Raj. J. Extn. Edu. 19 : 152-155, 2011

PESTICIDE USE BEHAVIOUR OF OKRA GROWERS IN SOUTHERN RAJASTHAN

Lalita Rawal*, F.L. Sharma and B. Upadhyay*****

ABSTRACT

The present study was conducted in Girwa tehsil of Udaipur district in southern Rajasthan. Total 10 villages were selected from identified tehsil and 120 respondents were selected on the basis of proportionate sampling method from selected villages. The result of the study indicated that 65.83 per cent respondents possessed medium level of pesticide use behaviour whereas, 20.00 and 14.17 per cent okra growers had low and high level of pesticide use behaviour. It was further observed that pesticides namely Malathion 50 EC, phorate 10 G and Iimidacloprid 200 SL were mostly used by majority of the okra growers for controlling insect-pests of okra. Likewise, Bavistin, Rogor, Thiram, Malathion 50 EC were also using commonly for controlling diseases in okra. It was also observed that there was no significant difference in pesticide use behavior among the okra growers of selected villages.

INTRODUCTION

In India okra is cultivated in 0.36 million hectares area with a total production of 3.50 million tonnes with an average yield of 9.72 tonnes/ha. The total area under okra cultivation in Rajasthan is 4255 hectares with a total production of 10482 tonnes and the productivity is quite low i.e. 2.46 tonnes/ ha. (Anonymous, 2004). Besides various reasons for low productivity of okra, heavy damage caused by insect-pests is a key limiting factor. Okra is a high value crop, therefore; chemical control of insect-pests is generally practiced for higher gains by the farmers. Indiscriminate use of pesticides has lad to many problems like adverse affects on parasites, predators and pollinators, toxic residues causing health hazards, resurgence of treated population of pests, development of resistance in insect to insecticides, environmental population etc. (Lal, 2001). Since okra is a fast growing crop and the harvesting of tender fruits is normally done at short intervals to cater the needs of the consumers, therefore the extensive and indiscriminate use of these chemicals in okra gives the chance of contamination of fruits with pesticides residues. Further, the plant protection measures are most needed practices in cultivation of okra but the judicious use of pesticides against control of insects, pests and diseases are very important to protect the environment of the country. Keeping the above facts in view, the present study was undertaken with following specific objectives:

1. To find out the extent of pesticide use behaviour of okra growers.
2. To compare pesticide use behaviour of farmers of selected villages.

RESEARCH METHODOLOGY

The present study was conducted in purposively selected Girwa Tehsil in Udaipur district of southern Rajasthan. There are total ten tehsils in Udaipur district of Rajasthan, out of which one tehsil namely Girwa has been selected on the basis of maximum area under cultivation of okra. Further, a comprehensive list of all the major okra growing villages was prepared in consultation with the help of personnel of Revenue and Agriculture Department from the identified tehsil. Ten villages from selected tehsil were taken on the basis of maximum area under okra cultivation. For selection of respondents, a comprehensive list of okra growers was prepared with the help of village patwari and agriculture supervisor of respective village. From the list so prepared, 120 okra growers were selected on the basis of proportionate sampling method from

* M.Sc. Student, Department of Extension Education, RCA, Udaipur.

** Professor, Department of Extension Education, RCA, Udaipur.

*** Professor & Head, Department of Agri. Statistics and Computer Application, RCA, Udaipur.

the identified villages. Data were collected by employing personal interview technique. Thereafter, data were analysed and interpretation were made in the light of objectives of study.

RESULTS AND DISCUSSION

To get an overview of pesticide use behaviour level, the respondents were categorized into (i) low (upto 40 score), (ii) Medium (41 to 58 score) and (iii) high (above 58 score) level on the basis of calculated mean and standard deviation of the obtained scores by the respondents. The distribution of respondents in each category is presented in Table 1.

Table 1. Distribution of respondents on the basis of their pesticide use behaviour in okra

n=120

S. No.	Pesticide use behaviour level	Frequency	Per cent
1.	Low (Upto 40 score)	24	20.00
2.	Medium (41 to 58 score)	79	65.83
3.	High (Above 58 score)	17	14.17
	Total	**120**	**100.00**

The data presented in Table 1 show that majority (65.83%) of the okra growers had used the pesticides at medium level. Whereas, 20.00 per cent okra growers were categorized in low level of pesticide use behaviour group and only 14.17 per cent respondents were fell in the high level of pesticide use behaviour group in the study area.

From the above discussion, it can be concluded that a large majority (80.00%) of the farmers were reported in medium to high level of pesticide use behaviour of okra crop. This may be due to the fact that majority of the farmers are educated, belonged to young to middle age group, higher economic motivation, more cosmopoliteness and better extension contacts with extension functionaries for getting agricultural technology. The findings are similar with the findings of Patel et al. (2005) who reported that slight more than two-fifth (44%) of the Chilli growers had medium level of adoption, followed by high and low level of adoption with 36.00 per cent and 20.00 per cent respectively. The similar findings are also reported by Sardana et al. (2005).

