

# Evaluation of Various Sticky Traps against *Thrips Tabaci* Lindmen (Thripidae: Thysanoptera) on Onion

<sup>1</sup>T Muthuram, <sup>2</sup>G Balamurugan, <sup>3</sup>V Suhasini, <sup>4</sup>S Arivudainambi

Department of Entomology, Faculty of Agriculture, Annamalai University, Annamalainagar, Chidambaram, Tamil Nadu, India

---

**Abstract:** Onion (*Allium cepa* L.) is widely cultivated species of the genus *Allium*. Yield losses in onion vary from 10–15% annually in India, depending upon the season and the prevalence of pests. Five different coloured sticky boards viz. green, yellow, orange, violet and white of 20 × 15 cm size smeared with sticky material and tested for the efficacy. Green coloured sticky boards were found effective in attracting *T. tabaci* than other boards.

**Keywords:** Onion, *Thrips tabaci*, sticky trap.

---

## 1. INTRODUCTION

Onion (*Allium cepa* L.), commonly called as bulb onion and Garden onion is the most widely cultivated species of the genus *Allium*. Yield losses in onion vary from 10–15% annually in India depending upon the season and the prevalence of insect pests. Out of several insect pests that have been reported on onion, *Thrips tabaci* L. is considered as a major persistent pest. Thrips infestation found in both seasons but severe in the summer crop (Gupta *et al.*, 2010, Bautista *et al.*, 1995).

Regular feeding of *T. tabaci* on onion crop cause silvery patches by sucking and puncture the cell sap of leaves. *Thrips tabaci* also act as a vector for viral disease like Iris Yellow Spot Virus (IYSV). Control of *T. tabaci* is very difficult due to its size cryptic habits (Lewis, 1997). Further they have a broad host range that includes grasses and broad leaves. Both nymphs and adults attack at all stages of onion plant.

On the other hand, farmers use large quantities of chemical insecticides singly or in combination to get good yield. Their practice of indiscriminate use of insecticides and calendar based application leads to pesticide residues, destruction of beneficial insects, pest resurgence, pesticide exposure to farm workers, environmental contamination, bioaccumulation and biomagnifications of toxic residues and disturbance in ecological balance (Dadmal *et al.*, 2004). Therefore, to overcome insecticides mediated environmental problems and repeated application, an effective and safer method of pest management is need of the hour. Hence, an experiment was done to evaluate various colour sticky traps in semi field condition to manage the persistence pest *T. tabaci*.

## 2. MATERIALS AND METHODS

Onion (variety: Co1) was raised in 1.5ac field. The spacing of 15cm between the rows was followed while planting. Regular watering and recommended fertilizer levels were followed. Tin sheet of 1mm thick was cut into boards of 20 x 15cm and painted with green, yellow, orange, violet and white separately on both the sides and fixed on wooden reapers (2' length) and smeared with a thin film of castor oil. In the total cropping area four plots of 20 x 20m<sup>2</sup> were marked with the buffer area of 10m<sup>2</sup> in between the plots. In each plot the above mention five different coloured sticky boards were

fixed at one per 4m<sup>2</sup>. The boards were fixed on 20<sup>th</sup> day after transplanting when the symptoms observed uniformly in all the plots. There were five treatments and four replications.

Once in 3 days, number of thrips stuck on the coloured surfaces was counted using 10x hand lens. After taking counts, the boards were smeared with oil and then fixed. Ten such counts were made during the cropping period and the average number was analysed statistically. Then the effective sticky boards selected in the preliminary experiment was confirmed by following paired row design. In the paired row 60m<sup>2</sup> plot was raised with onion (Co 1) and after uniform infestation of thrips two plots (20 x 20m<sup>2</sup>) were marked with enough buffer area. One is considered as control and in another plot five numbers of green boards were fixed. Then once in 7 days castor oil was reapplied on the boards after wiping the board. Finally, the percent damage by thrips was recorded and yield was calculated.

### 3. RESULTS AND DISCUSSION

Green colour sticky boards were found effective in attracting thrips than yellow boards. Violet, orange and white sticky boards were found on par with each other. Our results are in corroboration with the findings of Alex harman *et al.* (2007), who identified that green traps are useful against bean thrips, *Caliothrips fasciatus* (Pergande) management on citrus in Australia. But in contrast to the findings of Ananthakrishnan and Sen (1980) and Bhatti (1980) who reported that yellow and white boards were effective in attracting thrips (Table 1).

Regarding crop damage, the green sticky board placed plot recorded only 4.26% and in control it was 13.72%. There was 11.48% increase in yield by using green sticky boards.

Green sticky boards can be recommended to manage thrips in onion @ 1 board per 4m<sup>2</sup>. Selection of green colour paints should be done with at most care. Dark green was used in our study.

**Table 1. Efficacy of different coloured sticky boards against *T.tabaci***

Treatment (Sticky boards)	*Number of Thrips/board										Cumulative Average/board
	Counts										
	1	2	3	4	5	6	7	8	9	10	
Green	6.2	8.1	10.2	15.3	14.5	18.1	23.2	24.2	20.1	28.9	16.88 (4.43) <sup>a</sup>
Violet	2.1	3.2	3.1	4.2	2.1	2.8	3.4	6.3	4.6	4.8	3.65 (1.93) <sup>c</sup>
Yellow	7.2	8.6	6.2	10.3	12.2	10.2	12.6	16.1	13.2	16.1	11.27 (3.26) <sup>b</sup>
Orange	3.4	4.4	2.1	1.6	3.5	2.7	2.3	2.3	3.4	4.5	3.02 (1.73) <sup>c</sup>
White	11.1	0.0	2.4	0.0	1.6	2.4	1.3	0.0	3.2	3.3	2.53 (1.54) <sup>c</sup>
CD (0.05)											0.962

\*Mean of four replications

\*Values in parenthesis are  $\sqrt{\quad}$  transformed.

\*Values with different alphabets differ significantly

**Table 2. Efficacy of green sticky board on the percent damage and yield**

Treatment	*Percent damage	Yield (t/ac)	Percent increase in yield over control
Green sticky board	4.26	6.1t	11.48
control	13.72	5.4t	

\*Mean of 50 plants and 5 different counts

#### REFERENCES

- [1] Alex Harman, Chang Xuan Mao, Joseph G Morse (2007) Selection of colour of sticky trap for monitoring adult bean thrips, *Caliothrips fasciatus* (Thysanoptera: Thripidae). *Pest Manag Sci* 63: 210-216.
- [2] Ananthakrishnan TN, Sen S (1980) Taxonomy of Indian Thysanoptera. *Hand book-Zoological survey of India* 34:210-246.
- [3] Bautista RC, Mau RFL, Cho JJ and Custer DM (1995) Potential of tomato spotted wilt tospovirus plant hosts in Hawaii as virus reservoirs for transmission by *Frankliniella occidentalis* (Thysanoptera: Thripidae). *Phytopathology* 85: 953-958.
- [4] Bhatti JS(1980) Species of Thrips from India. *Systemic Ent.*5: 109- 166.
- [5] Dadmal SM, Nemade SB and Akhare MD (2004) A Field screening of onion cultivar for resistance to thrips. *Pest Management in Horticultural Ecosystems*, 10 (2): 145-150.
- [6] Gupta RP, Srivastava KJ, Pandey UB (2010) International Symposium on Alliums for the Tropics disease and insect pests of onion in India. *Acta Horticulture*. 11(2): 358
- [7] Lewis T (1997) Thrips as crop pests. CAB International, Wallingford, UK, 740 pp.