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Level of knowledge and scientific orientation towards integrated pest management among vegetable growers

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ABSTRACT

Vegetables are rich in minerals and vitamins. That is why; vegetables are used in daily diet either in raw or cooked form. To combat the pest menace, the growers are using malpractices knowingly or unknowingly. These malpractices directly or indirectly influence the living beings and their surrounding. A study about the level of knowledge and scientific orientation towards plant protection practices more particularly in vegetables was undertaken with the help of scheduled questionnaire. The responses showed that a huge scope existed in time and space to educate the farmers. About one fourth respondents of sampled farmers exhibited low level knowledge, however, over half of the respondents showed scientific orientation towards IPM.

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Key words : IPM, Level of knowledge, Vegetable, Scientific orientation

INTRODUCTION

Vegetables are the important ingredients in Indian diet. The intake of vegetables is found more or less in both rural and urban based consumers. It is utmost important as concerned with human health that the vegetables, taken under meal, free from pesticide residues. Generally, the vegetable growers are used to apply the pesticides injudiciously at frequent interval. This malpractice leaves toxic residues in vegetables and other processed vegetable's produce. Vegetables are harvested after spraying of pesticides without considering the waiting period and few of those marketed vegetables are consumed even without cooking. Not only leaving pesticide residues, synthetic pesticides play a very important role in disrupting the agro-ecosystem. Periodic exposure of chemicals, lift the natural control by killing the natural enemies and the other survivors competing with the harmful insect-pests, leading pest resurgence and insecticide resistance. In addition, it also pollutes the environment. The success of cultivation of vegetables depends on successfulness of pest management approach. Therefore, it is essential to measure the level of knowledge and scientific orientation towards IPM among the vegetable growers.

MATERIALS AND METHODS

To ascertain the knowledge level of pest management a study was conducted by KVK, Sant Ravidas Nagar. Three villages namely Dalapur, Khetalpur and Kurmaicha were selected under Aurai, Bhadohi and Deegh block, respectively, of district Sant Ravidas Nagar during 2009-10. Thirty five farmers purposively selected from each village adopted by Krishi Vigyan Kendra, Sant Ravidas Nagar. Thus, the sample consisted of a total number of 105 respondents.

The data were collected from sampled farmers with the help of informal discussion with the experts. Different pest management practices were discussed with the experts. Different pest management practices were discussed to measure the level of knowledge. The respondents were requested to assemble at a place in each village on a scheduled date. The selected practices were asked one by one for rating the level of knowledge.

Level of knowledge:

All the scheduled questions about knowledge level were dichotomized having three dimensions as good, average and poor with assigned numeral value 3, 2 and 1, respectively. The range of scores obtained by the respondents might vary from 0 to 315 in the knowledge test which indicate the knowledge level of respondents. It was categorized in to three categories *viz.,* Mean - SD, Mean ± SD and Mean + SD as low, medium and high, respectively.

Scientific orientation towards IPM:

There were 15 statements about the scientific

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orientation in which 14 were positive and one was negative. The scale had five points continuum as strongly agree (SA), agree (A), undecided (UD), disagree (DA) and strongly disagree (SDA). The scores were assigned numeral values as 5, 4, 3, 2 and 1. The responses given by individual respondent on each item were summed up and overall mean and SD were calculated. The respondents were categorized in to three categories on the basis of total scores obtained as following: Low = Mean - SD, Medium = Mean ± SD and High = Mean + SD.

RESULTS AND DISCUSSION

The results obtained from the present investigation as well as relevant discussion have been summarized under following heads :

Level of knowledge:

The study reveals that out of 11 IPM practices taken into consideration the knowledge about manual weed control ranked first with a mean score 84.67 (Table 1). The practices like monitoring of field ranked second (82.67), use of chemical pesticides ranked third (80.33), seed treatment ranked fourth (77.33), dose of pesticide ranked fifth (72.00), soil treatment ranked sixth (63.33), chemical weed control ranked seventh (62.00), hand removal of pest ranked eighth (49.00), identification of natural enemies ranked ninth (45.67) and both biological control and seedling treatment practices ranked last with a mean score 38.33 with reference to the knowledge possessed by the respondents about IPM in vegetable crops.

Table 1: Vegetable grower's level of knowledge towards IPM (n = 105)

Sr. No.	Plant protection practices	Mean score	Ranking
1.	Soil treatment	63.33	VI
2.	Seed treatment	77.33	IV
3.	Seedling treatment	38.33	X
4.	Monitoring of field	82.67	II
5.	Use of chemical pesticides	80.33	III
6.	Identification of natural enemies	45.67	IX
7.	Dose of pesticides	72.00	V
8.	Manual weed control	84.67	I
9.	Chemical weed control	62.00	VII
10.	Hand removal of pest/affected plant parts	49.00	VIII
11.	Biological control	38.33	X

Mean – 63.06, SD 17.77

The average extent of knowledge was observed to be 63.06. The present finding is in similar fashion with the findings of Malathi (1979) in which he studied the level of knowledge among rural women. Moreover, this study reflects that a vast scope of plant protection practices exists under farmer's field condition. It needs to be exercised through a number of demonstrations, trials, training programmes, farmer field schools and other various kind of tools among vegetable growers so that they can enhance their level of knowledge and perform plant protection activities in economic, eco-friendly and feasible manner.

A critical look at the Table 2 focuses that the majority of the respondents (65.71 per cent) were possessed medium level of knowledge towards IPM in vegetable crops followed by 22.86 per cent and 11.43 per cent respondents who had low and high level of knowledge, respectively. The mean score was found to be 63.06. On the basis of above facts, it can be said that nearly one fourth respondents had low level of knowledge. A similar report was presented by Singh and Prashad (1990) in a different study. Hence, these may be taken care by the policy makers and extension agencies to provide the suitable platform in order to foster farmer to farmer learning of new technologies.

