1.3 Knowledge level of the respondents regarding intercultural operation, irrigation, supporting and diseases

Sl. No.	Knowledge Dimension	f	%	Overall knowledge (%)
1.	a. Weeding should be done as per their requirement for healthy growth of tomato plants	120	100.00	
	b. 2.5gm urea should be applied 20-25 DAS	18	15.00	
	c. Earthing is required after urea application followed by irrigation	18	14.00	
	d. 2nd earthing should be done 40-45 DAS	20	16.67	36.67
2.	a. Water should be applied after earthing up as per the requirement	0	0.00	0.00
3.	a. Tomato crop require supporting to prevent the plants from drooping down	120	100.00	
	b. Supporting should be provide to the plants 10 DAS	36	30.00	65.00
4.	a. Damping off disease which can be control bycarbendazin, mancozeb etc.	13	10.83	
	b. Late Blight disease which can be control by spraying mancozeb	13	10.83	
	c. Leaf Spot disease which can be control by spraying fungicides like copper oxychloride, Mancozeb	13	10.83	10.83

Table 3.1.3 shows that majority (65%) of the respondents had an overall knowledge regarding the recommended supporting required by tomato crop, followed by 36.67 per cent of the respondents had knowledge regarding intercultural practices required by tomato, followed by 10.83 per cent of the

respondents had knowledge regarding diseases affecting tomato crop and none of the respondents had knowledge about irrigation practices.

Farmers in the study area performed intercultural operation such as weeding and earthing similar to the recommended practices but application of urea after sowing were not practiced by majority of the farmers. Respondents mostly progressive farmers were using different chemicals as control measures similar to the recommended one whereas majority of the farmers used those chemicals preferred by other farmers (progressive farmer, relatives, friends, neighbour) after they got the information from them .

3.1.4 Pests, harvesting, storage and processing

Table 3.1.4 Knowledge level of the respondents regarding pests, harvesting, storage and processing

Sl. No.	Knowledge Dimension	f	%	Overall knowledge (%)
1.	a. Fruit Borer can be controlled by collecting the damaged and infected fruits and destroy them or spray with Dimethoate, quinalphos or cypermethrin?	0	0.00	
	b. Semi-looper and Leaf eating caterpillar can be control by removing egg masses and cluster of affected leaves and destroy them or spraying quinalphos or Endosulphan	7	5.83	
	c. Aphids and that it can be managed by spraying Dimethoate or Chlorpyriphos	0	0.00	1.94
2.	a. Harvesting should be done when the fruits start to change its colour to red	120	100.00	
	b. Tomato should be harvested during morning and evening hours?	11	9.17	54.58
3.	a. Tomato fruit should be stored in plastic box, cardboard box or wooden box for transportation?	120	100.00	100.00
4.	a. Any processing facility?	0	0.00	0.00

Table 3.1.4 shows that 100 per cent of the respondents had an overall knowledge regarding recommended storage facility, followed by 54.58 per cent of the respondents who had knowledge

about harvesting, followed by 1.94 per cent of the respondents who had knowledge about pests and none of the respondents had knowledge regarding processing facility.

Respondents lack the knowledge about pest management and thus only few farmers followed recommended practices to some pests and in case of fruit borer they will collect only the damage fruit without spraying any chemicals.

Farmers harvest tomato crop as recommended i.e, when the fruits is green or start becoming red. The best time for harvesting is during morning and evening hours where only few farmers performed as recommended while the rest will harvest at any time of a day. The fruits are stored in plastic box, cardboard box or wooden box where all the farmers performed as recommended. In addition the farmers do not perform any processing activities and therefore tomato is transported and sold directly to the market.

3.1.5 Overall Knowledge level of Tomato Growers

Table 3.1.5 Distribution of respondents based on overall Knowledge level of Tomato Growers

Sl. No	Category	f	%
1	Low(<7.11)	6	5.00
2	Medium(7.11-13.81)	92	76.67
3	High (>13.81)	22	18.33
	Total	120	100

In order to measure the knowledge level of tomato growers, knowledge index was developed which can be categorised as low (<7.11), medium (7.11-13.81) and high (>13.81). Table 3.1.5 reveals that majority (76.67%) of the respondents had medium level of knowledge, 18.33 per cent of the respondents had high level of knowledge and only 5 per cent of the respondents had low level of knowledge regarding tomato cultivation.

5. CONCLUSION

The findings shows that overall 100 per cent of the respondents had knowledge related to climate in which tomato can be grown and recommended storage facility. More than 90 per cent of the respondents had knowledge regarding land preparation and recommended sowing time of tomato.

More than half of the respondents had knowledge about harvesting and average knowledge on soil related to tomato cultivation and intercultural practices required by tomato.

Knowledge on recommended varieties of tomato, recommended spacing and seed rate and none of the respondents had knowledge regarding manure and fertilizer, diseases and pests affecting tomato crop were below average.. While, the knowledge regarding irrigation practices was zero, since the study area was a rainfed area as they depend on rainfall for the crop and the same with knowledge on processing facility since majority of the farmers had low education and less farmers had attended the training thus their main aim is to produce the crops for marketing and they are not interested in processing.

Overall, the findings reveals that majority (76.67%) of the respondents had medium level of knowledge regarding tomato cultivation.

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