RESEARCH NOTE

Knowledge and Adoption Level of IPM Practices among Tomato growers in Indore District (M.P.)

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ABSTRACT

Keeping in mind the importance of Integrated Pest Management (IPM) in Tomato crop, study was conducted in Indore District with the objective to find out the knowledge and adoption level of IPM practices among tomato growers. Primary data were conducted from 200 farmers from two blocks of Indore district using random sampling method. Semi structured interview schedule was used for data collection, using personal interview. The study find out that tomato growers of selected areas were not having proper knowledge about Integrated Pest Management practices. They were well known to cultural practices while they were have poor knowledge about mechanical, biological and used of safer pesticide practices regarding IPM. Therefore, their adoption level was also poor and only limited to cultural practices. Findings also shows large gap between knowledge and adoption in respect to IPM practices. So, it is an argent need of skill oriented training to tomato growers regarding IPM practices for higher and safer tomato production.

Key words: *Integrated Pest Management; Knowledge; Adoption; Tomato;*

Tomato (*Lycopersicum esculentum* L.) is one of the important and popular vegetable and plays an important role in balance nutrition. From nursery phase to ripening of tomato fruit it infected by several types insect pests and diseases, where insect pest also cause great losses of output and quality also. For minimizing losses and to increase the profitability, farmers generally use chemical pesticides, especially by better endowed farmers in case of commercial crops like tomato, as farming become more market oriented. The market limitations, as reflected in poor quality of pesticides, high rate of borrowed capital, unfavorable prices etc. also contributed with the indiscriminate use of pesticides (*Choudhary et al, 2010*).

Spedding (1988) defined IPM system as a gap of interacting components operating together for a common purpose- to keep up the pest population below the economic threshold level. These components include cultural, mechanical, physical, biological and lastly chemical measures. Thus, IPM not only helps in minimizing pest population ecologically but also is economical for the growers and ultimately in agribusiness. But, the farmers are not adopting these practices due to lack of knowledge or for other several causes. On this background, the study was planned in tomato growing area Indore district of Madhya Pradesh with an objective to find-out the knowledge and adoption level of IPM practices among tomato growers.

METHODOLOGY

The study was purposively conducted in Indore district of Madhya Pradesh due to the importance vegetable crop and more use of agrochemicals on peri-urban/ commercial areas. The district comprises four blocks, out of these two blocks namely, Mhow and Sanwer were selected purposively. From each block, five villages and 20 tomato growers from each village were randomly selected. Thus, 200 tomato growers were selected. The selected respondents were interviewed with the help of a semi structured interview schedule on IPM. The collected data were analyzed in the light of the objective. To study the knowledge and adoption level of each individual, respondents were categorized into three groups as 'partially' (score-1), 'to some extent' (score-2) and 'fully'(score-3). On the basis of score, mean score value and rank orders were calculated.

RESULTS AND DISCUSSION

Knowledge of IPM practices among tomato growers: The knowledge of tomato growers about IPM practices was analyzed and twenty practices and four groups were delineated for the study. The respondents were categorized in to three level of knowledge i.e. partially knowledge, to some extent knowledge and fully knowledge. Practice wise distribution of the respondents according to knowledge about IPM practices is presented in Table 1.

As far as the study is concerned, the result (Table 1) shows that the highest mean value (2.62) was for FYM/ brown manure with rank-I, followed by summer deep ploughing, regular destruction of damaged fruit at each harvest, crop rotation and collection and distruction of larvae having mean value 2.49, 2.20, 2.10, 1.92 with rank II, III, IV and V, respectively. Other IPM practices show poor knowledge level with poor mean score value and poor rank order. The respondents have poor knowledge about biological IPM practices like use of bio-fertilizers (MSV 1.56 with rank order IX); use of bio-pesticide (Bt, NPV,NSK and others having MSV 1.16, 1.16, 1.26 and 1.12 with rank XV, XV,XII,XVII); and use of safer pesticide (MSV 1.22 with XIII rank) production.

Adoption level of IPM practices among tomato growers: The adoption level of tomato growers was also measures as fully adoption, to some extent adoption and partially adoption. The practices wise distribution of the respondents according to adoption about IPM practices is presented in under Table 2.