Table 2 : Distribution of respondents regarding knowledge level about IPM (n = 105)

Categories (Scores)	No. of respondents	Percentage
Low (up to 45)	24	22.86
Medium (46 – 80)	69	65.71
High (> 81)	12	11.43
Total	105	100.00

Scientific orientation towards IPM:

Five point scales was used to measure the scientific orientation towards IPM under 15 statements. Table 3 indicates that the statement, chemicals kill immediate insect-pests and diseases, scored highest mean (83.80) and ranked first.

The second important statement was observed that tolerant varieties play vital role against insect-pest management which stood 2nd rank with mean score 74.40.The respondents in majority with the statement expressed high level of scientific orientation towards IPM like, seed treatment prevents the spread of insects and diseases (72.60), chemicals lead adverse effect on environment (67.00), surveillance is an important tool in insect-pest management (65.80), soil treatment/soil

Table 3 : Scientific orientation of vegetable growers towards IPM (n = 105)

Sr. No.	Statements	Level of measurement										Mean score	Ranking
		Strongly agree		Agree		Undecided		Disagree		Strongly disagree			
		Number	Score	Number	Score	Number	Score	Number	Score	Number	Score		
1.	Soil treatment/ soil solarization for elimination of soil dwelling pest	12	60	40	160	10	30	22	44	21	21	63.00	VI
2.	Tolerant varieties play a vital role against insect pest management	18	90	52	208	12	36	15	30	8	8	74.40	II
3.	Seed treatment prevents spread of insects and diseases	25	125	32	128	22	66	18	36	8	8	72.60	III
4.	Proper row to row and plant to plant distance does not provide the micro climate to the pest to flare up the population	5	25	10	40	35	105	33	66	22	22	51.60	XI
5.	Surveillance is important tool in insect pest management	15	75	30	120	26	78	22	44	12	12	65.80	V
6.	Natural control is caused by bioagents	3	15	5	20	53	159	28	56	16	16	53.20	IX
7.	Chemicals kill insect pests and diseases immediately	35	175	48	192	10	30	10	20	2	2	83.80	I
8.	Chemicals kill natural enemies	2	10	7	28	25	75	40	80	31	31	44.80	XIII
9.	Chemicals lead adverse effect on environment	14	70	30	120	33	99	18	36	10	10	67.00	IV
10.	Each chemical has certain concentration to manage the pest	10	50	16	64	29	87	28	56	22	22	55.80	VIII
11.	Weeds are the flora provide habitat for insect and disease multiplication	15	75	18	72	37	111	20	40	15	15	62.60	VII
12.	Initially hand removal of pest and/or affected parts of the plant play important role in insect pest management	6	30	10	40	49	147	22	44	18	18	55.80	VIII
13.	Synthetic chemicals leave residues on the plant products	2	10	3	12	24	72	48	96	28	28	43.60	XIV
14.	Use of botanicals are the safer and cheaper method of pest control	3	15	5	20	55	165	22	44	20	20	52.80	X
15.	Waiting period is the important point to consider at the time of harvesting	2	10	4	16	51	153	28	56	20	20	51.00	XII

Mean = 59.85, SD = 11.39

solarization for elimination of soil dwelling pest (63.00) and weeds are the flora provide habitat for insects and diseases multiplication (62.60), ranked 3rd, 4th, 5th, 6th and 7th, respectively. Data further showed that the statements, each chemical has certain concentration to manage the pest, initially hand removal of pest and/or affected parts of the plant play important role in insect-pest management, natural control is caused by bioagents, use of botanicals are the safer and cheaper method of pest control, proper row to row and plant to plant distance does not provide the micro-climate to the pest to flare up the population, waiting period is the important point to consider at the time of harvesting with mean scores 55.80, 53.20, 52.80, 51.60 and 51.00, respectively and assigned 8th, 9th, 10th , 11th and 12th ranks, respectively. However, only the statements, chemicals kill natural enemies and synthetic chemicals leave residues on the plant products received minimum scores 44.80 and 43.60 with 13th and 14th rank, respectively.

It is apparent from the Table 4 that over half of the respondents (56.19 per cent) were possessed medium level of scientific orientation towards IPM in vegetable crops. However, 36.19 and 7.62 per cent respondents were found in the categories of low and high level of scientific orientation, respectively. The average mean score of scientific orientation was observed to be 59.85. Thus, it can be said that the most of the respondents came under the category of medium level of scientific orientation. On the basis of analysis of Table 3 and 4 it may be concluded that the farmers having high scientific orientation towards IPM will receive the innovative technology at a faster rate. Education and mass media exposure will indirectly influence their risk bearing abilities. Chaudhary (1999) and Johnson and Monoharan (2007) also observed similar kind of reports in a different study.

Table 4 : Distribution of respondents regarding scientific orientation (n = 105)

Categories (Scores)	No. of respondents	Percentage
Low (up to 49)	38	36.19
Medium (50 – 70)	59	56.19
High (? 71)	8	7.62
Total	105	100.00

Conclusion:

The present study emphatically disclosed the level of knowledge and scientific orientation of the vegetable growers about IPM. Due to indiscriminate use of chemical pesticides, most of the insect-pests and diseases have become resistant. Other hazards are also coming in the way. Therefore, it is need of the hour that the farmers should adopt IPM strategies at community level. The agencies involved in extension education should come forward to educate the farmers.

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