

## Management of sucking insect pests of cotton crop through yellow sticky traps under field conditions

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**ABSTRACT:** This study was performed to investigate the harmful effect of Thrips, Jassid, and whitefly pests on the cotton crops with their sucking pattern. It was found that pesticides not only affect the environment but also the health of crops. So, our study was also linked to reducing the risk of environmental hazards which can be created by pesticides that kill the different pests of the cotton crop. In cotton crop Thrips, Jassid and whitefly is an important pest which damages the crop drastically. The development of alternative methods for the management of agriculturally important pests is needed due to the adverse effect of pesticides on human health and the environment. The main objective of the present study was to manage of sucking Insect pest of the cotton crop including as thrips, *Thrips tabaci* (Lind.); Jassid, *Amrasca devastans* (Dist.); whitefly, *Bemisia tabaci* (Genn.) in field condition. The experimental results revealed that yellow sticky trap can be used to manage Thrips, Jassid, and Whitefly as well. The field data shows that the Thrips caches were 85.41/trap, Whitefly 34.07/trap and Jassid was 28.36/trap. Followed by the population in the experimental plot was significantly reducing such as Thrips was 1.92 per leaf, Jassid 0.68/leaf, and Whitefly was 0.83/leaf. It can be concluded from the present research findings that Insects always has the innate characteristic to get attracted to colours. This innate character was mainly used here for mass trapping and management of sucking pests of the cotton crops under field conditions using yellow colour traps.

**Keywords:** Management, Sucking pest, Cotton, Yellow sticky trap, Field conditions

### INTRODUCTION

Cotton is considered as life line of economy of Pakistan. It has a 0.8 percent share in GDP and contributes 4.5 percent in agriculture value addition. Cotton crop faces significant challenges vis-à-vis competing crops especially sugarcane. Most important being unfavourable international prices. During 2018-19, cotton production remained moderate at 9.861 million bales, a decrease of 17.5 percent over the last year's production of 11.946 million bales, and 31.5 percent against the target of 14.4 million bales. The production was also affected by unfavourable weather conditions, particularly the prolonged hot and dry weather that prevailed in the country. stunting of crop, attack of whitefly, pink bollworm and other pests/insects also hampered crop output (Gupta et al., 1989). It has been well established that insect pests are major factors constraining achievement of yield potentials in Pakistan (Ali, et al., 1994). The major insect pests of cotton such as thrips, *Thrips tabaci* (Lind.); jassid, *Amrasca devastans* (Dist.); whitefly, *Bemisia tabaci* (Genn.); aphid, *Aphis gossypii* (Glav.); mite, *Tetranychus cinnabarinus* (Boise);

spotted bollworm, *Earias insulana* (Boise); pink bollworm, *Pectinophora gossypiella* (Saund) and American bollworm, *Helicoverpa armigera* (Hub.) (Hart et al., 1978). Heavy reliance on costly pesticides has brought numerous problems like resurgence of non target pests and resistant races of targeted insects/pests. Elimination of useful and beneficial fauna of predators, parasites and pollinators besides indiscriminate use of chemicals has created pollution problems as well as human health hazards Gocmen et al., 1987 and Gillespie et al., 1978). It is imperative to reduce risk of economic losses by insect pest through integration of several crop and pest management techniques and to maintain pest population below economic threshold levels in the field; vegetables and fruits crops in Sindh province of Pakistan (Dhaka et al., 2007) . The answers to these problems have to be find-out by evolving alternate methods of pest control, which are less injurious to human health and are environment friendly. The experimentation in the recent past has produced considerable evidence that questions whether routine chemical treatment for insect control is necessary to protect the yields (Cytrynowicz et al., 1987). Sticky traps have been widely used to monitor flying insects in many agro-ecosystems especially for monitoring whitefly, thrips and leafhopper and are the most preferable method for the management of some insects. The traps, if they are cost effective, will be economical as well as environmentally safe. (Hill et al., 1984 and Singh et al., 2003). The present study was done to observe the “Management of sucking Insect pest of cotton crop including as thrips, Thrips tabaci (Lind.); jassid, *Amrasca devastans* (Dist.); whitefly, *Bemisia tabaci* (Genn.) in field condition.

