Original Research Article

Impact of Integrated Pest Management Technology on Cotton Growers

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A B S T R A C T

Keywords

~~Weeds, Herbicides, Weed control efficiency, Cane yield and seasonal sugarcane~~

A study was conducted to ascertain the knowledge and adoption behavior of the trainees compared to non-trainees with respect to IPM training organized by Krishi Vigyan Kendra, Durgapur. Seventy five trainee farmers who had participated in the training on IPM practices on cotton and equal number of non-trainee cotton growers were randomly selected making sample of 150 respondents. The impact of training programme measured in terms of change in knowledge and adoption of integrated pest management practices by trained farmers in comparison with the non-trainee farmers as a control group. The result indicated that majority trainees had high level of knowledge (88.00%) as compared to the non-trainee respondents about IPM practices. Further it was found that most of the trainees (98.67%) had medium level of adoption compared to the control group of non-trainees majority of them (92.00%) was found in low adoption category group. This indicates that there had been a significant difference between trainees and non-trainees regarding the extent of adoption of IPM practices for the cotton crop.

Introduction

Cotton is an important cash crop in India; it is also called as White Gold. The economic loss in the cotton through pest is serious concern. During last few decades cotton is becoming more susceptible to different insect, pest especially bollworms in the country. This is because of excessive and indiscriminate use of pesticides to control certain pests which result into disturbance of natural balance. Out of the total pesticides used in agriculture in India, more than 55 percent of them applied on cotton alone. (Anon.006). Thefigure reflects the picture of exhaustive use of pesticides for the crop.Farmers applying these high cost pesticides which result in increased cost of production and low economic return from the crop. The approach to overcome the ill effects of pesticides to certain extent is Integrated Pest Management practices. Hence, it is thought imperative to study the impact of IPM technology in terms of knowledge and adoption on cotton growers. The present study was undertaken with the specific objectives in view to study the Profile of trained and untrained cotton growers about IPM technology and to study the Impact of IPM technology on their knowledge and adoption pattern

Materials and Methods

The study was conducted in Amravati district of Maharashtra State.Amravati district was selected purposively on the basis of leading hybrid cotton area. Considering the importance and need of the farmers of

the region the Krishi Vigayn Kendra, Durgapur under study were imparting regular training programme about the integrated pest management practices for the cotton cropfor the economic upliftment of the cotton growers by minimizing cost of production and improving the production of the crop.The cotton growers those who had participated in the training on integrated pest management practices of cotton crop were randomly selected and considered as trainee respondents. Out of the total respondents who had attended IPM training organized by KVK, Durgapur, 75 trainees and equal number of non-trainee respondents were selected randomly. Information was collected with the help of a structured interview schedule. The interview schedule was pre-tested and modified based on suggestions made by the respondents and finally the data was collected by personal interview method. The data obtained was compiled and analyzed using statistical tools viz. frequency, percentage to measure the impact of integrated pest management technology, a teacher made adoption scale were administered and impact index was carried out.

Results and Discussion

Profile characteristics of trainee and non-trainee respondents

With regards to the profile of respondents (Table 1), data revealed that higher proportion of trained cotton growers were in the middle age group(60.00 %), educated up to matriculation level (48.00 %), medium level of social participation (49.33%), belonged to 4.01 to 10.00 ha, of land holding (56.00 %), having 2.01 to 4.00 ha area under cotton crop(53.33 %), with annual income between Rs. 40,000 to Rs. 80,000/- (62.67%), having high level of innovativeness (90.67%) and medium level

of risk preference (84.00%).

However majority of untrained farmers belonged to middle age group (46.67%), attained education upto matriculation level (34.67%), with low level of social participation (70.67%), representing 4.01 to 10.00 ha of land holding (56.00%), with 2.01 to 4.00 ha area under cotton crop (58.67%), having annual in the same range as of trained farmers (54.67%), with medium level of innovativeness (66.67%) and large section of the non-trainee respondents (97.33%) belonged to medium level of risk preference.

