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A study on training needs of chilli growers in Andhra Pradesh, India

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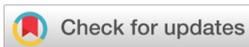
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Abstract

The present study assesses the training needs of chilli growers in Andhra Pradesh. An ex-post facto research design was adopted for the study. Two districts, Guntur and Prakasam, were purposefully selected for the study, as they cover the highest area of chilli cultivation. Two mandals were selected from each district purposively based on the highest area and from each mandal, 5 villages were selected. Thirteen respondents from each village were selected randomly. Thus, a total sample size of 260 was selected for the study. After a thorough review of the literature, focal group discussions with chilli growers and consultation with experts, 7 different categories of training areas were identified. The data was collected using the personal interview method, using a pre-tested, well-prepared interview schedule and ranked based on mean score. The study revealed that among all the different categories of training needs, the respondents perceived crop protection and crop production as the most important training needs, with mean scores of 2.324 and 2.159 and were ranked first and second. Training needs pertaining to marketing, harvesting and post-harvest handling, processing and value-addition, nursery management and mechanization occupied the next 3rd to 7th ranks respectively. Hence, the extension personnel, scientists and policymakers shall keep the results of this study in view regarding what content needs to be focused on while preparing training programs for chilli farmers.

Keywords

chilli crop production; post-harvest; agriculture

Introduction

Agriculture is the use of natural resources to support human life and produce income. It combines the most advanced technologies and modern production methods with creativity, resourcefulness and know-how needed to raise livestock and grow crops. India is an agricultural nation since almost 70 % of its people make their living from farming, particularly in the countryside, where the majority of people live entirely on farming. This is due to the fact that they inherited their ancestor's farming skills and knowledge. It is believed that India's agriculture industry is currently poised for a revolutionary technological shift. The new farm management strategy ensures that individual fields or crops receive precisely the inputs they need for maximum yield by precisely mapping farmlands using Global Positioning

System (GPS) and Artificial Intelligence-enabled software. The importance of commercial and horticultural crops has also been increased. One of the most significant spices in the world is chillies (*Capsicum annuum* L.). It belongs to the Solanaceae family. It has a significant role in human diets. Today, chillies are used as a spice and to make beverages and medications all over the world. While some types of chillies are well-known for their vibrant red colour due to the pigment "capsanthin," others are noted for their intense heat, which is ascribed to "Capsaicin."

The only nation with a wealth of types and varying quality characteristics is India. Vitamins A and C are extremely abundant in chillies. They are also a great source of iron, magnesium, and potassium. These are abundantly cultivated in the southern part of India as its topography and climatic conditions were well suited for chilli cultivation. Despite the fact that the demand for chilli is rising both domestically and internationally, the nation's current output and productivity of the spice only make up between one-fourth and one-third of what is needed. It is a pre-requisite to analyse the needs of the chilli farmers so that the output of chilli can be boosted significantly to meet public demand.

The majority of Indonesia's chilli growers require training in irrigation, pest management, marketing techniques, and group success (1). Training needs assessment of the tomato farmers indicated that most of them require training on the use of manures and fertilizers as well as plant protection techniques like insect, pest and disease control (2). The most important training need among all the training needs of groundnut farmers, with the highest mean score, is plant protection measures (3). In Bangladesh, farmers prioritize disease management, followed by pest management for crop protection. Marketing accorded the highest response from the farmers in the overall assessment of training needs (4). Vegetable farmers require extensive training in harvesting of vegetables. Additionally, the training needs of farmers in other aspects of vegetable cultivation were medium in field preparation, sowing, manure and fertilizer, management, intercultural operations, plant protection and marketing (5). Tomato farmers are in training need of post-harvest technologies such as sorting, grading, storage methods, transportation, preservation and processing techniques (6). The majority of Groundnut farmers need training in crop production and protection aspects (7). When it comes to training requirements, rice farmers were deemed high priority in areas such as water management, weed control, sowing and transplanting, nutrient management and seed selection and treatment (8).

According to a study conducted on the training needs of farmers on new agricultural practices revealed that the majority of farmers' training needs involve vermicomposting in relation to fertilizers and improved varieties of various crops regarding seeds; in terms of pesticides, the majority of the problems are related to the control of disease and insects with the appropriate pesticides (9). Research studies on the training needs of cotton growers indicated that they needed training on topics pertaining to conversion and certification requirements, quality standards, plant protection, sowing, land management and soil health management, harvesting and postharvest handling in order of precedence (10). A survey conducted on rice farmers revealed that the most important training needs were regarding weed management, disease and pest control as well as seed and seedling care, while land preparation was the least important training need (11). The majority of mustard farmers stated that they needed training on field preparation followed by plant protection measures, use of manures and fertilizers, harvesting, sowing and post-harvest technology (12). Farmers had a major need for integrated farming systems, integrated pest and disease management and soil and water conservation technology. It also further concluded that nursery management was the top training need in horticulture (13).

