



ISSN (E): 2277- 7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2021; SP-10(12): 39-41
© 2021 TPI

www.thepharmajournal.com

Received: 28-10-2021

Accepted: 30-11-2021

Ahire MC

Head, Department of
Agricultural Extension and
Communication, Post Graduate
Institute, MPKV, Rahuri,
Maharashtra, India

Dhadwad MB

Assistant Professor, Department
of Agricultural Extension and
Communication, Post Graduate
Institute, MPKV, Rahuri,
Maharashtra, India

Chougule SB

Research Scholar, Department of
Agricultural Extension and
Communication, Post Graduate
Institute, MPKV, Rahuri,
Maharashtra, India

Landage NN

Research Scholar, Department of
Agricultural Extension and
Communication, Post Graduate
Institute, MPKV, Rahuri,
Maharashtra, India

Corresponding Author

Ahire MC

Head, Department of
Agricultural Extension and
Communication, Post Graduate
Institute, MPKV, Rahuri,
Maharashtra, India

Utilization pattern of chemical pesticides among eggplant (Brinjal) grower

Ahire MC, Dhadwad MB, Chougule SB and Landage NN

Abstract

The present study was aimed at understanding the utilization pattern of chemical pesticides by Eggplant (Brinjal) growers in terms of combination of chemical pesticides used, nature of chemical pesticides used, farmer's preference for the chemical pesticide use and extent of chemical pesticide use by the eggplant growers. 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 the majority (50.83%) respondents used two-three pesticides along with fungicides to control pests in eggplant crop, majority of (44.17%) the respondents used organo-phosphates and chlorpyrifos was the most preferred chemical pesticide to control the pests in eggplant crop. Moreover, it was also observed that an alarming number of the respondent eggplant growers (48.34%) used above recommended quantity of pesticides, and majority of respondents (61.67%) sprayed pesticides at inappropriate stages of crop.

Keywords: eggplant, chemical pesticide utilization, brinjal growers, utilization pattern

Introduction

The chemical pesticides are effective in increasing crop production by suppressing level of insect pests. A majority of population in India is engaged in agriculture and is therefore exposed to the pesticides use in agriculture. Pesticides, together with fertilizer and high yielding varieties have helped Indian farmers to achieve significant increase in crop productivity since mid-1960s. During the initial years of green revolution, effectiveness of pesticides was so unambiguous that soon these over shadowed the traditional method of pest control. The average per hectare consumption of pesticides in India had increased from 3.2 gm in 1954-55 to 570 gm in 1996 (Bami, 1996) [1]. The present use of pesticides in India was 480 gm per hectare which is very low as compared to Taiwan (17kg/ha) followed by Japan (16.5kg/ha) and US (4.5 kg/ha) (Kumarasamy, 2008) [4]. 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) [5]. 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) [2]. However, their indiscriminate use has adverse ecological and socio-economic consequences. Chemical pesticides can cause resurgence by killing the natural enemies of the targeted insect pests. Pests also become resistant to chemical pesticides and significantly increase crop losses. Pesticides do not provide lasting control and needed repeated application. Continued use of pesticides builds up high level of toxic residues in food, ground water and air. In this context, the present study was undertaken to study the chemical pesticide utilization pattern among Eggplant growers in terms of combination of chemical pesticides used, nature of chemical pesticides used, farmer's preference for the chemical pesticide use and extent of chemical pesticide use by the eggplant growers.

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

In this investigation, utilization pattern refers to the use of different pesticides in different combination, type of pesticides used based on their nature and farmers preferences for use of pesticides. The information about utilization pattern of pesticides of the respondents were collected, tabulated and analyzed. The results are presented with the following heads.

1. Combination of pesticides used

The combination of pesticides means that the brinjal growers use the different pesticides solely or in the combination with fungicides. The results are presented in Table 1.

Table 1: Distribution of the respondents on the basis of the combination of pesticides used

Sr. No.	Number of combinations	No. of respondents (N=120)	Percentage
1	No combination	26	21.67
2	Two-three pesticides along with fungicides	61	50.83
3	Combine any two pesticides and apply	33	27.50
	Total	120	100.00

From Table 1 it is revealed that the majority (50.83%) respondents used two-three pesticides along with fungicides to control pests in eggplant crop. Further, 27.50 per cent respondents used combination of any two pesticides and the remaining 21.67 per cent respondents used pesticides solely. These results were in consistent with the findings of Krishna Murthy and Dhananjaya (2007) ^[3].

2. Classification of pesticides used based on their nature

The chemical pesticides used by the eggplant growers were classified in two categories i.e., based on chemical group and mode of action. The data are presented in Table 2.

Table 2: Distribution of the respondents on the basis of type of pesticides used

Sr. No.	Nature	No. of respondents (N=120)	Percentage
I Based on chemical group			
1	Organo Chlorinated	28	23.33
2	Organo Phosphate	53	44.17
3	Synthetic pyrethroids	39	32.50
	Total	120	100.00
II Based on mode of action			
1	Systemic + Contact	65	54.16
2	Systemic	34	28.34
3	Contact	21	17.50
	Total	120	100.00

From Table 2 it is observed that that majority of (44.17%) the respondents used Organo phosphates, followed by 32.50 per

cent of the respondents used synthetic pyrethroids and 23.33 per cent of the respondents were used organo chlorinated pesticides. Further, based on the mode of action of pesticides it is observed that majority of (54.16%) the respondents used Systemic + contact pesticides, followed by use of systematic pesticides (28.34%) and use of contact pesticides (17.50%). These results were in consistent with the findings of Krishna Murthy and Dhananjaya (2007) ^[3].

