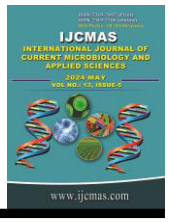
Int.J.Curr.Microbiol.App.Sci (2024) *13*(05): 69-75

International Journal of Current Microbiology and Applied Sciences
ISSN: 2319-7706 **Volume 13 Number 5 (2024)**
Journal homepage: http://www.ijcmas.com



Original Research Article https://doi.org/10.20546/ijcmas.2024.1305.010

A Study on Training Undergone by Tomato Growers in Solan District of Himachal Pradesh, India

Tenzing Palmu Sherpa[1*] and Pratima Rana[2]

[1]*Department of Agricultural Extension and Communication, Shoolini University of Biotechnology and Management Sciences, Solan, Himachal Pradesh, India*
[2]*Directorate of Extension Education, Dr. Y S Parmar University of Horticulture and Forestry, Solan, Himachal Pradesh, India*

**Corresponding author*

Keywords

Adoption, Practices, Production, Participation, Tomato growers, Training

Article Info

Received:
25 March 2024
Accepted:
28 April 2024
Available Online:
10 May 2024

A B S T R A C T

Training is systematic planned activities that help develop the competence of farmers. Farmers' training plays an important role in adoption of new agricultural practices and technologies. The present study infer the training undergone by tomato growers in the district Solan of Himachal Pradesh. For the study 80 tomato growers were personally interviewed through a pre-tested interview schedule. It was found that training programme's knowledge/skill like package of practices of tomato, high yielding and resistant varieties of seeds and diseases and pest control were the most adopted trainings by tomato growers in the study area till date. The result also shows the gap between training's skills imparted and adopted by tomato growers. Therefore, it was suggested that the active engagement of extension personnel in intensive guidance, post-training measurement, and follow-up of training plays an important role in the continued adoption of the practices by the farmers. This study helped in the assessment of the training programmes and provides a base for careful planning to enhance the training outcomes.

Introduction

The tomato is the world's most vital vegetable. The tomato is significant for nutrition in addition to its commercial value. Tomatoes are one of the top three most important crops on the Indian government's "TOP" priority list of horticulture crops, along with onions and potatoes.

Because it produces a higher yield and a higher profit in a shorter amount of time than food grain, tomato cultivation is becoming more and more important commercially, especially for low-income households. It also had a great deal of potential to improve the socioeconomic condition of small and marginal famers. Farmers from other state are drawn to it because it produces more revenue per unit area and jobs faster (Dheeraj, 2015). To achieve sustainable and efficient tomato production, it is crucial to have a profound understanding of the best practices and cultivation techniques. To maximize yields, growers need to be well-trained and adopt modern techniques. Training is a set of

activities that includes systematic preparation, execution, and follow-up. It improves rural people's quality of life by encouraging local leadership, self-reliance, and the appropriate utilization of indigenous resources. Training provides well-organized opportunities for participants to acquire appropriate information and skills Training programmes assist tomato growers with essential knowledge and skills to optimize yield and income. Training promotes competence and improves outcomes.

It helps in the development of work-related skills as well as the adaptation to organizational changes. As the farming sector grows more technologically advanced, farmers must be technologically empowered to increase production and profitability, stability and sustainability.

There are several studies conducted before by Bhalla (2012) who studied the impact of training on the productivity and income of vegetable growers in Punjab. The study disclosed that the trained vegetable growers received higher returns compared to untrained vegetable growers training received a positive impact on productivity and return from vegetable cultivation. Singh *et al.,* (2016) studied the adoption of improved technologies of vegetable growers. The study reflects the lack of control measures for weed and marketing, the high cost of pesticides and fertilizer, leaf curl in tomatoes, non-availability of labor for non-adoption of improved technologies. Pervaiz *et al.,* (2018) studied adoption of improved technologies regarding tomato cultivation reported that training of high yielding varieties resulted in adoption of high yielding varieties by all respondents, total cost of seed, weeding and pesticides, which increased tomato yield and income. Kumari *et al.,* (2021) study found that participants' income, savings, and knowledge of agricultural topics improved as a result of their use of technology. More than 90 per cent of people involved reported an increase in crop productivity as a result of technology adoption.

