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YIELD GAP AMONG IPM (INTEGRATED PEST MANAGEMENT) ORIENTED COTTON CULTIVATORS IN AN IRRIGATED AND RAINFED CONDITIONS A CRITICAL ANALYSIS

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ABSTRACT

The present part of the study deals with the yield gap among IPM (Integrated Pest Management) oriented cotton cultivators in an irrigated and rain-fed conditions. Under irrigated condition, almost half of the respondents had low levels of yield gap, followed by medium and high level of yield gap. Under rain-fed condition, half of the respondents had a medium level of yield gap, followed by low and high level of yield gap.

KEY WORDS: IPM, Yield gap, Irrigated condition and rain-fed 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 the green revolution, due to monocropping, 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 (1992) 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 (Ananymous, 2001).

In view of a rapidly growing population, the untapped producing reservoir otherwise known as "yield gap" has become an emerging issue. The main reason for the present low level of productivity and wider yield gap of cotton is the fact that about 49 lakh ha of area or about 65 per cent of the total area under cotton is entirely rainfed. Another reason for the low and the unstable yield of rain-fed cotton is the long duration of the existing varieties, which exposes them to the vagaries of weather for a long period Over the years, cotton cultivation had undergone a lot of changes in terms of genotypes (varieties and hybrids) grown, agro-input used, farm operations and practices that would lead to widen the yield gap.. The yield gap refers to difference between potential yield and actual yield. Keeping the above factors in mind the present research was designed with the specific objectives.

SPECIFIC OBJECTIVE OF THE STUDY

The specific objective of this study was the yield gap between Integrated Pest Management (IPM) oriented cotton growers under irrigated and rain-fed agro-ecosystem in Coimbatore district of Tamil Nadu, India.

REVIEW OF LITERATURE

Ramamoorthy and Venkatasamy (1999) opined that in order to estimate the yield gap among the cotton farmers of Warangal district of Andhra Pradesh, the difference between maximum yield and average yield were considered. Accordingly, the yield gaps were estimated at 530 kg and 210 kg/ha for irrigated and rain-fed conditions respectively.

Shiyani *et al.,* (1999) observed that the yield of cotton was 22.60 q/ha in case of drip adopters and 18.56 q/ha in respect of farmers using conventional method of irrigation.This indicates that about 22 per cent yield gap existed between drip adopters and non-adopters.

Ramamoorthy (2000) inferred that the yield of cotton crop under rice-fallow condition in non-IPM village was 13.33 q/ha and the IPM village was 18.8 q/ha. So the yield gap between IPM and non-IPM villages were about 5.5 q/ha.

Santhakumar (2002) reported that seed cotton yield in IPM adopted village was about 1200 kg/ha compared to non-IPM villages was about 600 kg/ha with little extra expenditure in cultivation cost for IPM village.

RESEARCH METHODOLOGY

Coimbatore district stands first in total number of IPM-FFS training programmes conducted for cotton throughout 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 irrigated and rainfed conditions. The same criteria were used for selection of Block where Madukarai block under irrigated condition and Avinashi block under rain-fed condition were selected. In Madukarai block, four villages were selected for irrigated condition and in Avinashi block; four villages were selected for rain-fed condition. A sample of 100 farmers each selected for irrigated and rainfed conditions. This part deals with the specific objective was to study the yield gap among IPM oriented cotton growers under irrigated and rainfed conditions. For yield gap analysis under irrigated condition TCHB 213 hybrid was selected for the study and for rainfed condition LRA 5166 variety was selected. The highest yield obtained by IPM-FFS rained cotton growers in kg/ac was considered as the potential yield. The yield obtained by each one of the IPM-FFS trained cotton growers in kg/ac in the selected villages was considered as actual yield. One score was given for every one kg yield. The percentage yield gap was worked out for irrigated and rainfed condtions for TCHB 213 and LRA 5166 based in the following formula:

$$\text{Percentage Yield gap} = \frac{\text{Potential yield /ac} - \text{Actual yield/ac}}{\text{Potential yield /ac}} \times 100$$

Based on the percentage yield gap under irrigated and rainfed conditions the respondents were grouped into low, medium and high based on cumulative frequency method.

FINDINGS AND DISCUSSION

The yield gap among IPM oriented cotton cultivators in an irrigated and rain-fed conditions

The distribution of respondents under irrigated and rain-fed conditions according to their levels of yield gap are furnished in Table 1.

Table 1. Distribution of Respondents according to Yield gap under Irrigated and Rainfed Conditions

S.No	Category	Irrigated (n = 100)	Rainfed (n = 100)
		Per cent	**Per cent**
1	Low	49.00	30.00
2	Medium	34.00	50.00
3	High	17.00	20.00
	Total	100.00	100.00
	Mean score	22.92	29.85
	Mean differences	6.93	
	't' value	2.554 (Significant at 5 % level)	

It is observed from Table 1 that under irrigated condition, almost half (49 %) of the respondents had low levels of yield gap, followed by medium (34 %) and the rest (17 %) had high levels of yield gap, Under rain-fed condition, half (50 %) of the respondents had a medium level of yield gap, followed by low (30 %) and the rest (20 %) had high levels of yield gap.

The't' value was found significant, indicating a significant difference between respondents of irrigated and rain-fed conditions with respect to yield gap. Since, the mean value of the yield gap of rain-fed farmers (29.85) was found to have higher than the irrigated farmers (22.92). It may be concluded that the yield gap under rain-fed condition was significantly higher than that of irrigated condition.

The assured irrigation would have brought the low level of the yield gap for nearly half of the responses under irrigated condition and depends on rainfall would have attributed to medium level of the yield gap for half of the cotton growers in rain-fed condition.

The study showed that significant difference was observed in the yield gap of farmers under irrigated and rain-fed conditions. Therefore, the hypothesis that, there will not be the difference in the yield gap of farmers under irrigated and rain-fed conditions was rejected.

CONCLUSION

From this study, it is concluded that under irrigated condition, almost half of the respondents had low levels of yield gap, followed by medium and high level of yield gap. Under rain-fed condition, half of the respondents had a medium level of yield gap, followed by low and high level of yield gap.

RECOMMENDATIONS

Both Central and state Government conduct more number of IPM-FFS training programmes in all the districts in order to reduce the yield gap 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, 2001. Technology Mission on Cotton – Mini Mission II. Ministry of Agrl., GOI, CICR, Nagpur, 13p.*

2) *Pretty, J., I. Guijit, I. Sconnes and J.Thompson 1992. "Regenerating Agriculture: The Agro-ecology of Low-External Input and Communication Development". In: J: Holmberg, (eds.) Policies for a small IIED, London.*

3) *Ramamoorthy, K. and R. Venkatasamy 1999. Technological Trap – A vicious Cycle of Debt-Trap among the Cotton Growers of Warangal. Research Report, CICR, Regional Station, Coimbatore, 27-38 p.*

4) *Ramamoorthy, K. 2000. Technical Bulletin on Summer Cotton in Tamil Nadu (1999-2000). Research Report, CICR, Regional Station, Coimbatore, 15-17 p*

5) *Santhakumar, S. 2002. IPM- An Opportunity to Crop Protection in Cotton Conference proceedings – on Constraints and Opportunities for Agriculture and Rural Development in different Agro-ecological Regions. Agrl. Economic Research Association (ind), National Centre for Agrl. Economics and Policy Research, New Delhi, 181-182 p.*

6) *Shiyani, R.C, D.B. Kuchhadiya and M.V. Patal. 1999. Economic Impact of Drip Irrigation on Cotton Growers of Saurashtra Region. Agrl. Situation in India, LVI (7) : 407-412 p.*