3. Farmers' preferences for the use of pesticides

The different types of pesticides are ranked according to their use by the respondents and the results are presented in Table 3.

Table 3: Preferences of pesticides by respondents

Sr. No.	Name of the chemical Pesticide	Rank
1.	Chlorpyrifos	I
2.	Sevin	II
3.	Quinalphos	III
4.	Dimethoate	IV
5.	Malathion	V

From Table 3 it is observed that Chlorpyrifos was ranked first by the respondents, followed by Sevin at the second rank, Quinalphos at third rank, Dimethoate at fourth rank and Malathion at fifth rank. These results were in accordance with the findings of Zade (1998) ^[7].

4. Extent of use of pesticides by the brinjal growers

Extent of use of pesticides refers to the quantity of chemical used, number of times pesticides applied, time of spraying and spray direction. The information about extent of use of pesticides by were collected, tabulated, analysed and the result are presented in Table 4.

Table 4: Distribution of the respondents according to extent of use of pesticides

Sr. No.	Pesticides	No. of respondents (N=120)	Percentage
I Quantity of chemicals			
1	Recommended quantity	27	22.50
2	Above recommended quantity	58	48.34
3	Below recommended quantity	35	29.16
	Total	120	100.00
II No. of spays applied			
	Recommended	23	19.17
	Above recommended no. of sprays	64	53.33
	Below recommended no. of sprays	33	27.50
	Total	120	100.00
III Stages of crop			
1	Sprayed at appropriate stages of the crop	46	38.33
2	Sprayed at inappropriate stages of the crop	74	61.67
	Total	120	100.00
IV Time of spraying			
	Morning	64	53.33
	Afternoon	15	12.50
	Evening	41	34.17
	Total	120	100.00
V Spray direction			
	Along the wind direction	86	71.67
	Against the wind direction	34	28.33
	Total	120	100.00

From Table 4 it is observed that majority of respondents (48.34%) used above recommended quantity of pesticides, followed by 29.16 per cent of the respondents used below recommended quantity of pesticides and 22.50 per cent of respondents used recommended quantity of pesticides. Further it is observed that majority of the respondents 53.33 per cent used above recommended number of sprayers, followed by 27.50 per cent of the respondents used below recommended number of sprayers and 19.17 per cent of the respondents used recommended number of sprayers.

It is also noticed that majority of respondents (61.67%) sprayed pesticides at inappropriate stages of crop, followed by 38.33 per cent of respondents sprayed pesticides at appropriate stages of crop. Further, majority of respondents (53.33%) sprayed pesticides in the morning, followed by 34.17 per cent of the respondents' sprayed pesticides in the evening and 12.50 per cent of respondent's sprayed pesticides in the afternoon. Further, it is observed that majority of respondents (11.67%) sprayed the pesticides along the direction of wind, followed by 28.33 per cent of respondents sprayed the pesticides against the direction of wind. The results were similar with the findings of Shinde (1997) [6].

Conclusion

The study concluded that the eggplant growers used chemical pesticides in combination of 2-3 pesticides along with fungicides to control pests in eggplant crop. Most of the chemical pesticides used by the growers belonged to organo-phosphate group; were either systemic or contact pesticides in nature and chlorpyrifos was the most preferred chemical pesticide to control the pests in eggplant crop. However, an alarming number of the respondent eggplant growers used more than recommended dose of pesticides that too at inappropriate stages of crop growth. This is a major area of concern in the utilization of chemical pesticides by the eggplant growers.

References

1. Bami HL. Pesticide use in India ten questions. Pest. Inform 1996;21(4):19-26.
2. Kodandaram MH, Rai AB, Jaydeep H. Susceptibility of brinjal shoot and fruit borer *Leucinodes orbonalis* and whitefly *Bemisia tabaci* to novel anthranilic diamide insecticide cyantraniliprole 10% OD. In: National Symposium on Abiotic and Biotic Stress Management in Vegetable Crops, IIVR, Varanasi, 2013, 12-14.
3. Krishna Murthy MK, Dhanajaya B. Utilization pattern and extent of use of pesticides by brinjal growing farmers. J of Extn. Educ 2007;19(1):135-140.
4. Kumarasamy S. Crop loss due to pest attack pegged at Rs. 1.40 lakh crores. Crop Care 2008;33(4):73-74.
5. MoA&FW. Ministry of Agriculture and Farmers Welfare, Govt. of India. (ON2744) & Past Issues 2021. Available online at <https://www.indiastatagri.com/table/agriculture/state-wise%20estimated%20demand%20of%20pesticides%20in%20india/718031>
6. Shinde PS, Bhopale RS, Vaidya VR. Adoption of integrated pest management practices by cotton growers. Maharashtra J Extn. Edn 1997.
7. Zade PN. Constraints in adoption of soybean production technology by farmers. M.Sc. (Agri), Unpublished Thesis, Dr. PDKV, Akola (M.S.) India 1998.