



## Integrated management strategies for onion thrips, *Thrips tabaci* Lindeman

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Onion thrips, *Thrips tabaci* Lindeman (Thysanoptera: Thripidae) a key pest of onion and garlic in India. Under severe infestation it cause yield loss upto 50% through



direct injury to foliage. As a vector in onion, thrips transmits Iris Yellow Spot Virus. IYSV is an emerging issue in onion particularly onion seed crop.

**Pest description and biology:** Eggs are kidney-bean shaped, microscopic in size, whitish when laid later change to an orange tinge and approximately 0.2 mm length. Eggs laid singly and inserted in leaf tissues. Hatching takes place in 4-10 days. Nymphs or larva are white to pale yellow in colour, elongate and slender bodied insect. Larval stage last about in 5-7 days. First two instars are active and feeding stages and instars 3<sup>rd</sup> and 4<sup>th</sup> are inactive, non-feeding stages called pre-pupa and pupa. Pupa pale yellow to brown in colour. Pupal duration is 3-10 days. The adults are slender, yellowish brown and measure about 1 mm in length. Life cycle is completed about 17-30 days.

**Symptom and nature of damage:** The damage is caused by both nymphs and adult thrips by rasping the leaf surface and then extracting sap from the cells. Feeding results into silvery leaf spots, white blotches and silvery patches along the leaves. Which can be detected from a distance. Damaged tissues coalesces exhibiting blast like appearance. Affected tissue will dry up when the damage

is severe. Damaged leaves may become papery and distorted. Infested terminals lose their colour, roll, gradually dry from tip downwards. Onion thrips also feed on bulbs following harvest and during storage. Silvery scars in the outer skin of bulbs affect the appearance and quality of bulb and fetches low price in the market.

**Seasonality:** In onion, thrips infestation persist throughout year and entire crop growth period. Generally, in *Kharif* onion, thrips population load and build up is slow or less. This is because of prevailing rainfall during the season. However, in Late *Kharif* and *Rabi* onion the problem of thrips is more and the population load may reach more than 100 thrips/plant under favourable climatic condition. Thrips reproduce both sexual and asexual mode. Parthenogenetic reproduction under favourable climatic condition facilitate sudden population build up in short period.

### IPM (Integrated Pest Management) strategies :

**Field sanitation:** Field sanitation is to be maintained to avoid infestation immediate of planting. Removal of weed species such as parthenium, wild amaranthus, milk weed and lantana in and around the vicinity of field will delay the infestation. These weed species are provide shelter for off season survival of thrips. Residual debris of previous crops also a source of both nymphs and adult thrips so debris should be destroyed.

**Pest monitoring/scouting and trapping:** Periodical field scouting or inspection is necessary to detect the infestation at early stage and taking management decision. Scouting twice in a week is advised. Visual counts and gentle tapping of leafs in a white paper further counting can be used for inspection. Three thrips per leaf or 20 thrips per plant is taken as ETL for going control measures. Yellow or blue sticky cards also can be used for monitoring and mass trapping of adult thrips.

**Cultural control:** Follow crop rotation with non-host crops (corn and



millet). Avoid successive planting of onion and garlic. Planting 2 rows of maize as barrier along the field border 7-10 days before transplanting is advised to avoid adult thrips movements from infested to an infested field. Sprinkler irrigation also effective in minimizing thrips population. However, it may aggravate disease incidence. **Botanical control:** Spray of neem powder, neem based formulations 2- 3% advised when the thrips population load is less. This would help in conserve the prevailing thrips Eulophid parasitoid, *Ceraneus mense* and predatory thrips, anthocorid bugs, *Chrysopa* sp. in onion ecosystem. **Chemical control:** Effective management of thrips on onion and garlic relies primarily on insecticides. Seedling root dipping (1/3 of bottom of seedlings) with carbosulfan 2 hours before transplanting is advised to avoid early attack of thrips. Foliar application of synthetic insecticides at critical growth stages, particularly 30- 60 days after transplanting. Spray of insecticides like profenophos 1ml/L, carbosulfan 2 ml/L, fipronil 1 ml/L, and spinosad 0.4ml/L

L is advised when population level crosses economic threshold level (ETL) i.e. 3-5 thrips/leaf or 30 nymphs/plant. Avoid spray 4 weeks before to harvest. Always add spreader @ 0.5 ml/L of spray solution to achieve good control.

**Conclusion:** Onion thrips, *Thrips tabaci* a key pest of onion and garlic in India. Use of chemical pesticides are widely employed by the farmers to manage this pest menace in onion and garlic. Sole reliance on chemical pesticide is not advised while considering cost of production, natural enemy safety, insecticide resistance and residue in end production. In this context, combined application of all IPM strategies could be more economical and viable option. Hence, all the available pest management strategies are compiled and provided in this article. The information provided here would be much more useful to the onion and garlic growers of India.

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