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How to do Knowledge of Integrated Pest Management (IPM) Trained Cotton Growers in Rainfed Condition

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Abstract: ***The goal of the current study is to find out how well-informed people are about integrated pest management (IPM) techniques in rainfed agriculture. With an emphasis on the Avinashi block, the study was carried out in the Tamil Nadu district of Coimbatore. It assesses the respondents' understanding of cultural, mechanical, biological, and chemical practices, among other IPM areas. The study's conclusions show that a sizable percentage of participants are competent in cultural practices, especially when it comes to using high-yielding, pest-resistant kinds, and certified, high-quality seeds. Regarding mechanical operations, the responders show proficiency in methods like gathering and eliminating insect eggs, larvae, and pupae. Furthermore, a significant proportion of participants indicate that they are acquainted with biological methods, such as using Thuricide: Bt, neem oil, and Trichogramma egg cards. In terms of chemical practices, the survey shows that most participants are aware of how crucial it is to steer clear of reusing the same pesticides over and over again and instead choose safe substitutes. These results highlight the high degree of knowledge and understanding that respondents had about IPM techniques in rainfed agricultural environments. To support the acceptance and application of these strategies for sustainable pest management in agricultural contexts, more study and educational efforts would be necessary.***

Keywords: Integrated Pest Management, Cotton Growers, biological.

1. Introduction

Over the course of the green revolution, there have been widespread outbreaks of insect pests, particularly on rice and cotton. These outbreaks have been caused by intercropping with other crops. In a similar manner, the excessive use of inorganic nitrogenous fertilisers generated an environment that was conducive to the rapid proliferation of a wide variety of insects and pests, which led to an outbreak of the situation. The cotton crops in India are infested by 162 different kinds of insects, and pest assaults are responsible for up to sixty percent of the yearly loss in fibre output (Anonymous, 1989). IPM, which stands for integrated pest management, has as its primary goal the maximisation of agricultural output while simultaneously minimising the costs of production, environmental pollution, and public and animal health hazards. This is accomplished by prohibiting the use of chemical pesticides in an excessive and indiscriminate manner. In order for farmers to be able to handle and control methods that maximise profit while optimising production input and resources, it strives to empower farmers to become managers and decision makers.

2. Review of Literature

More than 60 percent of dryland farmers, according to Sophia (1991), had a good understanding of how to carry out dryland practices such as summer ploughing, seed rate, seed treatment, intercropping with cotton and cluster bean system, fertiliser application, and chemical control of bollworms. This was stated in the context of dryland farming.

The results of Vennila's (1998) study revealed that fifty percent of the respondents possessed a medium level of how to do knowledge, followed by low levels (29 percent) and high levels (21 percent).

3. Objective of the Study

The objective of this study was how to do knowledge of Integrated Pest Management (IPM) practices by cotton growers under rainfed condition.

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4. Research Methodology

District of Coimbatore located in Tamil Nadu The selection of the state for the study was based on the total number of IPM-FFS training courses that were carried out for cotton cultivation. The district of Coimbatore is the most populous of all the districts in Tamil Nadu. Out of all the blocks in the Coimbatore district, the Avinashi block had the largest number of IPM-FFS training courses that were carried out in rainfed conditions. The biggest number of farmers growing under rainfed conditions led to the selection of four villages in the Avinashi block and their subsequent selection. The approach of proportional random sampling was utilised to pick one hundred farmers for the purpose of the study. Knowledge that consists of information that is required to make appropriate use of an invention is referred to as "how to do" knowledge. It is necessary for the adopters to have an understanding of how to properly use the innovation, how much of it to acquire, and other related information (Rogers, 1983). Following consultation with extension scientists and entomologists, as well as with reference to the IPM-FFS guide, a list of items on suggested IPM technologies was compiled in order to assess the level of knowledge of how to carry out the technologies. The objects that were chosen were arranged into the following categories: cultural practices, mechanical practices, biological practices, and chemical practices. The responses were divided into two categories: "correct" and "in-correct," and each category received a score of two and one, respectively.

5. Findings and Discussion

How to do knowledge of IPM Practices under Rainfed Condition

A. Cultural Practices

In the rainfed condition, it was possible to observe from Table 1 that one hundred percent of the respondents had the ability to do knowledge on how to avoid cotton ratoon cropping practices, quality and certified seeds, high yielding and pest resistant varieties, summer ploughing, intercropping such as greengram and blackgram, and growing the same variety throughout the village. The participants in the survey stated that they were able to acquire information about IPM techniques while participating in the IPM-FFS training programme.

