

Original Research Article

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Adoption of Integrated Pest Management Practices for Control of Pink Bollworm by Cotton Growers

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ABSTRACT

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The present study on adoption of integrated pest management practices for control of pink bollworm by cotton growers was conducted in Nagpur district of Vidarbha region of Maharashtra State with sample size of 120 farmers from 10 villages of two talukas. The result indicated that overall, 55.84 per cent of cotton growers had medium level of knowledge about integrated pest management practices. In overall, majority (60.83%) of cotton growers had medium level of adoption of integrated pest management practices.

Introduction

The world textile industries are being ruled by “King Cotton”. The antiquity of cotton has been traced to the fourth millennium BC. The fabric pieces from “Mohenjodaro” excavations were found to made up of cotton. For over three thousand’s years (1500BC to 1700 AD) India was recognized as cradle of cotton industry. India was country in the world to domesticate cotton and utilize its fibre to manufacture fabric. India is the second largest producer of cotton in the world. India accounts for approximately 25 per cent of world’s cotton area and 16 per cent of total cotton production. Maharashtra is the important cotton growing state in India

with 31.33 lakh ha and production of 62.00 lakh bales.

Integrated Pest Management is a pest management system hat in the content of the associated environment and the pest population dynamics of the pest species. Utilize all suitable techniques and methods in as compatible manner as possible and maintain the pest population at the level below these causing economic injury. This approach has been maintaining the agro-eco-system. It has more relevant due to advantage like safely to environment, pesticide-free food commodities, low input based crop production.

Materials and Methods

The study was conducted in Nagpur district of Maharashtra State. Out of 14 talukas of Nagpur district namely, Hingna and Nagpur (Rural) talukas were purposively selected for the study. Five villages were selected purposively from each taluka considering the maximum area under cotton cultivation. Thus in total, ten villages were taken for the study and a total of 120 respondents were selected. The exploratory research design was used for the study. The data were collected in face-to-face situation by the personal interview method with the help of structured interview schedule containing the questions on adoption of integrated pest management practices for control of pink bollworm. The data were tabulated, analyzed and the results were interpreted as on Table 1.

Results and Discussion

The findings of the study had been presented under the following headings.

Knowledge of integrated pest management practices by the cotton growers

The data in table 1 practice wise knowledge of respondents about cultural method of integrated pest management, cent per respondents(100%) had knowledge about allowing cattle grazing on the left over green bolls of the plant at the end of crop season, deep ploughing during summer(89.16%), timely sowing(80.84%) and selection of recommended variety with early medium maturity (47.50%), respectively. Regarding mechanical method, most of the respondents had knowledge about destruction of cotton stubbles immediate after by harvest (81.66%), followed by use of pheromone traps (61.66%) and hand picking and destruction of larvae (60.00%), respectively. In case of biological method majority of the respondents were

having knowledge about spraying of Neem Seed Kernel Extract (N.S.K.E.) 5% during flowering stage(56.67%) and Use of trichocards (40.00%), of chloropyriphos 20 ml/10lit. / quinolphos 20ml/10lit / profenophos 20 ml/10 lit / thiodicarb 20 gm/10lit at initial stage of ETL(87.50%), followed by avoid mixing of agrochemicals(65.00%) and use of synthetic pyrethroides (Cypermetherium 10 ml/10 lit and Fenvelrate 8 ml/10lit) and combination product(63.34%), respectively. It could revealed that majority of respondents have knowledge about application

Adoption of integrated pest management practices by cotton growers

The table 1 concluded that the adoption of integrated pest management practices of cotton, it was found that the majority of respondents completely adopted integrated pest management practices like to cultural methods under integrated pest management practices, most of the practices were completely adopted by respondents such as, cultural methods were allowing cattle grazing on the left over green bolls of the plant at the end of crop season (71.67%).In case of complete adoption of IPM practices under mechanical method, destruction of cotton stubbles immediate after by harvest(36.66%). Regarding with biological method, above one fourth of cotton growers completely adopted method such as spraying of Neem Seed Kernel Extract (N.S.K.E.) 5% during flowering stage (27.50%). It may also seen that of complete adoption of chemical methods like application of chloropyriphos 20 ml/10lit. / quinolphos 20ml/10lit / profenophos 20 ml/10 lit / thiodicarb 20 gm/10lit at initial stage of ETL (43.34%).

Whereas most of respondents partially adopted cultural methods of integrated pest management practices were, timely sowing

(60.00%), deep ploughing during summer (30.00%). However, it was observed that the majority of the respondents partially adopted mechanical method, destruction of cotton stubbles immediate after by harvest (45.00%), hand picking and destruction of larvae (40.00%). Moreover, the others partially adopted biological methods like spraying of Neem Seed Kernel Extract (N.S.K.E.) 5%

during flowering stage(29.16%) were adopted by the respondents partially. Regarding chemical method, most of the respondents partially adopted methods like, application of chloropyriphos 20 ml/10lit. / quinolphos 20ml/10lit / profenophos 20 ml/10 lit / thiodicarb 20 gm/10lit at initial stage of ETL(56.66%).