The present study deals with the training needs assessment of chilli growers. Training needs could be defined as the gap between what is and what ought to be. It indicates the gap that was present and which has to be addressed to attain full potential. Thus, to increase the effectiveness of training, it should be based on farmers' felt needs. The training program, which is not need-based, may have little impact on bringing desired change in the system. Keeping this fact in consideration, a future study of the training needs of chilli farmers will be undertaken. This study illuminated the major training needs of the chilli growers of Andhra Pradesh. It helps to analyze and address the mentioned needs in order to increase the production and productivity of chilli and meet global demand. Hence, the extension personnel, scientists and policymakers shall keep the results of this study in view regarding what content needs to be focused on while preparing training programs for chilli farmers.

Materials and Methods

An ex-post facto design in which the investigator studies the phenomenon that has already happened was adopted for the study. The present study assesses the training needs of chilli growers of Andhra Pradesh in 2021-22. Andhra Pradesh state was purposively selected as it has the highest area under chilli crop as well as for easy rapport as the investigator hails from the same state. Two districts, Guntur and Prakasam, were purposively selected for the study as they occupy the first 2 places in the area of chilli cultivation. Two mandals from each district were selected purposively based on the highest area and from each mandal, 5 villages were selected randomly for the study. From each village, 13 respondents were selected for the study randomly. Thus, a total of 260 respondents, 65 respondents from each mandal and 130 from each district, constituted the sample. The training needs were framed after profound discussions with experts and focal group discussions with chilli growers during the pre-testing schedule. Thus, the training needs under different criteria were identified and incorporated into the final schedule. The data

was collected on a three-point continuum of very important, important and least important training needs and were scored as 3, 2 and 1 respectively. The data was collected using the personal interview method, using a pre-tested, well-prepared interview schedule.

The collected data was tabulated, analyzed and interpreted for the final results. The overall score given by all the respondents was worked out to derive the mean score and based on the obtained mean scores, the items were ranked in each category. Based on the mean score obtained by all the items in each category, the categories were also ranked. Thus, the training needs of the chilli growers have ranked accordingly.

Results and discussion

The training needs of the respondents were grouped under different categories and were given ranks according to the importance perceived by the respondents to each training need according to their mean scores, which were displayed here in Table 1. In nursery management, "Nursery bed preparation" and "selection of varieties" were found to be the major training needs, with mean scores of 1.869 and 1.788 respectively. It's important to prepare a nursery bed in chilli according to the dimensions, such as length, width and height of the bed, which will facilitate proper germination of the seeds. Chilli farmers are interested in increasing their yield. So, they need training on different varieties of chilli regarding their yield, pungency, colour and days to maturity.

Table 1. Training needs of chilli growers in Andhra Pradesh.

Sl. No.	TRAINING NEED	Mean Score	RANK
I	**NURSERY MANAGEMENT**	**1.758**	**Sixth**
	Selection of varieties	1.788	2
	Seed treatment	1.765	4
	Nursery bed preparation	1.869	1
	Sowing depth	1.769	3
	Water management in nursery	1.723	5
	Nutrient management in nursery	1.719	6
	Protection measures in nursery	1.673	7
II	**PRODUCTION**	**2.159**	**Second**
	Land preparation	2.062	5
	Transplanting	2.262	3
	Fertilizer management	2.269	2
	Application of growth regulators	2.000	6
	Irrigation management	2.331	1
	Weed control	2.231	4
	Nutritional deficiency symptoms and Application of micro nutrients	1.958	7
III	**PROTECTION**	**2.324**	**First**
	Field scouting techniques	2.285	3
	Insect & mite management	2.354	2
	Bio control agents	2.273	5
	Disease management	2.508	1
	Installation of traps (sticky traps, light traps, pheromone traps)	2.285	4
	Pesticide application techniques and safety measures	2.242	6
IV	**MECHANIZATION**	**1.639**	**Seventh**
	Chilli transplanter	1.723	1
	Chilli harvester	1.600	3
	Chilli grader	1.592	4
	Chilli dryer	1.642	2
V	**HARVESTING AND POST HARVEST HANDLING**	**1.799**	**Fourth**
	Harvesting techniques	1.862	1
	Grading techniques	1.850	2
	Different storage methods	1.735	4
	Different post-harvest losses and their control mechanism	1.750	3