Despite the existence of training programme, the production varies considerably. This research investigates the extent to which tomato growers have access to training and their participation in training programme offered by the different organizations.

The study aims to identify the types of training offered and how are tomato growers responding to training programmes. The study also evaluates effectiveness of training and adoption of training programmes undergone by them.

Understanding the training status of tomato growers is essential for designing more effective and targeted programs. This, in turn, can lead to improved tomato production practices and enhanced yield, contributing to the economic well-being of the region.

Materials and Methods

The study was conducted in Solan district of Himachal Pradesh. Solan is known as the “Red city” of India. Solan district was purposively selected as it had the highest production (2,32,000 tonnes) and area of tomatoes among all twelve districts of Himachal Pradesh. Solan district has a total of five development blocks from which Solan block and Dharampur block were selected purposively due to highest production of tomatoes in these blocks.

The list of villages was collected from agricultural block department. Using simple random sampling without replacement (SRSWOR) four villages were selected randomly from each block. The total sample of 80 tomato growers were selected by considering ten tomato growers from each selected village.

The tools used for the study were both quantitative and qualitative which include an interview schedule containing closed-ended and open-ended questions, field notes, photography and observation method. The collected data were coded, tabulated, analyzed with formula of percentage and frequency and interpreted using statistical tools as IBM Statistical Packages for Social Sciences (SPSS) version 20.

The indicators of training programme’s adoption undergone by tomato growers were identified after intensive review of literature. Based on these indicators, adoption of training programme undergone by tomato growers was analyzed.

Results and Discussion

The training was an action of teaching by experts or subject matter specialists to tomato growers. Training refers to instructions, and scientific way of practice for the cultivation of tomatoes imparted to them. The eight indicators selected for the study included training’s aspect, participation in training, duration of the training programme, training conducting agency, trial, changes observed, adoption of training knowledge/skill and training outcome are discussed below:

Training's Aspect and Participation

The data related to training awareness in the study area presented in the Table 2 disclosed that 93.75 per cent of tomato growers were aware about the training organized in their area followed by 6.25 per cent who had no awareness regarding the training programmes organized in their area. It indicates majority of respondents were well exposed to their surroundings and well informed. It is evident from table 2 that 70.67 per cent of tomato growers participated in a training programme, while 29.33 per cent of tomato growers did not attend any training programme in the study area. Reason might be that they were too preoccupied with their primary work, as nowadays majority of tomato growers have diversified sources of income. Furthermore, some growers were elderly and had common conditions associated with it, such as physical and cognitive issues, which limited their participation in training. The findings of the study are in line with Marbaniang *et al.,* (2020) and Sangavi *et al.,* (2020) who reported that majority (52.50%) of tomato growers participated in training.

Willingness for Future Participation

It is evident from Table 2 that out of 22 number of tomato growers who did not participate in any training, 86.36 per cent of tomato growers were willing to participate in training in the future while 13.64 per cent did not want to participate in any training in future as well. The possible reason for this could be that they were busy with work to earn more income to support their family and some of tomato growers had health issues due to which it held them back from participation in training.

Theme, Duration and Training Conducting Agency

The result revealed that 47.17 per cent of tomato growers participated in organic farming training, followed by 39.62 per cent on tomato package of practices, 35.85 per cent on biofertilizer and pesticides, 22.64 per cent on vermicompost, 20.75 per cent on seeds of high yielding varieties, 16.98 per cent on zero budget natural farming and 15.10 per cent of tomato growers were trained on diseases and pest control related to vegetable crops in the study area. the majority (73.58%) of tomato growers went through a one-day training programme, 16.98 per cent of tomato growers received five days of training and 5.66 per cent of tomato growers had completed a two-day training programme. The remaining 3.78 per cent participated in a three-day training programme. Table 2 delineates that 100 per cent of tomato growers were provided training by the government organization where 37.73 per cent of trainings were provided by Krishi Vigyan Kendra, 28.31 were provided by State Agricultural Management and Extension Training Institute and 33.96 per cent were provided by State Agricultural University. It means that a maximum number of trainings were organized by government agencies.

