Tomato pinworm

(Order: Lepidoptera, Family: Gelechiidae, *Keiferia lycopersicella* (Walsingham))

Tomato pinworm adult (Image from The University of Florida).

Description:
Adult: The moths are small with a wingspan of 9-12 mm. The oval forewings are light brown to gray with orangish or brownish longitudinal streaks throughout, giving the moth a speckled appearance. The hind wing is a more uniform yellowish-brown and narrow and heavily fringed.
Immature stages: Eggs are deposited in small clusters (3-7) on leaves, but are seldom seen because of their small size. Young larvae are yellowish-gray with a brown head capsule. As the larva matures it develops dorsal coloration that initially is orangish or brownish and eventually turns purplish. The mature larva measures 5.8-7.9 mm. All larvae appear smooth skinned without any prominent hairs.

Biology:
Life cycle: Eggs are deposited on leaves in small clusters and hatch in 4-7 days. The larvae develop through 4 instars in about 10 days in summer. Mature larvae usually drop to the soil to pupate near the soil surface. Duration of the pupal stage varies from 8-20 days and cool weather may be passed in the pupal stage. A generation can be completed in 30 days under summer conditions.
Seasonal distribution: Tomato pinworm is a sporadic pest in Georgia. Problems are generally associated with use of infested transplants. Populations can also build during the season following multiple use of broad spectrum insecticides which interfere with natural biological control.

Tomato pinworm larva and damage to fruit.

Damage to Crop: Larvae usually begin feeding in leaf mines before moving to fruit, but may enter fruit soon after hatching. In leaves, larvae mine for the first two instars and then form leaf folds in which the last two instars are completed. Leaf mining pinworm deposit most of their frass at the entrance to the mine; whereas, dipterous leafminers will deposit frass throughout their mines. The most important damage occurs when larvae enter fruit. Larvae may enter fruit of any maturity. Larvae generally bore into fruit under the calyx, and the entry holes are difficult to detect. Once larvae have been feeding for a while, the brown granular frass can often be seen at the edge of the calyx. Larvae may feed shallowly beneath the skin of the fruit near the stem or may bore into the core of the fruit. The feeding creates narrow blackened tunnels and exposes fruit to decay. It is difficult to sort out infested fruit and larvae present at harvest may create a contamination problem.

Tomato pinworm damage to tomato (Image from The University of Florida).

Management: Adults can be monitored with pheromone traps, and pheromones have been used for mating disruption. In Georgia, this is not a consistent pest, and cultural controls, scouting, and judicial use of pesticides are recommended. Use of locally produced and 'clean' transplants is recommended to avoid transplanting pest problems with the crop. Close scouting of the crop for leafminers and frass around the calyx should detect populations before they reach damaging levels. In most cases in Georgia, this pest is likely controlled by insecticide applications targeting other lepidopterous species.