

IMPACT OF FRONTLINE DEMONSTRATIONS ON INTEGRATED APPROACHES AGAINST THE MANAGEMENT OF PINK BOLLWORM IN BT. COTTON

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ABSTRACT

Cotton is a major oilseed crop cultivated under irrigated and unirrigated areas in Rajkot district of Saurashtra region. Since last three-year cotton area was affected with heavy infestation of pink bollworm pest. Krishi Vigyan Kendra, Pipalia had conducted 50 demonstration on the farmers' fields on the integrated approaches for management technologies of pink boll worm and transfer the latest technologies among the farmers of KVK operational area. The findings revealed that cotton growers' yield ranged from 21.0 q/ha to 30.5 q/ha and per cent yield increase ranged from 9.09 % to 11.92 % over the local practices yield. This is due to transfer of improved technology and adoption of integrated approaches. The average CBR of three years was higher as compare to farmers' practices, which proves that the technology which was demonstrated was economically viable. The yield levels were considerably low under local practices because of considerable variations in the adoption of recommended package of practices depending upon the amount of risk involved in terms of cost, convenience, skill and knowledge about the concerned practice.

Keywords: *Bt.cotton, frontline demonstrations, integrated approach, pink bollworm*

INTRODUCTION

Cotton is one of the most important fiber and cash crop of India and plays a dominant role in the industrial and agricultural economy of the country. It provides the basic raw material (cotton fibre) to cotton textile industry. Cotton in India provides direct livelihood to 6 million farmers and about 40 -50 million people are employed in cotton trade and its processing. Cotton (*Gossypium* sp) white gold, the most important commercial crop of India, is subjected to the ravages of a number of insect pests. The use of Bt.cotton in India has grown exponentially since its introduction. Recently India has become the number one global exporter of cotton and the second largest cotton producer in the world. In India, there are ten major cotton growing states which are divided into three zones, viz. north zone, central zone and south zone. Central zone includes Madhya Pradesh, Maharashtra and Gujarat.

Socio-economic surveys confirms that Bt.cotton continues to deliver significant and multiple agronomic, economic, environmental and welfare benefits to Indian farmers and society including halved insecticide requirements and a doubling of yields. In India, the states of Maharashtra (26.63%), Gujarat (17.96%) and Andhra Pradesh (13.75%)

and also Madhya Pradesh are the leading cotton producing states.

In Gujarat, Rajkot districts were proffered Bt. cotton crop in *Kharif* from last 10 years and its gain highest production and productivity. But since last two years the farmers of this area are suffering from heavy attack of pink bollworm pest in Bt. cotton which caused reduction in production and productivity in 2014-15 which continuous in year up to 2017-18. Pink bollworm pest have become quite serious from 45-60 days after sowing and heavy infestation in later stages reduces the crop yield to a great extent. The estimated loss due to pink bollworm pests is up to 30-40%. For this only chemical control measure is not feasible, hence there is a need to use integrated approaches for management of pink bollworm in Bt. Cotton. Therefore, the present study was formulated to find out the frontline demonstrations yield and its comparison along with local check.

OBJECTIVE

To know the impact of frontline demonstrations on integrated approaches against the management of pink bollworm in bt. Cotton

METHODOLOGY

Krishi Vigyan Kendra, Pipalia has conducted 50 frontline demonstrations under real farming situations between 2014-15 and 2016-17 at different villages of krishi vigyan Kendra operational area. The area under each demonstration was 0.4 ha (1 acre). Through survey, farmers meeting and field diagnostic visit during the cropping period, low yield of cotton was conceived due to lack of knowledge about integrated management practice to manage the pink bollworm pest in Bt.cotton. To manage assessed problem, improved and recommended technologies were followed as intervention during the course of frontline demonstrations programme. In case of recommended integrated practice, set up pheromones trap at the time of first flowering and the lure of trap were change at 25 days interval. Not only regular inspection and continuous remove of collected adult from trap but also initial spray of ovicidal insecticide was introduced to overcome the problem. Three spraying of *beauveria bassiana* 60 gm/15 lit of water at the time of pest infestation will help to reduce pink boll worm infestation at the great level. In case of local check (control plots), existing practice being used by farmers i.e. only chemical insecticides after pink bollworm infestation was recorded. Well before the conduct of demonstrations, training to the farmers of respective villages was imparted with respect to envisaged technological interventions. All other steps like site and farmer selection, layout of demonstration, farmer's participation etc were followed as suggested by Choudhary (1999). Visits of the farmers and the extension functionaries were organized at demonstration plots to disseminate the message at large level. Yield data was collected from control (Farmer's practice) and demonstration plots and cost of cultivation, net income and cost benefit ratio were computed and analyzed.

RESULTS AND DISCUSSION

The yield performance and economic indicators are presented in [Table-1]. The data revealed that under demonstration plot, the performance of cotton yield was found to be substantially higher than that under local check during all the years (2015-16 to 2017-18). The yield of cotton under demonstration recorded was 21.0, 21.09 and 30.50 q/ha during 2015-16, 2016-17 and 2017-18 respectively. The

yield of demonstration plot of temperate vegetable crops was higher as compare to local check in Kully valley (Suman R. S., 2011)

The yield enhancement due to technological intervention was to the tune of 9.09, 9.70 and 11.92 % over control. The cumulative effect of technological intervention over last three years, revealed an average yield of 24.87 q/ha, while 23.73% is higher over local check. The year-to-year fluctuations in yield and cost of cultivation can be explained on the basis of variations in prevailing social, economic and prevailing microclimatic conditions of that particular village. Mukherjee (2003) has also opined that depending on identification and use of farming situation, specific interventions may have greater implications in enhancing systems productivity. Yield enhancement in different crops in Front Line Demonstration has amply been documented by Tiwari *et al.* (2003) and Tomeret *et al.* (2003). Economic indicators i.e. gross expenditure, gross returns, net returns and BC ratio of front line demonstrations are presented in [Table-1]. The data clearly resulted that, the net returns from the recommended practice were substantially higher than control plot, i.e. farmers practice during all the years of demonstration.