VI	**PROCESSING AND VALUE-ADDITION**	**1.763**	**Fifth**
	Cleaning techniques	1.635	4
	Drying techniques	1.842	2
	Different value-added Products	1.854	1
	Packaging techniques	1.723	3
VII	**MARKETING**	**2.083**	**Three**
	Cooperative marketing	2.177	2
	Contract marketing	1.992	4
	Organizations/agencies providing marketing services and Marketing schemes of govt./Public sector	2.081	3
	Market intelligence	2.296	1
	Export requirements and procedures	1.869	5

The perusal of the above table revealed that "Irrigation Management" and "Fertilizer Management" were ranked first and second with mean scores of 2.331 and 2.269 respectively, among the needs on crop production. The farmers were interested in getting trained in water-conserving irrigation techniques like drip irrigation methods. In a study, the majority of farmers need training in irrigation (1). In the present study, farmers also expressed their will to learn about fertilizer management by using biofertilizers and organic fertilizers that boost plant health and also the environment. In a study, most important training need expressed by the majority of farmers is the use of fertilizers (2).

Among the training needs on crop protection, "Disease Management" and "Insect and mite Management" were perceived as the most demanding training needs, with mean scores of 2.508 and 2.354 respectively. The yield that the farmers procure after a successful crop depends mostly on the crop protection techniques they follow to maintain a disease and pest-free healthy crop. Hence, the majority of the chilli farmers expressed that they require training in disease and pest management. In a study concluded that the most important training need among all the training needs of groundnut farmers with the highest mean score is plant protection measures (3). The research study stated that farmers prioritized disease management, followed by pest management, in crop protection (4).

The table depicted that the chilli growers expressed "chilli transplanter" and "chilli dryer" as major training needs among all the needs related to mechanization, with mean scores of 1.723 and 1.642 respectively. The extent of mechanization in chilli was very meagre when compared to other crops. So, the farmers expressed their intention to receive training on chilli transplanters as it facilitates precise control over the depth at which chilli seedlings are planted, minimizes damage during the transplantation process and lowers labour usage. They also illustrated that they would be benefited if they received training on a chilli dryer as it decreases the drying time of chillies, ensures uniform drying, improve the quality of dried chilli in terms of colour and can be used in bad weather conditions.

The respondents quoted "Harvesting techniques" as the most important training need and occupied first place with a mean score of 1.862 among harvest and post-harvest handling. The item "Grading techniques" occupied second place with a mean score of 1850. Extension personnel and other agricultural functionaries gave little importance to horticultural and commercial crops when compared to food crops. So, the number of training being conducted and the frequencies of technical advice rendered were meager, resulting in faulty harvesting and poor handling after harvesting. So, the farmers expressed their training needs on harvesting techniques, which will ensure superior quality of produce. The study done by Poonia MK and Dhaka BL concluded that the majority of the farmers required extensive training in harvesting vegetables (5). They also expressed their training needs on grading techniques like colour, size and moisture content to improve their marketing margins. The research study concluded that most of the tomato farmers are in training need of post-harvest technologies such as sorting grading (6).

Among the training needs emphasizing processing and value-addition, the respondents perceived "Different Value-added products," with a mean score of 1.854, as the major training need, followed by "Drying techniques," with a mean score of 1.842. As chilli is not a major crop or food crop, the MSP allocated by the government is not applicable. Hence, the prices were always fluctuating and were fixed by the traders rather than on demand. Thus, the farmers expressed their need to process and produce different value-added products and expressed their training needs on different value-added products that could be produced from chilli. They also require training on different drying techniques and methods in order to maintain the requisite moisture content pertaining to the processing procedures.

Among the training needs related to marketing, "Market intelligence" ranked first with a mean score of 2.296, followed by "Cooperative Marketing" with a mean score of 2.177. The respondents elucidated that they were exploited and incurred losses due to the poor marketing strategies they followed. Hence, they expressed their need to attain training on different marketing strategies and means to increase their market intelligence regarding existing market prices, supply and demand conditions, competitors and the overall market environment. They also require training on the process of forming and functioning CIGs and FIGs for the collective marketing of their produce at fair prices. A study concluded that marketing accorded

the highest response from the farmers in the overall assessment of training needs (4).

The pigeonhole view of the table makes it clear that among all the different categories of training needs, the chilli respondents perceived crop protection and crop production as the most important training needs, with mean scores of 2.324 and 2.159 and were ranked first and second. A study revealed that the majority of the farmers need training in crop production and protection aspects (7). Marketing, harvesting and post-harvest handling, processing and value-addition, nursery management and mechanization occupied the next 3rd to 7th ranks with mean scores of 2.083, 1.799, 1.763, 1.758 and 1.639 respectively. As crop protection and crop production were the major domains responsible for higher yields and returns, the farmers expressed their training needs to them.

