International Journal of Farm Sciences **6(1)** : 301-306, 2016

Knowledge of grape growers on the use of bio-pesticides

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ABSTRACT

Grape is an important fruit crop of temperate zone which has acclimatized to tropical and subtropical agro-climatic conditions prevailing in Indian subcontinent. Among the export oriented fruits, grape contributes maximum share of export from India to Europe and other parts of the world. As the maximum grapes are exported by the grape growers, bio-pesticides have an important role to accomplish the export standards which aids in the sense of keeping quality, disease and pest resistance and post harvest technology of the grapes. Subsequently it results in fine economic stability among the grape growers. Keeping this in view a study was conducted to assess the level of knowledge in the use of bio-pesticides in grapes by the growers of Baramati, Indapur and Junnar Tehsils of Pune district of Maharashtra. A total of 120 respondents were selected. The results of the study showed that maximum number of respondents were having medium level of knowledge in use of bio-pesticides to control pests and diseases. There was a significant difference noticed in high and low level of knowledge about use of bio-pesticides. The study suggests conducting of intensive awareness trainings on bio-pesticides usage and its benefit in grape production.

Keywords: Knowledge level; bio-pesticide; grape growers

INTRODUCTION

Grape, *Vitis vinifera* L is one of the most commercially important crops of the world and is fairly good source of minerals like calcium, phosphorus, iron and vitamins like B1 and B2. Grape is an important commercial fruit crop of India which contributes to the maximum share of export of fresh fruits and vegetables from India to Europe and other parts of the world. About 80 per cent of the production comes from Maharashtra followed by Karnataka and Tamil Nadu (www.fao.org/docrep/003/x6897e/x6897e06.htm).

A number of pesticides are being used in grape cultivation for the management of insect pests and diseases. Seeing the adverse effects of the chemicals, bio-pesticides are being encouraged by the scientists as well as the governmental agencies. Thus a study with respect to level of knowledge regarding the use of bio-

pesticides in the crop by the grape growers was conducted in Pune district of Maharashtra.

METHODOLOGY

The study was conducted during 2013 in three Tehsils viz Baramati, Indapur and Junnar of Pune district as these three Tehsils had maximum number of grape growers. On the availability of respondents with the consultation of Agricultural Officers and as per the area covered under grape cultivation through random sampling method, a total of 120 respondents were selected.

Personal interviews were conducted by using structured pre-tested interview schedule. The pre-tested interview schedule was prepared to obtain information with respect to both independent and dependent variables. The collected data were tabulated and analysed using relevant statistical tools.

RESULTS and DISCUSSION

From Table 1 it can be revealed that all (100.00 per cent) the respondents had knowledge that flea beetle could be controlled by neem seed kernel extract (NSKE); 86.67 per cent of the respondents had knowledge about the recommended dose of it. Forty per cent respondents had the knowledge about *Metarhizium anisopliae* and that it could be used to control flea beetle whereas 28.33 per cent had knowledge of its recommended dose.

To control mealy bugs, 85.00 per cent respondents had knowledge about *Verticillium lecanii* and its recommended dose was known to 46.67 per cent respondents. NSKE could also control mealy bug was known to 87.50 per cent and recommended dose of NSKE to 76.67 per cent of the farmers.

Majority (80.00%) of the farmers knew that aphids and white fly could be controlled by *V lecanii.* Only 38.33 per cent of the farmers had knowledge about its recommended dose. This is also controlled by NSKE was known to 81.67 per cent of the farmers; 72.50 per cent of the respondents had knowledge about its recommended dose.

Similarly majority (74.17 per cent) of the respondents had knowledge that jassids and thrips could be controlled using *V lecanii* and 40.83 per cent of the respondents knew about its recommended dose. NSKE could also control this pest was known to 80.00 per cent of the farmers and 72.50 per cent of the respondents had knowledge about its recommended dose.

