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Constraints encountered by eggplant (Brinjal) growers in utilization of chemical pesticides

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Abstract
Eggplant crop is damaged by more than 53 important insect pests and out of 13-14 per cent of pesticides used on vegetables in India, eggplant receives the maximum pesticide sprays after chilli**.** This investigation was aimed at documenting constraints encountered by Eggplant (Brinjal) growers in utilization of chemical pesticides and suggestions to overcome the constraints. The study was conducted in 10 villages in the Rahuri and Rahata tahasils in Ahmednagar district of Maharashtra state using ex-post facto research design. The data were collected from 120 respondent Eggplant growers using simple random sampling and personal structured interview method of data collection. It was observed that poor knowledge about nature of chemical pesticides and their application (67.50%) and lack of knowledge about the incidence of pests (59.16%), were the two major constraints reported by the farmers in utilization of chemical pesticides in brinjal cultivation. Further, majority of the respondents suggested giving subsidy for purchase of plant protection equipment's (80.83%), imparting knowledge about incidence of different pests to the eggplant growers (77.50%), and organization of a large number of demonstrations on use of chemical pesticides (72.50%) in eggplant cultivation.

Keywords: constraints, eggplant, pesticide utilization, chemical pesticides

Introduction
Eggplant (*Solanum melongena* L.) is one of the world's major vegetable crops grown in the world, especially in the tropics and subtropics. It belongs to family *Solanaceae* and genus Solanum. It is originated in South East Asia and has spread to many countries. It is a widely grown vegetable in Asian countries. India is the world's second largest producer of brinjal only after China. In India it is adopted to a wide range of climatic condition from north to south and east to west. In India the total area under cultivation of brinjal crop is 744 thousand ha with total production of 12682 TMT (MoA&FW, 2020) [3]. In Maharashtra, total area under brinjal cultivation is 22.48 thousand ha with total production of 429.91 thousand metric tonnes (MoA&FW, 2019) [2]. In Maharashtra brinjal is mainly grown in kharif and rabi season but it is also grown in summer season wherever the irrigation facilities are available. In Maharashtra Ahmednagar, Nashik, Jalgaon, Pune are important brinjal growing districts. The commercial production of the Eggplant crop in terms of quantity and quality depends on a large number of factors, including adoption of appropriate and timely plant protection measures. Eggplant crop is damaged by more than 53 important insect pests, out of which 8 species are considered as major pests causing severe damage to the crop. Since green revolution, the use of chemical pesticides and insecticides in particular has become popular among Indian farmers for the control of insect pests. The figures of consumption of chemical pesticides show the clear picture of increasing demand for chemical pesticides which was estimated at 70668 metric tons in the year 2020-21 (MoA&FW, 2021) [4]. Out of 13-14 per cent of pesticides used on vegetables in India, eggplant receives the maximum pesticide sprays after chilli (Kodandaram *et al.*, 2013) [1]. The present study was focused on documenting constraints encountered by Eggplant (Brinjal) growers in utilization of chemical pesticides and suggestions to overcome the constraints.

Methodology
For the present study 120 respondent Eggplant growers were selected from 10 villages in the Rahuri and Rahata tahasils in Ahmednagar district of Maharashtra state. For this purpose, a list of brinjal growing villages of Rahuri and Rahata tahsil was obtained from the Taluka Agriculture Officer. There are 95 villages in Rahuri tahsil out of these 5 villages were selected randomly. There are 36 villages in Rahata tahsil out of these 5 villages were selected

randomly. Thus, 10 villages were selected from Rahuri and Rahata tahsils of Ahmednagar district for the study purpose on the basis of maximum area under brinjal crop. After that, a list of brinjal growers from the selected villages was prepared with the help of village level functionaries namely Gramsevak and Agriculture Assistant. This list constituted the sampling frame for selecting individual farmers as respondents of the study. Thus, twelve brinjal growers from each village were selected randomly from this sampling frame making total sample size to 120. Ex-post facto design of social research was used for study. Collection of the data from the respondents was completed by personally interviewing with the help of structured interview schedule.

Research findings

1. Constraints faced by the eggplant growers

Constraints act as a barrier in use of Pesticides effectively. With this view in mind, the respondents were specifically asked to enumerate the constraints they faced in utilizing the pesticides. The data were collected on the constraints faced by the eggplant growers in utilization of pesticides has been analysed and findings are presented in table 1.

Table 1: Constraints faced by the eggplant growers regarding utilization of pesticides

Sr. No.	Constraints	No.	Percentage
1.	Poor knowledge in terms of doses, nature of chemicals and application details	81	67.50
2.	Lack of knowledge about incidence of pests	71	59.16
3.	Lack of maintenance facility of plant protection equipment's nearby place	47	39.16
4.	Non availability of plant protection appliances	29	24.16
5.	High cost of pesticides	23	19.16

It was observed from Table 1. that, majority of respondents (67.50%) had faced the constraints regarding poor knowledge in terms of doses, nature of chemicals and application details, followed by lack of knowledge about incidence of pests (59.16%), lack of maintenance facility of plant protection equipment's nearby place (39.16%), non-availability of plant protection appliances (24.16%) and high cost of pesticides (19.16%). Thus, inadequate knowledge about nature of chemical pesticides and their application and the incidence of pests are the two major constraints reported by the farmers in utilization of pesticides in brinjal cultivation. The results were in consistent with the findings of Zade (1998) [6].

2. Suggestions given by the eggplant growers to overcome constraints

Considering the constraints faced by the brinjal growers in utilization of chemical pesticides, the respondents were also asked to provide suggestions to overcome constraints faced them and help them to eliminate problems in utilization and application of chemical pesticides to control pest incidences in eggplant cultivation.

Table 2: Suggestions given by eggplant growers to overcome constraints

Sr. No.	Suggestions	No.	Percentage
1.	Government should Give subsidy for plant protection equipment's.	97	80.83
2.	Knowledge about incidence of different pest should be given.	93	77.50
3.	Large no. of demonstration on use of pesticide should be organized.	87	72.50
4.	Pesticides should be available at reasonable rate.	71	59.16
5.	Pesticides should be easily available.	45	37.50

The data revealed that a majority 80.83 per cent of the respondents suggested that government should give subsidy for purchase of plant protection equipment's. Other major suggestions made by the respondents were imparting knowledge about incidence of different pests to the eggplant growers (77.50%), organization of a large number of demonstrations on use of pesticide (72.50%). Further, 59.10 per cent of the respondents suggested that pesticides should be available at reasonable rate and 37.50 per cent of the respondents suggested that pesticides should be easily available. The results were similar with the findings of Shinde *et al.* (1997) [5].

Conclusion

The study concluded that the eggplant grower's poor knowledge about nature of chemical pesticides and their application and lack of knowledge about the incidence of pests were the two major constraints in appropriate utilization of chemical pesticides in eggplant cultivation. These constraints can be overcome through implementation of appropriate farmer suggested measures such as imparting knowledge about incidence of different pests to the eggplant growers and organization of a large number of demonstrations on use of chemical pesticides in eggplant cultivation by the agricultural extension agro-advisory service providers.

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