

Thrips and Whitefly Trapping With Three Colors Sticky Trap on Okra Crop

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Abstract: Okra, (*Abelmoschus esculentus* L.), is the hot-climate annual vegetable crop their family is Malvaceae. Thrips Whiteflies and because of their sucking insect pest, are the maximum negative insect pests of okra crop, and the maximum commonplace manner of controlling infestation is through the usage of chemical substances. A subject test turned into designed to determine the appeal of whiteflies (*bemisia tabaci* genn.) to three one-of-a-kind hues of sticky traps in okra plants for the during of the June to august in 2021. After 20 days of plant germination, empty 1 Liter coke bottles covered with yellow, Orange and Green, sheets of sticky paper were randomly placed in crop field, 1.5 meters between and 50 cm above the plants. Effects confirmed that yellow sticky traps have been the best for monitoring and handling whiteflies and thrips in okra crops at subtropical climate conditions. The opposite colors had been less fairly attractant. This have a look at observed that using yellow-colored sticky-traps as an opportunity for okra crop safety is less high-priced and less hazardous than the usage of chemical insecticides.

Introduction

Vegetables are the most remunerative agricultural activity for small and marginal farmers; it is the main sources of farm income for small and limited resource farmers [1],[2]. There is an increase in demand for the vegetable crop.

Okra [*Abelmoschus esculentus* (L.) Moench] is one of the most important summer vegetable crops in Iraq, but productivity is low [3][4]. With increased demand and low productivity, farmers use large-scale production. It is necessary to evaluate agricultural economic policies of Producers. Economics of okra production is essential to develop appropriate agricultural policy. Studies have examined economics of okra production [5-12].and it was found that okra production was more profitable, cost of family labor was the highest among production costs, per hectare cost of okra production increases with an increase in farm size, and the highest return was on medium farms.

An own family malvaceae crop is known as lady finger and okra and is the most famous annual vegetable vegetation, originating in africa and cultivated all through the tropical areas global. The vegetable components of the plant are regularly plagued through a large number of sucking and chewing insect pests, interfering with the farmers' ability to get their predicted yield within the harvesting time frame. Pests are one of the most serious demanding situations facing crop production today, despite the fact that there are numerous approaches to reduce or kill pests (Owen 2004). The most unfavorable insect pests are the THRIP THRIPS TABACI (lint.) or WHITEFLY, BEMISIA TABACI (GENN.), and the observed BOLLWORM, EARIAS SPP. (SHABOZOI ET AL. 2011 aziz et al. 2011). Such pests are normally managed by means of dangerous chemical substances, which, when launched into the surroundings, could have a terrible worldwide affect. Such concerns have created a need for analogous controls designed with protection in mind. For pest tracking and management, trapping offers the maximum convenient equipment. Coloured sticky-traps are a simple, low-price approach for figuring out the relative abundance of insects and are used to display screen flying insect species on many vegetation ((lessio and alma, 2004 raja and ARIVUDAINAMBi 2004)). For example, different colored cylindrical sticky traps located at a top of 157.5cm are an powerful means of controlling aphids. Preserving that in mind, a subject experiment changed into conducted to decide which shade of 3 special colored traps changed into the maximum attractive to whitefly adults and thrip adults and nymphs. It's miles was hoping that the statistics from this study can be capable of help inside the monitoring and management of those pests, in addition to beautify included pest management applications in Pakistan and different nations with comparable ecological conditions. It's also was hoping that a reasonably-priced, easy and easily attained technique for manage of these insect species will be brought and prove useful for any crop attacked by means of whiteflies.

Material and Methods

The field experiment was carried out during the (June to august) in 2021 to evaluate the attractive effects of different colors on insect pests at Tando Jam, Pakistan. The okra seeds cultivated were the Jambalaya variety, sown on well-prepared soil on both sides of ridges, 20 June to august 2021. The distance between rows was 40 cm and from plant to plant, 3 to 4 cm. Three different colors, yellow, Orange and green, were used to trap the okra insect pests. After 20 days of plant germination, the experimenter placed, at random, empty 1 Liter coke bottles covered with yellow, Orange and green, sheets of sticky paper in crop field, 1.5 meters between and 50 cm above the plants, with the help of bamboo stakes. No chemical substances have been used at any time for pest management at some stage in the research period.

Field Studies

Traps were placed in the field between 10 am and 11 am and replaced after 24 hours. The grownup whiteflies and thrips adults and nymphs have been collected from each colored trap, then counted and recorded, repeating each 5 days a complete of 10 collections turned into recorded. The facts received had been subjected to statistical analyses the usage of statistical laptop software and figures have been drawn on ms-excel.