The data depicted in the Table 2 shows that majority of the trainee respondents (88.00%) had high level of knowledge about IPM practices in cotton followed by 12.00 per cent of trainee respondents had medium level of knowledge, none of the trainees was observed in low level knowledge group. Whereas, majority of non-trainee respondents (60.00%) possessed medium level of knowledge followed by 40.00 per cent non-trainee respondents had high level of knowledge about IPM practices in cotton. The findings indicated that trainee respondents were having high knowledge level as compared to non-trainee respondents and there is a significant difference between trainees and non-trainees regarding knowledge about IPM practices of cotton crop. This finding is in conformity with the findings of Dubey&Shrivastava (2007) and David Rajni (2005).

Adoption level of trainee and non-trainee respondents about IPM of cotton crop

Table 4depicts that 98.67 per cent of the trainee participants had medium level adoption of IPM practices, while majority of the non-trainee respondents i.e. 92.00 per cent had low level of adoption of IPM practices cotton crop.

Table.1 Profile of the respondents

Profile	Category of the farmers			
	Trained (n1 = 75)		Untrained (n2 = 75)	
	Number	Per cent	Number	Per cent
1. Age				
Young age (Up to 30 years)	20	26.67	14	18.67
Middle age (31 to 50 years)	45	60.00	35	46.67
Old age group (Above 50 years)	10	13.33	26	34.67
2. Education				
Illiterate	0	0.00	9	12.00
Primary school	5	6.66	10	13.33
Middle school	17	22.67	10	13.33
SSC	36	48.00	26	34.67
College and above	17	22.67	20	26.67
3. Social Participation				
Low	37	49.33	53	70.67
Medium	37	49.33	22	29.33
High	1	1.33	0	0.00
4. Land holding (ha)				
Upto 1.00	1	1.33	2	2.67
1.01 to 2.00	4	5.33	5	6.67
2.01 to 4.00	27	36.00	25	33.33
4.01 to 10.00	42	56.00	42	56.00
10.01 and above	1	1.33	1	1.33
5. Area under cotton crop (ha)				
Upto 1.00	2	2.67	4	5.33
1.01 to 2.00	27	36.00	14	18.67
2.01 to 4.00	40	53.33	44	58.67
4.01 to 10.00	6	8.00	13	17.33
10.01 and above	0	0.00	4	5.33
6. Annual Income (Rs.)				
Upto 40,000/-	9	12.00	30	40.00
40,001 to 80,000/-	47	62.67	41	54.67
80,001 to 1,20,000/-	11	14.67	3	4.00
1,20,001 and above	8	10.67	1	1.33
7. Innovativeness				
Low	0	0.00	1	1.33
Medium	7	9.33	50	66.67
High	68	90.67	24	32.00
8. Risk preference				
Low	0	0.00	2	2.67
Medium	63	84.00	73	97.33
High	12	16.00	0	0.00

Table.2 Distribution trainee and non-trainee respondents according to their knowledge level

Sr. No	Knowledge	Trainee		Non-trainee	
		Frequency	Per cent	Frequency	Per cent
1	Low (Up to 14.16 index score)	0	0.00	0	0.00
2	Medium (14.17 to 56.66 index score)	9	12.00	45	60.00
3	High (56.67 and above index score)	66	88.00	30	40.00
	Total	75	100.00	75	100.00

Table.3 Distribution trainee and non-trainee respondents according to their adoption level

Sr. No	Adoption	Trainee		Non-trainee	
		Frequency	Per cent	Frequency	Per cent
1	Low (Up to 9.5 index score)	1	1.33	69	92.00
2	Medium (9.6 to 39.09 index score)	74	98.67	6	8.00
3	High (39.10 and above index score)	0	0.00	0	0.00
	Total	75	100.00	75	100.00

Table.4 Distribution of trainee and non-trainee respondents according to their adoption of IPM practices of cotton.

