

22. Shore Fly Control in Greenhouse Vegetable Production (HortReport, May 2002)

Shore flies (Ephydriidae) are sometimes confused with the dark winged fungus gnat. Both insects thrive in a moist greenhouse environment, have similar biology and feed on fungi and decaying matter. Shore fly larvae are not known to feed on plant tissue unlike fungus gnat larvae which can cause economic damage to plant roots. When they occur in high numbers, the adult stage of both pests can be a nuisance to employees and to customers in retail greenhouses. Additionally, fungus gnat and shore fly adults and larvae can spread spores of fungal pathogens.

It is important to identify which fly is attacking your crops since the control strategy for each pest varies. Shore flies are very difficult to control since control options are limited in edible crops and biological controls that attack fungus gnats may not be effective for shore fly control.

Life Cycle

Adult shore flies (2 mm.) are more robust than the delicate fungus gnat. The dark shore fly has short bristlelike antennae and each wing has five pale spots. These characters are easy to identify with a 15x hand lens.

Adult shore flies lay oblong, white eggs (up to 300) on algal scum or in very wet areas with decomposing organic matter (potting mix, pots, floors, near water spigots). Eggs hatch into tiny first stage larvae (maggots) that have two forked, dark-tipped breathing tubes at the rear. Two additional larval stages occur with the mature larva reaching a length of 2.5 mm. The pupae are dark brown, curved and tapered on both ends with a tough skin that provides protection from insecticides. All of these stages are found within the crust of algae and on the top layer of potting mix. The life cycle from egg to adult requires approximately 4 weeks depending on temperature. Development time decreases as the temperatures rises.

Damage

The primary damage caused by shore flies is “fly specks” or excrement left on foliage of seedlings or mature plants.

Control

Monitoring

Monitor weekly for shore fly and fungus gnat development with yellow sticky cards, especially in propagation areas. Inspect plants and soil surface for adult shore flies.

Cultural Methods

- Avoid overwatering and fertilizer runoff.
- Eliminate algae on benches, walls, mats, and on soil under benches with a registered algaecide.
- Practice good sanitation and remove all plant debris from greenhouse.

Biological

Hypoaspis miles (predatory mite) – this predatory soil mite provides some control over shore fly larvae if they are not in standing water. Shore fly larvae can survive in standing water, however the soil mite cannot. This soil mite is commercially available through most biological control suppliers.

A new biocontrol being researched is *Atheta coriara*, a soil dwelling staphylinid beetle that feeds on fungus gnats, shore flies and thrips pupae. This beetle is not yet commercially available.

Two widely used biological products for fungus gnat control, *Steinernema feltiae* (beneficial nematode) and Gnatrol™ (*Bacillus thuringiensis*) are not effective in controlling shore flies.

Drenches with Biorational Pesticides

Soil treatments can be used to control the larval stages of shore flies. Treatments are mainly insect growth regulators used to interrupt hormones and prevent maturation of the insect to the adult stage. Many synthetic insect growth regulators are approved for shore flies in ornamental crops, however, they are not approved for greenhouse vegetable production.

The following treatments are approved for greenhouse vegetables.

- Azadirachtin (Botanical) – when ingested or absorbed by the insect larva, the molting process is interrupted. Several products containing this active ingredient are commercially available.

- *Beauveria basianna* (fungus, microbial) – the spores of this beneficial fungus attach to the larva and penetrate the cuticle eventually infecting the body cavity.

Remember when applying these products that they are not “rescue treatments” – use as a preventative when insect populations are at low levels.



Figure 11-A. Shore fly adult.

Notice clear round spots on wings.