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Awareness knowledge of IPM (Integrated Pest Management) adopting cotton cultivators in an irrigated condition: An overview analysis

[1] N Muthukumaran, [2] B Sudhakar
[1] Department of Entomology, Faculty of Agriculture, Annamalai University, Tamil Nadu, India
[2] Department of Agricultural Extension, Faculty of Agriculture, Annamalai University, Tamil Nadu, India

Abstract
The present part of the study deals with awareness knowledge of IPM (Integrated Pest Management) adopting cotton cultivators in an irrigated condition. Under irrigated condition, among cultural practices, cent per cent of respondents had awareness knowledge about majority of IPM practices. Regarding mechanical practices majority cent per cent of respondents had awareness knowledge of fixing light traps, clipping the terminal portion of main stem, collecting and destroying egg, larvae and pupae of pests and removing and destroying pest and disease infected cotton squares, flowers and other shed materials. With regard to biological practices, cent per cent of the respondents awareness knowledge about spraying neem oil, followed by 90 per cent about tying *Trichogramma* eggcards. Among chemical practices, cent per cent of the respondents were aware of spraying herbicide.

Keywords: IPM, cotton, awareness knowledge, irrigated condition

Introduction
India accounts for almost 25 to 30 per cent of World's export of cotton and there are bright chances for further increase in its share. The area under cotton in India is the largest and constitutes nearly one-fourth of the World's cotton area. The cotton productivity in India is abysmally low as compared to many other countries, including our neighbor, Pakistan. Under the impact of green revolution, due to mono cropping, there have been many outbreaks of insect pests especially on rice and cotton. To meet these challenges, it is of utmost importance that in future the insect problems would have to be tackled through Integrated Pest Management (IPM). IPM has been defined by Pretty *et al.* [3] as the integrated use of some or all the pest control strategies in a way that not only reduce pest population to economically acceptable levels but it is sustainable and non-polluting. The IPM programme aims at educating the farmers and extension agencies through Farmers Field Schools (FFS). Under FFS programme, farmers are made experts in identifying natural enemies of pests, monitoring regular pests and taking suitable management measures. In the year 1999-2000 under ICDP (Intensive Cotton Development Programme) totally 1500 FFS were organized and 45000 cotton growers were trained throughout India [1].

Specific objective of the study
The specific objective of this study was awareness knowledge of Integrated Pest Management (IPM) adopting cotton growers under irrigated agro-ecosystem in Coimbatore district of Tamil Nadu, India.

Review of literature
Sripal [5] found that 100 per cent of irrigated cotton cultivators had known about high yielding varieties, 63 per cent were aware of seed treatment, 24 per cent about fertilizer application and 33 per cent about plant protection. Snehalatha [4] reported that seed treatment with *Azospirillum* had the maximum level of awareness (62.50 %) among cotton growers. The use of light traps was known to 75 per cent of cotton growers

Bhople and Lakhdive [2] reported that more than half (63.33 %) of the respondents had known about the IPM practices and as much as 45 per cent of them had an idea about neem seed extract. The findings of Velusamy [6] revealed that among the three bio-control methods for cotton pests, NPV spray was well known to 92.50 per cent of cotton growers followed by *Trichgramma chilonis* and *Crysopa* sp. to 90 per cent and 67.50 per cent respectively.

Vennila [7] reported that 58 per cent of the small and big farmers had medium level of awareness knowledge, followed by 20 per cent of small farmers and 26 per cent of big farmers with low and 22 per cent small and 16 percent big farmers were found to have high level of awareness knowledge.

Research Methodology
Coimbatore district stands first in total number of IPM-FFS training programmes conducted for cotton throuout the Tamil Nadu State over the years and hence, it was selected for the study. The highest area under cotton and maximum number of IPM -FFS training programmes conducted were considered as the criteria to select the Taluk representing irrigation condition. The same criteria were used for selection of Block where Madukarai block under irrigated condition were selected. In Madukarai block, four villages were selected. A sample of 100 farmers was selected for study. This part deals with the specific objective was to study the awareness knowledge of IPM oriented cotton growers under irrigated condition. Awareness knowledge denotes the knowledge of

farmers about different IPM practices. The list of items that would help to measure the awareness knowledge on recommended IPM technologies were prepared in consultation with Entomologist, Extension Scientists and by referring to the IPM-FFS Guide. The items were categorized into cultural, mechanical, biological and chemical practices. The respondents were collected on a two-point continuum of 'aware' and 'not-aware'. Percentage analysis was worked out to study the practice-wise awareness knowledge of respondents on IPM practices.

Findings and Discussion

Practice-wise awareness knowledge of IPM practices under irrigated condition

The distribution of cotton growers according to practice-wise awareness knowledge under irrigated condition is presented in Table – 1.