Table 2 indicates that the extent of application of Malathion 50 EC was highest for Jassid control in okra with 88.00 MPS and ranked first by the respondents. The extent of use of Endosulfan 35 EC for Jassid control was observed 86.38 per cent among the okra growers. The study of table further reveals that Phorate 10G was applied by the respondents with the extent of 43.05 MPS and ranked third by the farmers. Whereas, the extent of use of Dimethoate 30 EC was only 13.88 per cent among the farmers for Jassid control in okra cultivation.

Table 2. Extent of use of Pesticides for Insect-pests control in okra **n=120**

S. No.	Name of insect-pests	Use of pesticides	MPS	Rank
1.	Jassid	(i) Malathion 50 EC	88.00	1
		(ii) Endosulfan 35 EC	86.38	2
		(iii) Dimethoate 30 EC	13.88	4
		(iv) Phorate 10 G	43.05	3
2.	Shoot & fruit borer	(i) Endosalfan 35 EC	80.27	1
		(ii) Quinalphos	10.83	2
3.	White fly	(i) Dimethoate 30 EC	12.78	2
		(ii) Triazophos 40 EC	5.56	3
		(iii) Iimidacloprid 200 SL	33.34	1
4.	Dusky cotton bug	(i) Dimethoate 30 EC	15.56	1
		(ii) Iimidacloprid 200SL	8.62	2
5.	Red spider mite	(i) Malathian 50 EC	88.34	1
		(ii) Endosulfan 35 EC	86.38	2
		(iii) Phorate 10 G	59.45	3
6.	Root knot nematode	(i) Carbafuron 3 G	26.39	2
		(ii) Phorate 10 G	46.95	1

MPS = Mean per cent score

Analysis of table further shows that Quinalphos pesticide was applied with the extent of 10.83 per cent by the respondents for controlling shoot and fruit borer in okra crop. While, extent of use of Endosulfan 35 EC was 80.27 per cent among the okra growers to control shoot and fruit borer in okra.

Regarding the control of white fly, the Iimidacloprid 200 SL pesticide was used with the extent of 33.34 per cent among okra growers and ranked first. The extent of use of Dimethoate 30 EC was recorded 12.78 MPS and this pesticide was ranked second by the respondents. Whereas, the adoption of Triazophos 40 EC was only 5.56 per cent among the farmers for controlling the white fly in okra crop.

The study of Table further reveals that the extent of use of Dimethoate 30 EC was noted to be 15.56 MPS for controlling Dusky cotton bug in okra crop, whereas the extent of application of Iimidacloprid 200 SL was 8.62 per cent among the okra growers. For controlling the Red spider mite in okra, the extent of use of Malathion 50 EC was noted to be 88.34 per cent and ranked first by the respondents. Likewise, the Endosalfan 35 EC was also applied with the extent of 86.38 per cent by the okra growers. Whereas, the Phorate 10G was possessed above average adoption by the farmers with 59.45 MPS for controlling the Red spider mite in okra.

Regarding the use of Carbafuron 3G, the extent of application was 26.39 per cent among the farmers for Root knot nematode control in okra. On the other hand application of Phorate 10G, the extent of use was 46.95 per cent for controlling root knot Nematode among the respondents.

From the above discussion it could be concluded that pesticides namely Malathion 50 EC, Endosulfan 35 EC, Phorate 10G and Iimidacloprid 200 SL were used by majority of the okra growers for controlling various insect pests of okra. Further, the Endosulfan is recently banned by the Supreme Court of India for the use of controlling insect pests & diseases and other purposes. Thereafter, farmers were not using this chemical for different purposes.

Data presented in Table 3 reveal that the extent of use of Bavistine was 76.12 MPS among the okra growers for controlling of Damping off disease in okra and ranked first by the respondents. The adoption regarding Thiram was 58.34 per cent and ranked second by the okra growers. Whereas, the extent of use of Topsin for controlling of Damping off disease was observed to be only 2.28 per cent among the okra growers, which was negligible.

Regarding controlling of powdery mildew disease in okra, the extent of use of Endosulfan 35 EC was 82.28 per cent among the respondents. Whereas, Karathen EC was used with the extent of 8.05 per cent and Calixin was adopted only 6.95 per cent by the okra growers.

The study of Table 3 further reveals that the extent of use of Malathion 50 EC was 86.67 MPS to control Yellow vein mosaic disease of okra and ranked first by the respondents. The next important pesticide namely Endosulfan 35 EC was applied with the extent of 85.28 per cent by the okra growers. While Rogor was also used by the majority of okra growers for controlling the Yellow vein mosaic disease of okra.