Trial

Trial is defined as the stage of application of training's ideas by the tomato growers in small scale on their farm. Table 3 displays data on the application of training's experience. The majority of tomato growers i.e., 33.96 per cent applied package of practices of tomato's training concept on their fields, followed by 30.18 per cent biofertilizer and pesticides and organic farming, 16. 98 per cent high yielding and resistant seed varieties.

Despite attending a training programme, training's ideas of organic farming were not applied by 16.98 per cent of tomato growers, zero budget natural farming by11.32 per cent and vermicompost by 7.57 percent did not apply on their farm.

Changes Observed

Changes observed refers to the visible changes observed by tomato growers after applying the training's skills on their field. The fact that 57.46 per cent of tomato growers observed positive changes in quality and quantity of tomato on their field after the application of trainings. Remaining 42.54 per cent didn't observe any changes even after application.

Adoption of training knowledge/skill

Data pertaining to the adoption of training knowledge/skill is presented in Table 5. It is evident that majority (23.40%) of tomato growers adopted organic farming followed by packages of practices of tomato (8.51%), biofertilizer and pesticides (29.78%), high yielding and resistant varieties of seeds (4.25%), vermicompost (4.25%), zero budget natural farming (8.51%), and diseases and pest control (4.25%) for one year.

Table.1 Distribution of indicators on basis of training programme undergone by Tomato Growers

S. No	Indicators	Descriptions
1	Training's aspect	• Awareness about trainings • Number of trainings organized
2	Participation in training	• Number of trainings attended by farmers • Willing to participate in future trainings • Theme areas
3	Duration of training	• Number of days/weekly/ fortnightly /monthly
4	Training conducting agency	• Conducting agency (Government/ Private)
5	Trial	• Decision to accept or reject
6	Changes observed	• Changes observed in the field of farmers
7	Adoption of training knowledge/skill	• Application of knowledge/skills in the respective fields of farmers
8	**Training outcome**	• Level of contentment by the farmers

Table.2 Indicators of adoption of training programmes undergone by tomato growers in the study area

S. No	Indicators	Frequency	Percentage
1	**Training awareness (n=80)**		
	Aware	75	**93.75**
	Not aware	05	**6.25**
2	**Participation in Training (n=75)**		
	Participated	53	**70.67**
	Not participated	22	**29.33**
3	**Willingness for future participation (n=22)**		
	Willing	19	**86.36**
	Not willing	03	**13.64**
4	**Theme of Training (n=53)**		
	Organic Farming	25	**47.17**
	Package of practices of tomato	21	**39.62**
	Biofertilizer and pesticides	19	**35.85**
	High yielding and resistant varieties Seeds	11	**20.75**
	Vermicompost	12	**22.64**
	Zero Budget Natural farming	09	**16.98**
	Diseases and pest control	08	**15.10**
5	**Training duration (n=53)**		
	One day training programme	39	**73.58**
	Two days training programme	03	**05.66**
	Three days training programme	02	**03.78**
	Five days training programme	09	**16.98**
6	**Training conducting agency (n=53)**		
	Private	00	**00**
	Government	53	**100**
	Krishi Vigyan Kendra	20	**37.73**
	State Agricultural Management and Extension Training Institute	15	**28.31**
	State Agricultural University	**18**	**33.96**

Table.3 Distribution of tomato growers on the basis of application of training's experience. (n=53)

S. No	Name of training	Adopted	Rejected
1	Organic Farming	16(30.18)	**09(16.98)**
2	Package of practices of tomato	18(33.96)	**03(5.66)**
3	Biofertilizer and pesticides	16(30.18)	**03(5.66)**
4	High yielding and resistant varieties of seeds	09(16.98)	**02(3.77)**
5	Vermicompost	08(15.09)	**04(7.57)**
6	Zero Budget Natural farming	03(5.66)	**06(11.32)**
7	**Diseases and pest control**	**06(11.32)**	**02(3.77)**