Conclusion

The chilli farmers perceived crop protection and crop production as the most important training needs, followed by Marketing, harvesting and post-harvest handling, processing and value-addition, nursery management and mechanization. Chilli is an important horticultural crop and is in high demand in the global market. There is ample need to increase the production and productivity of chilli. This study attempted to analyze the extent of different training needs perceived by chilli growers. The extension personnel, scientists and policymakers shall keep the results of this study in view regarding what content needs to be focused on while preparing training programs for chilli farmers. Hence, by incorporating the aforesaid training, the farmer's skills could be improved to get higher yields and ultimately, the socio-economic life of the chilli growers could be improved.

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Authors' contributions

KV has done data collection, research analysis and manuscript preparation. BPM guided me in the preparation of the interview schedule, research and drafting of the manuscript.

Compliance with ethical standards

Conflict of interest: The authors declare that they have no competing interests.

Ethical issues: None.

References

1. Hasan N, Widiyanto W, Wibowo A. Training need analysis model at Central Java agricultural training center. In: Subejo, Matthew NK, Benalywa ZA, editors. ICSASARD2021: Proceedings of 1st International Conference on Sustainable Agricultural Socio-economics, Agribusiness and Rural Development. Atlantis Press: Springer. 2021;85-91. https://doi.org/10.2991/aebmr.k.211214.012

2. Pale E, Ram D, Devi MD, Singh NO. Training needs assessment of tomato growers in West Jaintia Hills district of Meghalaya. International Journal of Current Microbiology and Applied Sciences. 2018;8(5):2147-51. https://doi.org/10.20546/ijcmas.2019.805.252

3. Rajaguru S, Kalidasan T, Kavaskar M, Vengatesan D, Ramesh P. Training needs of farmers in adoption of groundnut production technologies in Ariyalur district of Tamil Nadu. International Journal of Innovative Technology and Exploring Engineering. 2019;8(12):2278-3075. http://doi.org/10.35940/ijitee.L3366.1081219

4. Rahman MS, Khatun M, Rahmam ML, Haque SR. Assessment of training needs on crop production for farmers in some selected areas of Bangladesh. Bangladesh Journal of Agricultural Research. 2018;43(4):669-90. https://doi.org/10.3329/bjar.v43i4.39165

5. Poonia MK, Dhaka BL. Training need assessment of vegetable farmers in Bundi district of Rajasthan. Indian Journal of Extension Education. 2011;47(1&2):80-85. https://epubs.icar.org.in/index.php/IJEE/article/view/128545

6. Enemosah APO, Pelemo, JJ, Adeyemi OA, Sunday Y, Akubo D, Iyaji J, Alabi OB. Assessment of post-harvest management training needs for tomatoes farmers in Niger state, Nigeria. Agricultural Society of Nigeria Proceedings of 56th Annual Conference. 2022;26-30.

7. Chowdary KR, Babu GP, Mitnala J. A study on training need assessment among farmers in Kurnool district of Andhra Pradesh. Journal of Pharmacognosy and Phytochemistry. 2018;7(5):08-11.

8. Leihaothabam NS, Singh AT, Stina K, Singh MS, Singh RS, Vivekananda Y, Shyamananda KC. Study on training needs assessment of rice growing farmers in Imphal East district, Manipur, India. International Journal of Current Microbiology and Applied Sciences. 2020;9(3):66-74. https://doi.org/10.20546/ijcmas.2020.903.008

9. Chhodavadia HC, Joshi NS, Parmar VS, Patel NL, Prajapati PJ. Training needs of farmers with respect to new agricultural practices. International Journal of Current Microbiology and Applied Sciences. 2018;7(11):577-82. https://doi.org/10.20546/ijcmas.2018.711.069

10. Prashanth P, Reddy MJM, M, Rao IS. Training needs of cotton farmers on organic cotton production technologies in Andhra Pradesh. Agriculture Update. 2013; 8(1&2):14-18.

11. Kshash BH. Training needs of rice farmers in Mahanawiyah district, AL-Qadisiya province, Iraq. Turkish Journal of Agriculture-Food Science and Technology. 2016;4(12):1072-76. https://doi.org/10.24925/turjaf.v4i12.1072-1076.714

12. Pandey RK, Doharey RK, Singh RK, Mishra AK, Jeetendra P, Manoj K, Ashish D. A critical analysis on training needs of farmers about mustard production technology. International Journal of Agriculture Sciences. 2015;7(14):892-95.

13. Sajeev MV, Singha AK, Venkatasubramanian V. Training needs of farmers and rural youth: An analysis of Manipur state, India. Journal of Agricultural Sciences. 2017;3(2):103-12. https://doi.org/10.1080/09766898.2012.11884691