**MATERIALS AND METHODS:**

The investigation was carried out at CABI’s Better Cotton farms. Two cotton farms were selected where BT-886 cotton variety was planted on beds. One was for our experiment and the other one was a control plot. The size of the experimental plots was 30m x 20m with a bed length of 20 m. The yellow sticky traps were coated with a thin layer of adhesive glue on both sides. The traps were suspended on a wooden rod at a height of 45 cm vertically. Yellow sticky traps were placed in every varietal block @ 18 traps/bed. Treatments were replicated twice in a completely randomized design along with the untreated checks. The observation was made on the number of Thrips, Jassid, and whiteflies on the yellow sticky traps on the third, fifth, seventh, and fifteenth days after the initial installation of traps. No insecticides were used on the experiment plot throughout the sampling period. Normal agronomic practices were followed for raising the crop.

**RESULT AND DISCUSSION:**

Results showed significant differences in pest population recorded in treatments after the observed third day, fifth day, the seventh day, and fifteenth day of applied yellow Sticky traps.

In the first use of yellow sticky trap, the overall average caught in which Thrips was 85.41/trap, Whitefly 34.07/trap, and Jassid was 28.36/trap (Table 1). Whereas the population in the experimental plot was significantly reducing such as Thrips was 1.92 per leaf, Jassid 0.68/leaf, and Whitefly was 0.83/leaf (Table 2). Followed by the population in control plots were remain stable such as 5.96/leaf, Jassid 1.12/leaf and Whitefly was 2.17/leaf (Table 3). Although The two times application of yellow sticky traps revealed that the sucking pests Thrips, Jassid, and Whitefly is attracting towards yellow color (Yellow Sticky Trap) and it can be used for controlling sucking insect pest of the cotton crop.

Table 1: Average number of insect pest caught on per yellow sticky trap

	Third Day	fifth Day	seventh Day	fifteenth Day	Total Caught
Thrips	32.9	23.16	15.7	13.65	85.41
Jassid	7.5	6.95	5.725	8.185	28.36
Whitefly	9	8.455	7.8	8.815	34.07

Table 2: Average number of insects per leaf in experimental plot.

	Third Day	fifth Day	seventh Day	fifteenth Day	Average
Thrips	2.84	1.95	1.05	1.85	1.92
Jassid	0.76	0.695	0.525	0.725	0.68
Whitefly	1.08	0.74	0.73	0.785	0.83

Table 3: Average number of insects per leaf in control plot.

	Third Day	fifth Day	seventh Day	fifteenth Day	Average
Thrips	5.5	6.3	5.72	6.315	5.96
Jassid	0.885	1.005	1.215	1.38	1.12
Whitefly	1.75	1.99	2.32	2.635	2.17

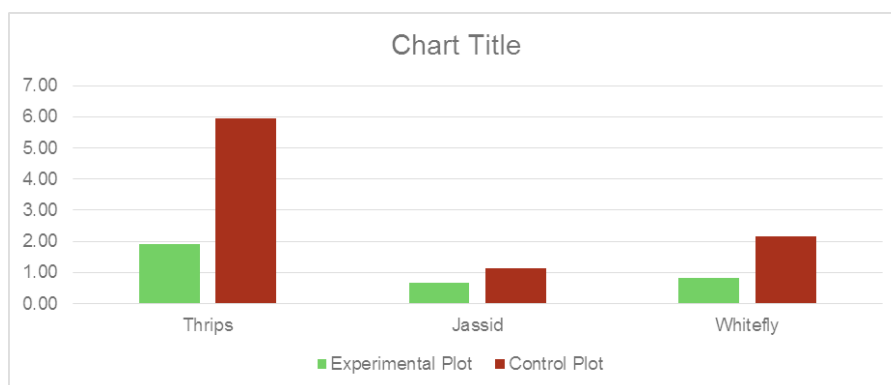


Figure 1: Reduction of pest population per leaf as compared to control plot



**CONCLUSION:**

It can be concluded from the present research findings that Insects always has the innate characteristic to get attracted to colours. This innate character was mainly used here for mass trapping and management of sucking pests of the cotton crops under field conditions by using yellow color traps. Thrips and whitefly show greater phototactic response to bright yellow colour compared to other colours however another sucking pest Jassid also can be managed through Yellow Sticky Traps. If the initial population is low, a yellow chart with an adhesive glue (waterproof) or castor oil coat will definitely play an important role in the reduction of the Thrips, Jassid, and whitefly

populations. Furthermore, the Integration of such traps in insects' management package would also be helpful to reduce the need for conventional chemical uses

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