Hirsutella thompsoni could control red spider mite was known to only 10.00 per cent of the respondents and a very few (3.33%) had knowledge about its recommended dose. Majority (70.83%)

Table 1. Distribution of the respondents according to their knowledge about the bio-pesticides and their recommended doses to control insect pests

Bio-pesticide/dose	Respondents having the knowledge	
	#	%
Flea beetle		
Metarhizium anisopliae	48	40.00
5 g/l	34	28.33
NSKE	120	100.00
5% @ 1 ml/l	104	86.67
Mealy bug		
Verticillium leccanii	102	85.00
3-4 kg/ha or 5 g/l	56	46.67
NSKE	105	87.50
5% @ 1 ml/l	92	76.67
Aphid/white fly		
V leccanii	96	80.00
5% @ 1 ml/l	46	38.33
NSKE	98	81.67
5% @ 1 ml/l	87	72.50
Jassid/thrips		
V leccanii	89	74.17
3-4 kg/ha or 5 g/l	49	40.83
NSKE	96	80.00
5% @ 1 ml/l	87	72.50
Red spider mite		
Hirsutella thompsoni	12	10.00
5 g/l	4	3.33
V leccanii	85	70.83
3-4 kg/ha or 5 g/l	40	33.33
M anisopliae	48	40.00
5 g/l	34	28.33

of the respondents had knowledge about *V leccanii* to control red spider mite but only one third (33.33%) had knowledge about its recommended dose. Forty per cent respondents had knowledge that red spider mite could also be controlled by *M anisopliae*; only 28.33 per cent had knowledge about its recommended dose. The data regarding knowledge level of the respondents about use of bio-pesticides to control insect pests were collected and categorized on the basis of mean and

Table 2. Distribution of the respondents according to their knowledge level about use of bio-pesticides to control insect pests

Knowledge level	Score	Respondents (n= 120)	
		#	%
Low	Up to 10	21	17.50
Medium	11-18	83	69.17
High	19 and Above	16	13.33

Mean= 14.26, SD= 3.92

standard deviation (SD). It is observed from Table 2 that majority (69.17%) of the respondents had medium level of knowledge about bio-pesticides used to control insect pests while 17.50 per cent and 13.33 per cent of the respondents had low and high knowledge level about use of bio-pesticides respectively.

Table 3 reveals that only one fourth (25.00 per cent) of the grape growers had known that bio-pesticide *Bacillus subtilis* could be used to control downy mildew

Table 3. Distribution of the respondents according to their knowledge about the bio-pesticides and their recommended doses to control diseases

Bio-pesticide/dose	Respondents having the knowledge	
	#	%
Downey Mildew		
Bacillus subtilis	30	25.00
1-1.5 ml/l	26	21.66
Powdery mildew		
B subtilis	52	43.33
1-1.5 ml/l	38	31.66
Anthracnose		
Trichoderma	116	96.67
3-4 kg/ha	60	50.00
Crown gall		
Rahnilla aquatilis	0	0.00
Bacterial canker		
Agrobacterium radiobactor	0	0.00

disease of grapes and only 21.66 per cent had knowledge about the recommended dose of it. Only 43.33 per cent of the grape growers knew that *B subtilis* could be used to control powdery mildew and 31.66 per cent had knowledge about its recommended dose. Majority (96.67%) of the respondents had knowledge that *Trichoderma* controlled anthracnose disease of grapes and half (50.00%) had the knowledge of its recommended dose. It was not known to the respondents that *Rahnilla aqatilis* could control bacterial crown gall and *Agrobacterium radiobactor* could control bacterial canker.

From the data given in Table 4 it can be observed that majority (82.50%) of the respondents had medium level of knowledge about bio-pesticides use in disease control; while 14.17 per cent had high level of knowledge and only 3.33 per cent of the respondents had low knowledge.

It can be seen from the data given in Table 5 that majority (69.17%) of the respondents had medium level of knowledge about the use of bio-pesticides while 20.83 per cent and 10.00 per cent of the respondents had low and high level of knowledge respectively.

Table 4. Distribution of the respondents according to their knowledge level about use of bio-pesticides to control diseases

Knowledge level	Score	Respondents (n= 120)	
		#	%
Low	Up to 1	04	03.33
Medium	2-4	99	82.50
High	5 and above	17	14.17

Mean= 2.62, SD= 1.68

Table 5. Distribution of the respondents according to overall level of knowledge about use of bio-pesticides in grapes

Knowledge level	Score	Respondents (n= 120)	
		#	%
Low	Up to 12	25	20.83
Medium	13-22	83	69.17
High	23 and Above	12	10.00

Mean= 16.88, SD= 4.81

Rajendra (2000) and Darling and Vasanthakumar (2004) also reported similar results.

CONCLUSION

From the above discussion it is enunciated that most of the grape growers had medium level of knowledge about the use of bio-pesticides for controlling insect pests and diseases. Thus there was need to bring awareness amongst the grape growers regarding bio-pesticides, their use and recommended doses.

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Received: 15.3.2015 ***Accepted: 27.7.2015***