It is amply clear from Table 3 that adoption level was higher in case of FYM/ brown manure practice with mean score value of 2.36 (rank-I) followed by summer deep ploughing, crop rotation, pest resistant varieties and intercropping with mean score value 2.13, 1.82, 1.75, 1.41 and rank order II, III, IV & V, respectively. It means that cultural practices were more adopted by tomato growers while other IPM practices like mechanical, biological and use safer pesticide were

Table 1. Practices wise knowledge level of IPM among tomato growers (N = 200)

IPM Practices	Knowledge level						Mean value	Rank order
	Fully		Some extent		Partially			
	No.	%	No.	%	No.	%		
Cultural practices								
Summer deep ploughing	107	53.5	84	42	09	4.5	2.49	II
Crop rotation	47	23.5	127	63.5	26	13.0	2.10	IV
Inter cropping	27	13.5	82	41.0	91	45.5	1.68	VIII
Pest resistant varieties	59	29.5	92	46.0	49	24.5	2.05	V
FYM/brown manure	132	66.0	60	30	08	4.0	2.62	I
Mechanical Practices								
Staking	32	16	80	40.0	88	44.0	1.72	VII
T-perching	23	11.5	60	30.0	117	58.5	1.53	XI
Use of mesh nylon net	28	14.0	52	26.0	120	60.0	1.54	X
Use of pheromone trap	47	23.5	88	44.0	65	32.5	1.91	VI
Regular destruction of damaged fruits	69	34.5	102	51.0	29	14.5	2.20	III
Collection and destruction of larvae	39	19.5	107	53.5	54	27.0	1.92	V
Biological Practices								
Use of biofertilizer	32	16.0	49	24.5	119	59.5	1.56	IX
Bacillus thuriagienses (Bt)	05	2.5	23	11.5	172	86.0	1.16	XV
Nucleo Polyhydrous Virus (NPV)	05	2.5	23	11.5	172	86.0	1.16	
Neem Seed Kernal (NSK) extract	09	4.5	35	17.5	156	78.0	1.26	XII
Others bio- pesticide	06	3.0	13	6.5	181	90.5	1.12	XVII
Predetors	05	2.5	19	9.5	176	88.0	1.14	XVI
Paracites	06	3.0	22	11.0	172	86.0	1.17	XIV
Others	03	1.5	12	6.0	185	92.5	1.09	XVIII
Use of chemical pesticide								
Safer pesticide	13	6.5	19	9.5	168	84.0	1.22	XIII

Table 2. Practices wise adoption level of IPM among tomato growers (N = 200)

IPM Practices	Adoption level						Mean value	Rank order
	Fully		some extent		Partially			
	No.	%	No.	%	No.	%		
Cultural practices								
Summer deep ploughing	92	46	74	37	03	1.5	2.13	II
Crop rotation	40	20	112	56	20	10	1.82	III
Inter cropping	21	10.5	72	36	75	37.5	1.41	V
Pest resistant varieties	52	26	79	39.5	37	18.5	1.75	IV
FYM/brown manure	121	110.5	52	26	06	3	2.36	I
Mechanical Practices								
Staking	23	11.5	42	21	08	4	0.80	VI
T-perching	12	6	11	5.5	00	00	0.29	IX
Use of mesh nylon net	11	5.5	00	00	00	00	0.16	XI
Use of pheromone trap	13	6.5	00	00	00	00	0.19	X
Regular destruction of damaged fruits	17	8.5	08	4	02	1	0.34	VIII
Collection and destruction of larvac	07	3.5	00	00	00	00	0.10	XIII
Biological Practices								
Use of bio-fertilizer	20	10	09	4.5	02	01	0.40	VII
Use of bio-pesticide								
Bacillus thurigensis (Bt)	02	01	00	00	00	00	0.03	XVI
Nucleo Polyhydrous Virus (NPV)	02	01	00	00	00	00	0.03	XVI
Neem Seed Kernal (NSK) extract	05	2.5	03	1.5	01	0.5	0.11	XII
Others bio- pesticide	03	1.5	00	00	00	00	0.04	XV
Use of biological agents								
Predetors	00	00	00	00	00	00	-	-
Paracites	00	00	00	00	00	00	-	-
Others	00	00	00	00	00	00	-	-
Use of chemical pesticide								
Safer pesticide	04	02	02	1.5	01	0.5	0.08	XIV

either poorly adopted or not adopted due to either lack of knowledge or skill or other factors.

CONCLUSION

The result of the study, indicate that tomato growing farmers of Indore district are not having proper knowledge on Integrated Pest Management practices. Generally, tomato growers have good knowledge only about cultural practices therefore, their adoption level was also high in this case. Tomato growers were having poor knowledge about mechanical practices followed by biological practices and use of safer pesticide, therefore, their response about adoption were also similar to knowledge level. It means respondents poor knowledge is associated with poor adoption. A large gap exists between knowledge and adoption. Therefore, it is an urgent need of skill oriented training for tomato growers regarding Integrated Pest Management to enhance the knowledge and adoption of tomato growers in the study area, Indore district.

Paper received on : July 12, 2014
Accepted on : August 10, 2014

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