Table.1 Distribution of respondents according to their recommended practice wise knowledge and adoption of integrated pest management practices

Sl. No.	IPM practices	Knowledge (n=120)		Adoption (n=120)		
		Yes (1)	No (0)	CP (2)	PA (1)	NA (0)
		Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)
A.	Cultural Method					
1.	Deep ploughing during summer	107 (89.16)	13 (10.84)	71 (59.14)	36 (30.00)	13 (10.86)
2	Timely sowing (Avoid pre monsoon sowing)	97 (80.84)	23 (19.16)	23 (19.16)	72 (60.00)	25 (20.84)
3	Selection of recommended variety with early medium maturity.(140 to 160 days duration and resistance to sucking pest)	57 (47.50)	63 (52.50)	35 (29.16)	22 (18.34)	63 (52.50)
4	Allowing cattle grazing on the left over green bolls of the plant at the end of crop seas	120 (100)	00 (00)	86 (71.67)	34 (28.33)	00 (00)
B	Mechanical Method					
5	Hand picking and destruction of larvae.	72 (60.00)	48 (40.00)	24 (20.00)	48 (40.00)	48 (40.00)
6	Destruction of cotton stubbles immediate after by harvest.	98 (81.66)	22 (18.34)	44 (36.66)	54 (45.00)	22 (18.34)
7	Use of pheromone traps (2-3 pheromone traps/acer) for monitoring.(at the time of flowering)	74 (61.66)	46 (38.34)	41 (34.16)	33 (27.50)	46 (38.34)
C	Biological Method					
8	Spraying of Neem Seed Kernel Extract (N.S.K.E.) 5% during flowering stage.	68 (56.67)	52 (43.33)	33 (27.50)	35 (29.16)	52 (43.34)
9	Use of trichocards (3cards/acre) i.e. for 7-8 times after the initiation of flowers at an interval 8-10 days.	0 (00)	120 (100.00)	0 (00)	0 (00)	120 (100.00)
D	Chemical Method					
10	Application of chloropyriphos 20 ml/10lit. / quinolphos 20ml/10lit / profenophos 20 ml/10 lit / thiodicarb 20 gm/10lit at initial stage of ETL.	105 (87.50)	15 (12.50)	52 (43.34)	68 (56.66)	0 (00)
11	Avoid mixing of agrochemicals. (Monocrotophos + Acephate)	78 (65.00)	42 (35.00)	36 (30.00)	42 (35.00)	42 (35.00)
12	Use of synthetic pyrethroides (Cypermetherium 10 ml/10 lit and Fenvelrate 8 ml/10lit) and combination product(During boll formation stage)	76 (63.34)	44 (36.66)	27 (22.50)	49 (40.84)	44 (36.66)

CA- Complete adoption PA- Partial adoption NA-No adoption

Table.2 Distribution of respondents according to their level of overall knowledge and overall adoption of integrated pest management practices

Sl. No.	Index Level	Respondents (n=120)			
		Knowledge		Adoption	
		Frequency	Percentage	Frequency	Percentage
1.	Low (Up to 33.33)	03	02.50	09	07.50
2.	Medium (33.34 to 66.66)	67	55.84	103	85.84
3.	High (Above 66.66)	50	41.66	08	06.66
	Total	120	100.00	120	100.00
	Mean		68.26		50.17
	SD		11.79		13.22

In case of non adopted integrated pest management practices were, selection of recommended variety with early medium maturity (52.50%). It was also found that majority of respondents not adopted hand picking and destruction of larvae (40.00%). It is also found that majority of the respondents not adopted use of trichocards (3cards/acre) i.e. for 7-8 times after the initiation of flowers at an interval 8-10 days (100.00%). Most of the respondents did not adopted chemical method like use of synthetic pyrethroides (Cypermetherium 10 ml/10 lit and Fenvelrate 8 ml/10lit) and combination Product (36.66%).

Overall knowledge and adoption level

Data presented in Table 2 shows that majority (55.84%) of cotton growers had medium level of knowledge about integrated pest management practices, followed by 41.66 per cent in high and 2.50 per cent in low level respectively. These findings were consonance with the findings of Choudhari (2010), Sable and Kadam (2012), Patel and Sanwal (2015) and Raviya (2017), respectively.

Table 2 also revealed that majority (85.84%) of cotton growers had medium level of adoption, followed by 07.50 per cent low and 06.66 per cent with high level of adoption of integrated pest management practices. These

findings are supported by Tilara (2009), Dhenge (2013) and Neethi and Shailaja (2013), respectively.

In conclusion, in order to accelerate the adoption of recommended technology of IPM for control of pink bollworm in cotton multifold efforts are needed. Extension agency of state Agriculture Department, Department of Agricultural Entomology, KVK functionaries and Zillha Parishad, Panchayt Samiti may jointly decide the policies and chalk out programmers for making IPM practices popular among the cotton growers to manage pink bollworm in cotton by resorting to the participatory approach so as to motivate and involve them in endeavor at hand.

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