



**RESEARCH ARTICLE**

**Effect of Some Species of Thrips, Thysanoptera: Thripidae on Chilli Crop of District Aligarh**

**Manika Gupta and Virendra Kumar<sup>1</sup>**

J.J.T. University, Jhunjhunu, Rajasthan, India

<sup>1</sup>Deptt. of Zoology, D.S College, Aligarh

Email: [manika.gupta1992@gmail.com](mailto:manika.gupta1992@gmail.com), [vv\\_kv28@rediffmail.com](mailto:vv_kv28@rediffmail.com)

Received: 19<sup>th</sup> April 2015, Revised: 15<sup>th</sup> May 2015, Accepted: 20<sup>th</sup> May 2015

**ABSTRACT**

A biological monitoring survey was carried out of Western Uttar Pradesh in district Aligarh on favorable growing season to provide information on infestation and abundance of thrips species on the crop of chilli *Capsicum annum*. A total of five localities participated in our study. These localities are Tappal, Jalalli, TalibNagar, Sumera and Kayamganj. Data was collected from these localities on the basis of infestation level caused by thrips populations. Results indicated that a total of four thrips species present such as; *Scirtothrips dorsalis*, *Thrips tabaci*, *Frankiniella occidentalis* and *Frankniella schultzei* in those regions. The majority of the thrips species were recorded in the young stages (leaves, flowers and fruits) of crop development appears young ball formation, necrosis of tissues, wilted growth of flowers and fruits and finally yields loss.

**Key word:** Thysanoptera, young balls, Thrips, Western. U. P.

**INTRODUCTION**

Vegetable play a major role in the farming of agricultural crops which are susceptible to pest infection on many hosts including chilli pepper, the thrips may feed on the upper surface of leaves when infestations are high in the form of damaged fruit development and economic loss. Among 8,000 species of thrips, around 5,000 species has been well described with their diverse life history and habitats (Grimaldi, D.A, et al. 2004). The pest spectrum of chilli crop is complex with more than 293 insects and mites species deliberating the crop in field as well as in storage (Anon; 1987 and Dev, et al.1964). Thrips can reduce yield of the crop directly by using them as food and oviposition manner. They show strong viruliferous behaviour (CLC, PYSV, TSV, MYSV etc,) in the form of several plant diseases. Their infestation can negatively impact on global trade due to the quarantine risks associated with several species in the order. (Morse et al., 2006). Thrips has a rapid life cycle (14-20 days) from egg to adult. Eggs are deposited by adult female on the underside of host plant tissues and may take a week for the larvae to emerge. Consequently chances of transportation of thrips species through state, regional, and international trade of plant materials for all life stages is high (Seal and Kumar 2010). We are reporting here, the abundance and infestation caused by composition of thrips populations. The abundance of chilli thrips is high in dry season but low during rainy season.

In this paper, we have evaluated the level of damage by thrips on the generative structures of chilli plant at different field localities of district Aligarh.

**REVIEW AND LITERATURE**

To check the seasonal abundance of most prevalent species *Thrips hawaiiensis* and *Scirtothrips dorsalis* on commercial and control mango orchard during the flowering season of December 2008 - march 2009. (Aliakbarpour et. al., 2012).

Twelve different crops were found in Miami-Dade County, Florida, to be economically affected by *S. dorsalis* during scouting and sampling of various plant species. An open free choice host susceptibility test was conducted by (Kumar *et al.*, 2012) on 6 fruit hosts from the nursery. Sprays of difentheuron with acetamiprid at 10 days interval and 30 days after transplanting of the crop, (Mandal, 2012) was used to control the population of thrips count.

### MATERIAL AND METHODS

A biological monitoring survey was conducted on growing seasons of chilli crop: April- June of 2015 where the production of the agricultural crops is high. In study of this survey five localities Tappal, Jalalli, TalibNagar, Sumera and Kayamganj were purposely selected based on production levels. On each selected field, few plants were selected by random sampling method. Data were collected on thrips abundance, from each selected plant, by counting and collecting thrips found on underside of two top-most, fully expanded chilli leaflets. Thrips samples were collected in the early morning hours by gently tapping on the leaves, which dislodged the thrips from leaves to white sheet of paper placed under each plant. Using camel hair brushes, the thrips were transferred to vials 60% ethanol, glycerin, and acetyl glyceric acid (AGA) fluid in the ratio 10:1:1, respectively for the preservation of features (Palmer, *et al.* 1989; Palmer 1990). The vials of thrips were then taken to the laboratory for counting and identification. Thrips were mounted and identified under a compound light microscope using the procedure described by Palmer (1990), at a magnification of 40. Palmer (1990) and Mound, *et al.* (1976) were used for identification of thrips species, using the morphological features.

### OBSERVATIONS

Some species of thrips *Scirtothrips dorsalis*, *Thrips tabaci*, *Frankiniella occidentalis* and *Frankniella schultzei* are found on chilli crops of different localities. Infestations on chilli results in the form of curling leaves, necrosis tissue, silver to brown scars on fruits, complete defoliation of buds and flowers, distortion and discolouration of plant and finally yield loss. Thrips have piercing and sucking mouth parts to suck the cell sap of leaves and reduced its photosynthesis. Highest frequency of thrips was recorded in Talibnagar (85%) locality. Prolonged feeding by thrips recognized as 'MURDA DISEASE' at that region. We also observed that thrips feed in high enough densities and in sufficiently dry climates the process results in the dessication and death of their host plant.

### RESULTS

Symptoms of infestation occur at seedling stages and these symptoms must be monitored at early stages in favour to reduce the level of thrips. So we use the better IPM management strategies in favour of chilli crop and sampling is important to inform the growers about thrips population pressure over time.

### REFERENCES

1. Kumar, Vivek. , Seal, D.R., Kakkar, Graima., Mckenzie Cindy L., and Osborne, Lance S. (2012). New Tropical Fruit Hosts of *Scirtothrips dorsalis*(Thysanoptera:Thripidae) and its Relative Abundance on them in South Florida. *Florida Entomologist*, Vol. 95: (1), pp. 205-207.
2. Aliakabarpour, Hamesh. , Salmah, che Md.R, (2012). Seasonal abundance of Thrips hawaiiensis (Morgan) and *Scirtothrips dorsalis* (Hood) (Thysanoptera: Thripidae) in mango orchard in Malaysia. *Pertanika Journal of Agricultural Science*, Vol. 35: (3), pp. 637-645.
3. Seal, D.R., and Kumar, V. (2010). Biological responses of chilli thrips, *Scirtothrips dorsalis* Hood (Thysanoptera: Thripidae) to various regimes of chemical and biorational insecticides. *Crop Protection*, Vol. 39, pp. 1241-1247.
4. Dev, H.N. (1964). Preliminary studies on the biology of Assam thrips, yellow tea thrips, strawberry thrips), *Scirtothrips dorsalis* Hood, *Provisional Management Guidelines*. Florida: University of Florida, EDIS: ENY 725.
5. Mandal, S.K. (2012). Field Evaluation of Alternate use of Insecticides against Chilli Thrips, *Scirtothrips dorsalis* (Hood). *Annals of Plant Protection Sciences*, Vol. 20: (1), pp. 59-62. ISSN.
6. Morse JG, Hoodle MS. Invasion biology of thrips. *Annual Review of Entomology*.
7. Grimaldi DA, Shmakov A, Fraser N. Mesozoic thrips and early evolution of the order Thysanoptera (Insecta). *Journal of Paleontology*. 2004, 78 (5): 941-952.