B. Mechanical Practices

Table 1 showed that under rainfed conditions, one hundred percent of the respondents were able to demonstrate knowledge of mechanical practices. These practices included the collection and destruction of pest eggs, larvae, and pupae, as well as the removal and destruction of cotton squares, flowers, and other shed materials that were infected with pests and diseases. This was then followed by the use of pheromone traps (80%), yellow sticky traps (80%), and the removal of the terminal section of the main stem (75%). It is possible that the causes are related to the fact that during the IPM-FFS training, farmers were able to acquire information through demonstrations that were done on mechanical procedures.

C. Biological Practices

Based on the information shown in Table 1, it can be observed that ninety percent of farmers have acquired the knowledge necessary to implement biological methods in rainfed conditions. These activities include the use of neem oil and Trichogramma eggcards. After this, there is a possibility that 85 percent of the thuricide will be Bt, and 80 percent of them about NPV. A greater number of respondents had acquired information about Trichogramma eggcards and neem oil. This might be attributed to the fact that the State Department of Agriculture regularly supplies eggcards to farmers throughout the season without allowing them to expire.

D. Chemical Practices

Table 1 shows that when asked about chemical practices under rainfed settings, 100% of respondents knew how to avoid using the same insecticides, how to identify ETL for cotton pests, and how to apply granular pesticides like carbofuran. During their time in IPM-FFS training, rainfed cotton farmers learned about the dangers of using the same pesticides over and again, and as a result, a larger percentage of responders avoid doing so. One possible explanation for the larger number of respondents who were knowledgeable of ETL (Economic Threshold Level) is that they were

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properly taught on the importance of ETL levels for all pests, and they were aware of the detrimental effects of chemical pesticides on the soil.

6. Conclusion

Based on the findings of this study, it is possible to draw the conclusion that among the cultural practices, one hundred percent of the respondents had the ability to perform knowledge on the majority of the IPM practices in rainfed conditions among IPM trained cotton producers. Concerning mechanical procedures, it was found that more than eighty percent of respondents possessed information on how to do the majority of the IPM activities. Among the biological practices, there were two practices that ninety percent of the respondents had information about how to perform. In terms of chemical procedures, one hundred percent of respondents possessed information on how to do three activities out of a total of eight approaches to pest management. The ultimate result is that the majority of rainfed cotton producers have a larger proportion of knowledge regarding agricultural operations, mechanical practices, biological practices, and chemical procedures.

References

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Table 1.

Practice-wise How to do knowledge of IPM Practices under Rainfed Condition

S.NO	PRACTICES	Correct	Incorrect
A	**CULTURAL**		
1	Avoiding cotton ratoon cropping practices	100.00	----
2	Sowing quality and certified seeds	100.00	----
3	Growing high yielding and pest resistant variety	100.00	----
4	Summer ploughing	100.00	----
5	Growing intercrops like blackgram and greengram	100.00	----
6	Growing same variety throughout the village	100.00	----
B	**MECHANICAL**		
1	Collecting and destroying egg, larvae and pupae of pests	100.00	----
2	Removing and destroying pest and disease infected cotton squares, flowers and other shed materials	100.00	----
3	Fixing sex pheromone traps @ 5 numbers/ac	80.00	20.00
4	Fixing yellow sticky traps@ 5 numbers/ac	80.00	20.00
5	Clipping the terminal portion of main stem	75.00	25.00
6	Fixing 'T' shaped poles @ 5 numbers/ac	75.00	25.00
C	**BIOLOGICAL**		
1	Tying *Trichogramma* egg cards 4cc (40 pieces) / ac	90.00	10.00
2	Spraying neem oil	90.00	10.00
3	Spraying thuricide: Bt (*Bacillus thuringensis*) @ 300 gm / ac	85.00	15.00
4	Spraying 200 ml NPV(Nuclear PolyHedrosis Virus) / ac to control bollworms	80.00	20.00

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5	Releasing the predator *Chrysopa* @ 5000 / ac	80.00	20.00
D	**CHEMICAL**		
1	Avoiding repeated use of the same insecticides	100.00	----
2	Applying granular insecticides like carbofuran 3 G 12 kg / ac	100.00	----
3	Identifying ETL (Economic Threshold Level) for cotton pests	100.00	----
4	Applying correct quantity of pesticides	90.00	10.00
5	Spraying chemicals in evening hours	88.00	12.00
6	Applying safe insecticides such as endosulfan @ 250 ml / ac and phosalone @ 100 ml / ac	80-.00	20.00
7	Spraying neem based insecticide: such as *Azadirachtin* 200 ml / ac	80-.00	20.00
8	Spraying herbicide such as fluchloralin @ 900 ml/ac and pendimethalin @ 1.3 lit / ac	80-.00	20.00

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