Sr. No	Practices	Adoption					
		Trainee (n= 75)			Non-trainee (n=75)		
		Complete (%)	Partial (%)	No (%)	Complete (%)	Partial (%)	No (%)
1	Removal & destruction of the cotton stalk, previous crop residues	75 (100.00)	-	-	10 (13.33)	39 (52.00)	26 (34.67)
2	Follow up deep ploughing	75 (100.00)	-	-	15 (20.00)	47 (62.67)	13 (17.33)
3	Avoid mono cropping	75 (100.00)	-	-	17 (22.67)	52 (69.33)	6 (8.00)
4	Use or certified and delineated seed	75 (100.00)	-	-	8 (10.67)	54 (72.00)	13 (17.33)
5	Use of seed treatment	75 (100.00)	-	-	8 (10.67)	50 (66.67)	16 (21.33)
6	Recommended dose of fertilizers	68 (90.67)	6 (8.00)	1 (1.33)	5 (6.67)	54 (72.00)	16 (21.33)
7	Use of trap crop	68 (90.67)	7 (9.33)	-	5 (6.67)	54 (72.00)	16 (21.33)
8	Use of yellow sticky traps	54 (72.00)	13 (17.33)	8 (10.67)	-	28 (37.33)	47 (62.67)
9	Use of biological insecticides	33 (44.00)	25 (33.33)	17 (22.67)	1 (1.33)	32 (42.67)	42 (56.00)
10	Cleaning of field after last picking	60 (80.00)	12 (16.00)	3 (4.00)	16 (21.33)	38 (50.67)	21 (28.00)

The results further revealed that the trainee respondents had more adoption level as compared to the non-trainee respondents; the reason could be trainee respondents had more knowledge and well acquainted with the benefits of IPM in cotton crop due to participation in training programme organized by KVK. The findings of the study are in line with the results of Nityashri & Angadi (2001).

A critical look at the data about practice wise adoption of IPM practices of cotton by the trainee and non-trainee participants revealed that cent per cent trainee respondents had complete adoption of IPM practices like removal and uprooting of previous crop residues before sowing of the crop, prepared filed with deep ploughing operations, avoided mono cropping, use of certified and delineated seed for sowing and use of seed treatment for the cotton seed to avoid seed borne diseases. Whereas (90.67%) trainee respondents adopted recommended dose of fertilizer and use of trap crop, while (72.00%) trainee respondents adopted use of yellow sticky trap to control the insects & pest of cotton crop, (44.00%) adopted biological insecticides for control of pests while (80.00%) respondents had adopted practice of cleaning of field after last picking of cotton crop.

Further (22.67%) and (10.67%) trainee respondents observed in non-adoption group regarding use of biological insecticides and non-adoption of yellow sticky traps for control of pests.

Majority of the non-trainees respondents had not adoptionof IPM practices like use of yellow sticky traps (62.67%) and use of biological insecticides (56.00%); equal number of respondents (72.00%) reported partial adoption of IPM practices like use of

certified and delineated seeds, use of recommended dose of fertilizer and use of trap crop. Whereas69.33 per cent non-trainees had partial adoption of avoid mono cropping,(66.67%) partially adopting seed treatment, (62.67%) had partial adoption of deep ploughing and removal and (52.00%) non-trainee respondents partially adopted uprooting of previous crop residues.

Adequate knowledge of any improved technology is prerequisite for adoption of any new technology or practice hence by and large it could be inferred that percentage of trainee respondents had more adoption of cotton IPM practices than non- trainees due to gain in knowledge an exposure during the period of training of Krishi Vigyan Kendra. The results of the study were in line with the results of Patil (2004) and Deshmukh (2002).

It is concluded from the above study that majority of the trainee respondents had high level of knowledge as compared to medium level of knowledge observed in non-trainee respondents about integrated pest management training. The findings about overall adoption level of IPM large section of trainee respondents was noticed in medium level of adoption as compared to maximum non-trainees observed in low level adoption category about IPM practice. As the result of integrated pest management training programme imparted by Krishi Vigyan Kendra significant changes in the level of knowledge and adoption of cotton IPM technologies among trainees was noticed as compared to non-trainee respondents.

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