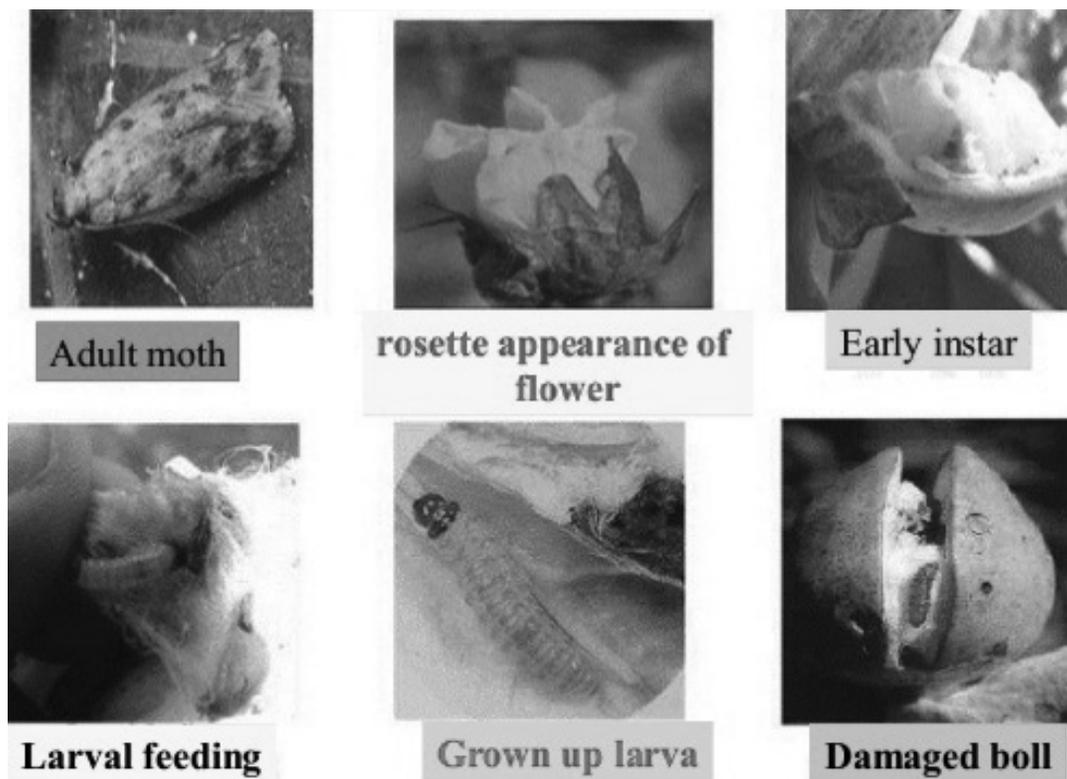
An average net return from recommended practice was observed to be ₹ 102192 in comparison to control plot i.e. ₹ 89221. On an average ₹ 12971 as additional income is attributed to the technological interventions provided in demonstrations plots, i.e. set up pheromones trap @ 10/acre at the time of first flowering and the lure of trap were change at 25 days interval, and also three spraying of *Beauveria bassiana* 60 gm/15 lit of water at the time of pest infestation. Economic analysis of the yield performance revealed that cost benefit ratio of demonstration plots was observed significantly higher than control plots. The cost benefit ratio of demonstrated and control plots were 1:4.6, 1:4.3 and 1:3.52, 1:3.35 and 1:4.8, 1:4.3 during 2015-16, 2016-17 and 2017-18 respectively. Hence, favourable cost benefit ratios proved the economic viability of the intervention made under demonstration and convinced the farmers on the utility of intervention. Similar findings were reported by Sharma (2003) in moth bean and Gurumukhi and Misra (2003) in sorghum.

Table 1 : Impact of frontline demonstration on integrated approaches against pink bollworm in Bt. cotton

n=100

Year	No. of Demo.	Yield (q/ha)		% increase over	Gross expenditure (₹/ha)		Gross returns (₹/ha)		Net return (₹/ha)		CB ratio	
		RP	FP		RP	FP	RP	FP	RP	FP	RP	FP
2015-16	50	21.0	19.3	9.09	30393	29743	120750	110687	90357	80944	1:4.6	1:4.3
2016-17	50	21.9	19.5	9.7	32618	29743	114975	99850	82357	70232	1:3.52	1:3.35
2017-18	50	30.5	27.3	11.92	30393	29743	144993	129556	114600	99813	01:04.8	01:04.3
Average	50	24.87	23.73	10.52	31134.67	29743.00	133326.67	118922.67	102192.00	89221.33	1:4.30	1:3.98

RP= Recommended Practices FP= Farmers Practices CB ratio: Cost Benefit Ratio



CONCLUSION

The results of front line demonstrations convincingly brought out that the per cent yield of cotton could be increased by 9.09 to 11.92% with the recommendation practices. Favourable and higher cost benefit ratio is self-explanatory of economic viability of the demonstration and convinced the farmers for adoption of integrated management practices was successfully imparted. The technology is suitable for enhancing the productivity of cotton crop and calls for conduct of such demonstrations under the transfer of technology programme by krishi vigyan kendra or other transfer of technology centres.

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