

VEGETABLE CROPS

INSECTS OF ONIONS AND CABBAGE Onion Thrips

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onion thrips

Thrips tabaci Lindeman

INTRODUCTION

Onion thrips are present throughout the United States and in many other parts of the world. They feed on numerous vegetable plants, weeds, and field crops. In northeastern United States, they are a perennial pest of onions and a sporadic but serious pest of cabbage. There are usually several overlapping generations per season.

LIFE STAGES

Onion thrips vary in color from white to yellow to brown. The adults are very small, 1/16 inch (2 mm) long, slender, and pointed at both ends (Fig. 1). The males are wingless, extremely rare, and are not needed for reproduction. The adult females have four slender wings which, when folded, extend slightly past the tip of their abdomen. Wings are fringed with long hairs. In the field, these characteristics can be identified with a 10X hand lens. Without magnification, adult thrips may be identified by their small size and rapid movement on the leaf surface. The immature stages are similar in form to the adults, but lighter in color, wingless, smaller in size, and slower moving (Fig. 2).

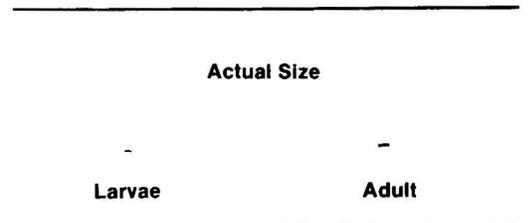
Both adults and larvae spend the winter in clover, alfalfa, and wheat rather than in onion or cabbage residues left in the field. In late spring and early

summer, populations move from their overwintering sites to vegetable crops. The female thrips lays white, bean-shaped eggs in plant leaves. Eggs hatch in 5-10 days. There are two larval stages followed by a prepupal (Fig. 3) and pupal stage (resting stage prior to adult). These last two stages are reportedly spent in the soil at the base of the plant in onions. However, with cabbage they develop within the head. Developmental time from egg to adult may range from 10 to 30 days, depending upon temperature. After the pupal stage, the adult female lays eggs for another generation.

DAMAGE

Onions: The onion thrips is a perennial pest of onions in the Northeast. Thrips puncture the individual leaf cells with chewing mouthparts and suck up the exuding sap. This causes longitudinal, silvery mottling or blotching on onions (Fig. 4). Both the adult and nymph feed mainly between the sheaths of newly emerging onion leaves. This feeding habit makes them difficult to detect unless the inner leaves are parted. Large numbers of thrips produce scars so numerous and close together that entire onion leaves may look white and desiccated. Leaf distortion then occurs followed by withering, browning, and eventually lodging. Thrips feeding in large enough populations can result in reduced onion yields, increased incidence of bacterial rot, and outright death of seedlings. Onion thrips are more of a problem during hot and dry weather. Where onion maggot fly control measures are used, thrips rarely build up to damaging levels.

Cabbage: Thrips are a sporadic but potentially



serious pest of cabbage in the Northeast. Their feeding causes small, silvery areas with black specks (fecal matter) on the frame leaves (Fig. 5), and bronzed, rough areas on and in the head (Fig. 6). Thrips feeding and presence on cabbage presents a cosmetic and contamination problem rather than a reduction in yield. However, excessive amounts of damage on or in the heads may make them unmarketable. Some varieties are more susceptible than others (see your county agent for recommendations). Thrips damage on a green leaf is very subtle but it is more discernible on the inner white leaves of the head. Excessive amounts of the latter type of damage may make the heads unacceptable for fresh market and processing cabbage.

MONITORING

Sticky traps are a useful monitoring tool for determining time of adult flights and magnitude of the dispersing population. This tool should be combined with actual plant sampling to give an accurate estimate of the risk to the crop.

Onions: An acceptable method involves randomly choosing several sites per field and sampling a few plants at each site. Count all the thrips on the plant with emphasis placed on the area between the newest leaves. Note the percentage of thrips that are winged adults, thus, indicating their capacity to disperse and increase the potential for future outbreaks. Determine the severity of damage by counting the number of damaged leaves per plant and the percentage of leaf with silvery-white blotches.

Quick checks for onion thrips should be directed along the borders of onion fields near woods and other crops particularly grain and field crops. Search first for feeding signs and if found, use a more extensive plant examination to determine thrips levels.

Cabbage: At least 20 randomly chosen cabbage plants should be sampled throughout the field. Scout-

ing emphasis is also suggested along crop borders, especially those near wheat or alfalfa. Scouting for thrips in cabbage should be emphasized during the time wheat is maturing and during wheat harvest. Thrips are normally found on the underside of leaves. Feeding signs are sometimes more evident than the presence of immature forms and should be used as an indicator. Field scouting is important just prior to early head formation of cabbage. Early detection and control of populations prior to head formation facilitates suppression of thrips. Once thrips infest cabbage heads they are protected from insecticides. After head formation thrips and their damage can be found on the developing head by peeling back the outermost leaves.

CONTROL

Syrphid larvae, lacewings, spiders, predacious wasps, and pseudoscorpions are known predators of thrips. The eggs and larvae of thrips are parasitized by a number of parasitic wasps. Some mites are known to be ectoparasitic on onion thrips. Some fungi, specifically *Entomophthora thripidum*, are also known to infect thrips. A heavy rain can significantly reduce thrips populations on onions and frame leaves of cabbage.

Consult your local recommendations to determine which insecticides and time of application are most effective in your area.

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