

DEPARTMENT OF ENTOMOLOGY
CSK HIMACHAL PRADESH KRISHI VISHVAVIDYALAYA,
PALAMPUR

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| Name of the student | : | Goverdhan Dass |
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Abstract

The present investigations undertaken during the summer seasons of 2004 and 2005 at Palampur and Sullah revealed that both the pests viz., *Helicoverpa armigera* (Hubner) and *Trialeurodes vaporariorum* (Westwood) were found continuously associated with tomato crop at both the locations during the two seasons. Monitoring of *H. armigera* through light and pheromone traps revealed the adult activity from 2nd week of April to end of July. Although the peak activity of the pest showed a fluctuating trend yet it coincided with one or the other important stage of the crop, thus, proving to be a good indicator of the pest prevalence in the field. The larval population in the field ranged from 4-38 larvae/30 plants during the period of the pest activity from May to August with peak population appearing 3rd-4th week of June at both the locations. The fruit damage at the two locations varied from 4.76 to 14.94 per cent during the two seasons with highest damage to fruits being recorded in the month July, in general. *T. vaporariorum* was found active on tomato crop during the period ranging from May to July with its peak population (15.6-27.6/3 leaves) during 3rd to 4th week of June. The moth activity in light and pheromone traps proved a good predictor of larval population in the field registering a significant positive correlation with the field population. Similarly the adult activity of *T. vaporariorum* in the yellow pan traps provided a good estimate of the population of the pest in the field. Two larval parasitoids viz., *Campoletis chloridæ* (Ichida) and *Diadegma fenestralis* (Holmygraen) at both the locations and one egg parasitoid, *Trichogramma chilonis* Ishii only at Sullah, were found prevalent on *H. armigera*. *C. chloridæ* was most promising parasitoid associated with *H. armigera* both at Palampur and Sullah. Genotype Modade-1 proved least susceptible to both the pests with negligible infestation at both the locations. The genotypes BL-333-3, BT-18, PTOM-9802-3 and variety Palam Pink also showed a very low susceptibility level with respect to flower and fruit damage as well as larval population of *H. armigera* whereas BL-333-3 and PTOM-9802-3 experienced comparatively low population pressure of *T. vaporariorum* population during the two seasons. The treatments combining Btk (500g/ha) + Indosulfan (0.025%), Btk (500g/ha) + deltamethrin (0.0014%), Btk (500g/ha) + acephate (0.025%), HaNPV (250LE) + Btk (500g/ha) + *T. chilonis* (50,000/ha) proved superior to other treatments in suppressing the larval population of *H. armigera* on tomato whereas imidacloprid (0.004%) proved most effective in reducing the adult as well as immature population of *T. vaporariorum* followed by acephate (0.05%) and achook (0.00045%). All the biopesticides viz., achook, Btk and HaNPV proved safe to the egg parasitoid *T. chilonis* both under field and laboratory conditions. Among insecticides imidacloprid was safest, acephate was moderately safer whereas Indosulfan and deltamethrin were most toxic.

Signature of student
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Countersigned

Head of the Department

Signature of Advisor