Table 3. Extent of use of pesticides for controlling of diseases in okra

n = 120

S. No.	Name of Diseases	Use of pesticides	MPS	Rank
1.	Damping off	(i) Bavistin	76.12	1
		(ii) Topsin	20.28	3
		(iii) Thiram	58.34	2
2.	Powdery mildew	(i) Karathen EC	08.05	2
		(ii) Calixin	06.95	3
		(iii) Endosulfan 35 EC	82.28	1
3.	Yellow vein mosaic	(i) Malathion 50 EC	86.67	1
		(ii) Rogor	65.84	3
		(iii) Endasulfan 35 EC	85.28	2
4.	Cercospora leaf spot	(i) Mancozeb	43.89	1
		(ii) SAAF (Mencozeb+Carbendazim)	02.78	2
5.	Fusarium wilt	(i) Thiram	55.84	1
		(ii) Carbendazim	37.73	2

MPS = Mean Per cent Score

Likewise, the extent of adoption about mencozeb was 43.89 per cent for controlling the Cercospora leaf spot disease of okra by the farmers. Whereas, SAAF (Mencozeb + Carbendazim) was used in negligible form (2.78%) by the farmers to

control this disease in the study villages. The extent of use of Thiram was observed to be 55.84 per cent to control Fusarium wilt disease in okra among the farmers. Similarity, Carbendazim was applied by the farmers with the extent of 37.73 per cent to check the occurrence of Fusarium wilt disease in okra.

From the above results, it could be concluded that majority of okra growers were using pesticides namely Malathion 50 EC, Endosulfan 35 EC, Bavistin, Rogor, Thiram for controlling various diseases in okra.

The present findings are conformity with the findings of Tackie et al. (2004) reported that a majority of farmers (73%) cultivated vegetables and sprayed pesticides on crops. Melathion, Sevin, Bravo were the most common pesticides, which were used by the farmers, while Roundup, 2-4 D and Poast were the most common herbicides applied by the farmers. George and Lahiri (2009) pointed out that 98.37 per cent farmers had been using pesticides whereas, in far flag farms, all the farmers were using pesticides.

Analysis of variance (F test) was applied to find out the significant variation among the farmers of selected villages about pesticide use behaviour. The results of ANOVA computed for this purpose are presented in Table 4.

Hypotheses :

NHo_1: There is no significant difference among the farmers of selected villages about pesticide use behaviour in okra cultivation

RH_1: There is no significant difference among the farmers of selected villages about pesticide use behaviour in okra cultivtion.

Table 4. Analysis of variance of pesticide use behaviour of okra growers of selected villages n= 120

Source of variation	d.f.	S.S.	M.S.S.	F value
Between the farmers of selected villages	9	6736.22	748.46	0.22^{NS}
Error	110	367751.78	3343.19	
Total	**119**	**374488**		

NS = Non Significant

Data accorded in Table 4 reveal that calculated F value 0.22 is less than tabulated value at 5 per cent level of significance. Thus, research hypothesis (RH1) is rejected and null hypothesis (NH01) was accepted. It means that there was no significant difference in pesticide use behaviour among the okra growers of selected villages. Thus, it was concluded that the extent of pesticide use behaviour of okra growers of different villages was more or less similar in the study area. Similar findings have been reported by Sardana et al. (2005) and George and Lahiri (2009).

CONCLUSION

From the above results can be concluded that pesticides namely Malathion 50 EC, Endosulfan 35 EC, Phorate 10G, Iimidacloprid 200 SL were mostly used by the okra growers for controlling various insect-pests of okra. Likewise Bavistin, Rogor, Thiram and Malathion 50 EC were also used commonly for controlling various diseases of okra.

REFERENCES

Anonymous, 2004. Economic Survey 2003-2004. Ministry of Financial and Company Affairs, Government of India, New Delhi, PP.162-163

Lal, O.P. 2001. Bio-diversity in relation to insect pest management. In proceeding of National conference on plant protection new horizon in a millennium held at Udaipur during February 23-25:15-16.

Patel, B.D. 2005. A study on adoption of recommended chilli cultivation technology in Vadodara district of Gujarat state. M.Sc. (Ag.) Thesis submitted to Anand Agricultural University, Anand, Gujarat.

Sardana, H.R., Kadu, L.N., Singh, D.K. and Singh, R.V. 2005. Knowledge of vegetable growers on pest management practices. *Indian Journal of Extension Education* 41: 80-83.

Tackie, N.O., Jackai, L.E.N., Ankumah, R., Noble, R. and Hardney, E. 2004. Small farmers perceptions on Integrated Pest Management. Series in Applied Economics and Related Sciences, number 0604-01. George Washington Carver Agricultural Experiment Station, Tuskegee, AL: Tuskegee University.

❐❐❐