**Multiple Response analysis; Note: Values in parenthesis are percentages*

Table.4 Distribution of tomato growers on the basis of changes observed. (n=47)

S. No.	Changes	Frequency	Percentage
1	Observed	27	**57.46**
2	**Not observed**	**20**	**42.54**

Table.5 Distribution on the basis of continuation of training knowledge/skill. (n=47)

S. No	Name of training	One year	Two years	Implementing till date
1	Organic Farming	11(23.40)	03(6.38)	**02(4.25)**
2	Package of practices of tomato	04(8.51)	02(4.25)	**15(31.91)**
3	Biofertilizer and pesticides	14(29.78)	00	**02(4.25)**
4	High yielding and resistant varieties of seeds	02(4.25)	00	**10(21.27)**
5	Vermicompost	02(4.25)	05(10.63)	**02(4.25)**
6	Zero Budget Natural farming	04(8.51)	05(10.63)	**00**
7	**Diseases and pest control**	**02(4.25)**	**00**	**06(12.76)**

**Multiple Response analysis; Note: Values in parenthesis are percentages*

Table.6 Distribution of tomato growers on the basis of training outcome. (n=47)

S. No.	Results	Frequency	Percentage
1	Satisfied	27	**57.46**
2	Neutral	18	**38.29**
3	**Unsatisfied**	**02**	**4.25**

The organic farming (6.38%), package of practices of tomato (4.25%) vermicompost (10.63%), and zero budget natural farming (10.63%), were adopted for two years by tomato growers. The training's knowledge/ skill implemented by tomato growers till date on their field were organic farming (4.25%), package of practices of tomato (31.91%), biofertilizer and pesticides (4.25%), high yielding and resistant varieties of seeds (21.27%), vermicompost (4.25%), and diseases and pest control (12.76%), respectively.

Training Outcome

Results refer to the level of satisfaction tomato growers have after the adoption of training imparted to them. Data presented in Table 52 clearly shows that 57.46 per cent of tomato growers after adoption were satisfied with the training's results. 38.29 had neutral outcomes after the

adoption of training. While the remaining 4.25 per cent of tomato growers were unsatisfied with the training's outcome.

It may be inferred from the above findings that the tomato producers training status has both strength and room for development. Tomato growers have proven to understand the importance of training programmes and were actively willing to participate in it.

Therefore, there is a need for the involvement of other training conducting agencies such as private, voluntary, and non-government organizations as well to reach out to maximum growers, to better meet tomato growers' needs by updated information with current changes in technologies which will encourage the adoption of improved methods.

It is recommended that tomato growers' access to the facilities and resources they required, including irrigation systems, high-quality seeds, fertilizer, and equipment, need to be improved. Tomato growers must be provided with more comprehensive training based on an assessment of their training needs.

Further compulsory follow-up, including visits and consultations, is suggested to help address implementation challenges. This is with regard to the training that had been provided and the training adopted by tomato growers. Therefore, good extension service at village level training programmes and selection of opinion leaders needs to be incorporated for the selection of voluntary leaders to multiply training impacts.

Author Contribution

Tenzing Palmu Sherpa: Investigation, formal analysis, writing—original draft. Pratima Rana: Validation, methodology, writing—reviewing.

Data Availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethical Approval Not applicable.

Consent to Participate Not applicable.

Consent to Publish Not applicable.

Conflict of Interest The authors declare no competing interests.

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How to cite this article:

Tenzing Palmu Sherpa and Pratima Rana. 2024. A Study on Training Undergone by Tomato Growers in Solan District of Himachal Pradesh, India. *Int.J.Curr.Microbiol.App.Sci.* 13(5): 69-75.
doi: https://doi.org/10.20546/ijcmas.2024.1305.010