- **Cultural Practices:** It is seen from the Table -1 that under irrigated condition, cent per cent of the respondents had awareness knowledge on the cultural practices *viz.*, summer ploughing, treating seed with *Azospirillum* bio-fertilizer, applying neem cake, growing high yielding and pest resistant hybrids, growing intercrops like blackgram and greengram, sowing quality and certified seeds and following cotton ratoon cropping practices. This might be due to most of the farmers attended the IPM-FFS training programmes conducted for cotton.
- **Mechanical Practices:** Table 1 also reveals that under irrigated condition, cent per cent of the respondents had awareness knowledge on the mechanical practices *viz.*, fixing light traps, clipping the terminal portion of main stem, collecting and destroying egg, larvae and pupae of pests and removing and destroying pest and disease infected cotton squares, flowers and other shed materials. This might be due to most of the mechanical practices are simple and easily understood by the cotton growers under IPM-FFS training programmes.
- **Biological Practices:** The Table 1 indicates that under irrigated condition, with respect to biological practices, cent per cent of the respondents awareness knowledge about spraying neem oil, followed by 90 per cent about tying *Trichogramma* eggcards and more than two-third of respondents were aware of the practices: releasing the predatory reduvid bug, spraying NPV. The reason for higher number of respondents were aware of spraying neem oil and tying *Trichogramma* eggcards might be due to that during the training on IPM eggcards and neem oil supplied to most of the trainees at subsidized rates.
- **Chemical Practices** The Table 1 indicates that as for as chemical practices were concerned, under irrigated condition, cent per cent of the respondents were aware of spraying herbicide followed by more than 90 per cent of the respondents aware of Identifying ETL for cotton pests (94%), applying granular insecticides (93%) and applying safe insecticides (91%). More than 80 per cent of the respondents aware of the practices *viz.*, avoiding repeated use of the same insecticides (89 %) and applying correct quantity of pesticides (84%). The reason for higher awareness knowledge about chemical practices might be the very fact that most of the farmers relied upon inorganically formulated pesticides for the control of pests and to get more yield

Table 1: Practice-wise awareness knowledge of IPM practices under irrigated condition (N=100)

S. No	Practices	Awareness Knowledge
A.	Cultural	**Per cent**
1	Summer ploughing	100.00
2	Treating seed with *Azospirillum* bio-fertilizer	100.00
3	Applying neem cake	100.00
4	Applying FYM(Farm Yard Manure)/Compost	100.00
5	Growing high yielding and pest resistant hybrids	100.00
6	Growing intercrops like blackgram and greengram	100.00
7	Sowing quality and certified seeds	100.00
8	Following cotton ratoon cropping practices	100.00
9	Acid delinting of cotton seeds	87.00
10	Growing bund crops like maize, cumbu and castor	78.00
11	Treating seed with fungal bioagent : *Trichoderma*	73.00
12	Growing same hybrid throughout the village	64.00
13	Growing trap crops like sunflower and marigold	58.00
14	Sowing cotton seed by ridges and furrow method	36.00
15	Following alternate furrow method of irrigation	33.00
16	Treating seed with mixture of *Trichoderma* and*Pseudomonas* fungal bioagents	29.00
17	Seed hardening with pungam leaf extract	28.00
B	Mechanical	
1	Fixing light traps	100.00
2	Clipping the terminal portion of main stem	100.00
3	Collecting and destroying egg, larvae and pupae of pests	100.00
4	Removing and destroying pest and disease infected cotton squares, flowers and other shed materials	100.00
5	Fixing sex pheromone traps	96.00
6	Fixing yellow sticky traps	78.00
7	Fixing 'T' shaped poles in the cotton field	39.00
8	Covering dark blue cloths in the field	21.00

C	Biological	
1	Spraying neem oil	100.00
2	Tying *Trichogramma* egg cards	90.00
3	Releasing the predatory Reduvid bug	73.00
4	Spraying viral bio-control agent: NPV(Nuclear Poly- Hedrosis Virus)	69.00
5	Spraying bacterial biocontrol agent thuricide : Bt (*Bacillus thuringensis*)	46.00
6	Spraying pungam oil	27.00
7	Releasing the predator *Chrysopa*	24.00
8	Releasing the egg, larval parasitoid: *Chelonus blackburni*	11.00
D	Chemical	
1	Spraying herbicide	100.00
2	Identifying ETL (Economic Threshold Level) for cotton pests	94.00
3	Applying granular insecticides	93.00
4	Applying safe insecticides	91.00
5	Avoiding repeated use of the same insecticides	89.00
6	Applying correct quantity of pesticides	84.00
7	Spraying neem based insecticide: *Azadractin*	62.00
8	Spraying chemicals in evening hours	47.00

Conclusion

From this study, it is concluded that under irrigated condition, among cultural practices, cent per cent of respondents had awareness knowledge about eight IPM practices among seventeen practices. Regarding mechanical practices cent per cent of respondents had awareness knowledge of four IPM practices among eight practices. With regard to biological practices, cent per cent of the respondents awareness knowledge about spraying neem oil. Among chemical practices, cent per cent of the respondents were aware of spraying herbicide.

Recommendations

Both central and state Government conduct more number of IPM-FFS training programmes in all the districts in order to increase the Cent per cent awareness knowledge of cotton growers by the way to increase the adoption of IPM practices and reduce the pest menace, finally increase their productive and income.

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References

1. Anonymous. Technology Mission on Cotton – Mini Mission II. Ministry of Agrl., GOI, CICR, Nagpur. 2001, 13p.
2. Bhople RS, Lakhdive BL. Use of Neem Seed Extract for Control of Crop Pests by Farmers. Agrl, Extn, Review. 1996; 12(10):29-30 p.
3. Pretty J, Guijit I, Sconnes I, Thompson J. Regenerating Agriculture: The Agro-ecology of Low-External Input and Communication Development. In: J: Holmberg, (eds.) Policies for a small IIED, London, 1992.
4. Snehalatha ES. Spread and Acceptance of Farm Technologies and their Impact on Production, Productivity and Socio-economic Condition of Farmers. Unpub. M.Sc.(Ag.) Thesis, TNAU, Coimbatore, 1991.
5. Sripal KB. Factors Influencing Farmers in the Adoption of Improved Practices for Dryland and Irrigated Cotton. Research Project No. R.1, Dept. of A.E & R.S, TNAU, Coimbatore, 1981.
6. Velusamy R. Farmers Awareness and Adoption towards Bio-control Agents and Bio-pesticides. Unpub. Ph.D. Topical Research, TNAU, Coimbatore, 1997.
7. Venilla MA. Adoption of Innovations: Generated by Research System – An Analysis. Unpub. M.Sc. (Ag.) Thesis, TNAU, Coimbatore, 1998.