Results

Thrips populace found on colored sticky traps

Thrips had been observed to be more attracted to the yellow coloration trap, as properly. At the time of 8 collections, the highest adult population becomes 50.40 according to card, and the bottom population 1.85 according to card became recorded at the first collection. (Fig 1) green become the second one preference for the thrips, with a most population of 45.85 in keeping with card recorded from the 9th series, at the same time as the bottom populace of 2.9 in the line with card changed into recorded after the 2nd one collection (fig 1). Orange cards had been located to be a higher attractant for thrips as compared to the whitefly. Thrips peak populace of 19.50 / Orange card changed into recorded at the 10th collection; the bottom population of 1.10 become recorded from the 1st statement (Fig. 1).

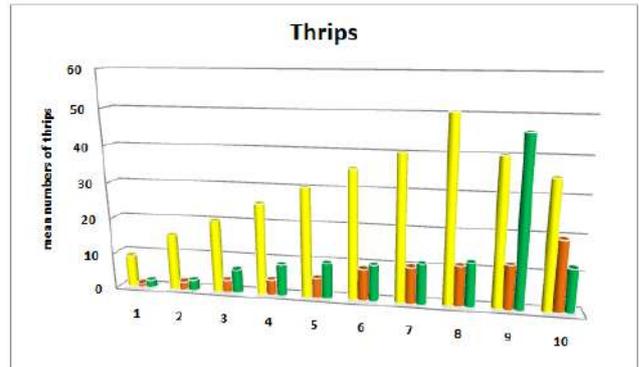


Fig 1. Population of the Thrips on the different colored sticky traps

Whitefly population discovered on colored sticky traps

The yellow sticky color became the strongest attractant of whitefly adults. The highest population of whitefly on yellow sticky cards was observed to be 60.9 / card from the 8th collection, while the lowest population was 7.99 / card from the 1st collection (Fig. 2). The green sticky entice became the second strongest attractant of whitefly. The highest population from the green sticky trap was 35.61 / card from the seventh collection, and the lowest population was 2.1 / card from the first collection (Fig. 2). Following the yellow and green traps, the purple card was observed to be favored by the whitefly, with the highest population of 24.81 from the eighth collection, and the lowest population of 1.27 from the first collection (Fig 2). The Orange cards were found to be a poor attractant for whiteflies throughout the season, with the highest population of adult whiteflies recorded from the 10th collection, with 5.95 per card and the lowest population of 0.64 / card from the 1st collection.

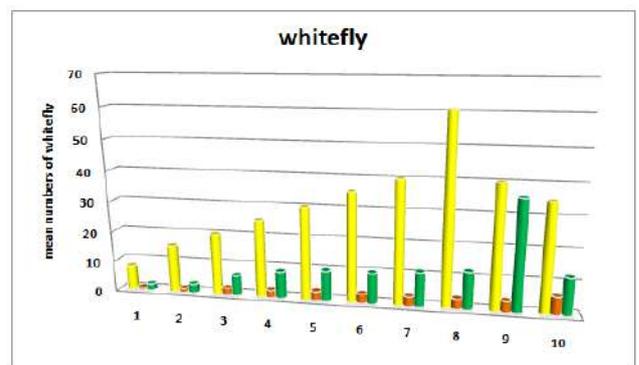


Fig. 2. Population of whiteflies on different colored sticky traps

Discussion

The result of the present study show that yellow is the most effective attractant, followed by green, and Orange. The vertical yellow trap was the most

attractive and efficient trap to use in monitoring the whitefly; however, found that yellow was the most attractive color to whiteflies, regardless of the trap design. A enormously small population changed into attracted with the aid of inexperienced, and Orange traps when the populations peaked in crop infestations; therefore, it is able to be stated that if the populace is under control, the colors aside from yellow might be veins. Both adult and nymph thrips were attracted to yellow, followed by green, and Orange. A related study evaluating trap height and color was performed by [13], who found that yellow sticky traps at a height of 70 cm above the ground were the most suitable for adult thrips infesting garlic, onion and tomato crops. It was also observed that the when the insect pest populations increased, they diverted to colors other than yellow.

Conclusions

The use of colored sticky traps shows good results for monitoring and managing okra's insect pests in subtropical climate conditions. Yellow is the most attractive color to the whitefly, followed by green, and Orange. For thrips monitoring and management, the color yellow was also observed to be a strong attractant, followed by green, and Orange. Moreover, this look at concluded that using special colored traps for okra crop safety turned into considerably much less costly and much less dangerous than chemical insecticides.

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