

Tomato Pinworm

Scientific name: *Keiferia lycopersicella* (Lepidoptera: Gelechiidae)

Tomato pinworm is a serious pest of tomatoes in Missouri. Several farms, particularly in the southwest region, have reported the presence of this pest, which has caused economic damage to field-grown and high-tunnel tomatoes.



Description

Adult — The small gray moth (pictured at right) has a reddish-brown, mottled head and thorax. Its body is about 6 mm long with a 9 to 12 mm wingspan.



Egg — The tiny oval egg is about 0.4 mm long. Light yellow when newly deposited, it turns pale orange before hatching (pictured below).



pupal cell made of loosely woven silk and covered with soil particles.

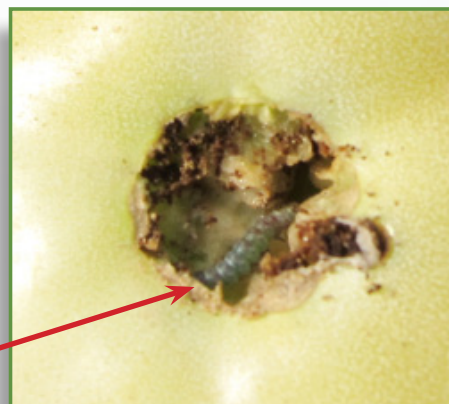
Biology

Distribution — Tomato pinworm lives year round in warm agricultural areas of Mexico, California, Texas and Florida. Tomato pinworm has also been reported in greenhouses in Delaware, Mississippi, Missouri, Pennsylvania and Virginia. In states further north, it cannot survive the winter outdoors. Winter outdoor infestations occur there, but they are usually limited to fields near infested greenhouses.

Host Plants — The tomato pinworm feeds only on plants belonging to the nightshade family (Solanaceae). Common hosts include crops such as tomato, potato and eggplant.

The weeds nightshade and horse nettle are also subject to attack.

Larva — The newly hatched larva is yellowish-gray and about 0.8 mm long. The mature fourth instar (a stage between two successive molts), which averages 6.5 mm long, may be yellow, green or ash gray and is covered with dark purple spots (pictured at right).



Damage — Blotch-like leaf mines, folded and tied leaves, pinholes in stems and fruit, and fruit blotches all can be caused by pinworms. First and second instar larvae mine leaves in a manner

Pupa — A little over 6 mm long, the pupa gradually changes from green to brown. This change occurs in the soil enclosed in a

similar to that of serpentine and vegetable leafminers, leaving slender, winding,



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whitish or greenish burrows in the leaves. These mines, however, are widened gradually into one large blotch (pictured below).



Upon emerging from leaf mines, third instar larvae fold and web leaves to protect themselves and feed from inside these shelters. Some of the larvae bore into stems, buds and fruit, leaving small “pinholes” on the surface. The fruit is usually entered near the calyx lobes (sepals of a flower) or the stem, but larvae rarely penetrate deeper than 18 mm and usually feed just below the skin. In addition to the presence of pinholes, injured tomato fruits have discolored blotches. Damage to leaves and vines can range from little importance to severe loss of leaves. Injury to the fruit (pictured at right) can cause substantial economic losses. Caterpillars may be difficult to detect in harvested fruit unless they have been feeding long enough to create small piles of brown, granular frass (digestive waste generated by plant-eating insects) at the edge of or at the calyx.

Life History — In California, Florida, Texas and Mexico, tomato

pinworms overwinter (make it through the winter) outdoors as pupae at or near the soil surface. The moths in warm climates may emerge as early as March or April and have nocturnal habits. Eggs, usually deposited on the undersides of leaves, hatch about one week later. Larvae mine the leaves for about six days and then fold leaves or bore into fruit for another six days. Mature fourth instar larvae either remain in folded leaves, or drop to the soil to pupate. About 12 days later, a new generation of adult moths emerges.

In summer, a generation can be completed every 26 to 34 days. In cooler weather, the life cycle is longer. Seven to eight overlapping generations occur each year in Florida, and it is probable that just as many occur in Missouri’s greenhouses. If moths escape to the outside, several generations may occur in field grown tomatoes during summer. Because the pinworm can have several generations per season in Missouri, it



may become more serious as the season advances.

Monitoring — Monitoring can be done by visually inspect-

ing plants for signs of tomato pinworm infestation and by using traps baited with synthetic female-released sex pheromone.

Control — Sanitation (destruction of all plant debris and fields after harvest) and prevention are good control measures for tomato pinworms. Infestations usually result from transplants that are shipped in or grown in local greenhouses. Therefore, close inspection of new plants can prevent serious problems later in the season. Chemical control should be implemented as soon as infestations are observed.

For more information:

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(573) 681-5522 if you are interested in learning more about monitoring and control options for tomato pinworm, or if you want to report an infestation of tomato pinworm.

Selected References:

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