

Battle of the Flies



By Roger C. Styer

At this time of year, growers of plugs and liners are running into two old friends of production — fungus gnats and shoreflies. I'm being facetious in referring to these pests as friends. Of course, most growers know that fungus gnat larvae feed on roots, but did you also know that adult fungus gnats and shoreflies spread spores of *Pythium*, *Phytophthora*, *Fusarium*, and *Rhizoctonia* and that these root rots can become more of a problem when you have a lot of these pests around? In addition, plug and liner producers that ship to other growers have heard complaints about lots of black flies coming out of boxes when opened at their destination. So, growers should not consider these two insects only a nuisance, but also pests to be controlled.

IDENTIFICATION

In order to know how to control fungus gnats and shoreflies, it is important to know how to identify them, as some controls are more effective for fungus gnats and not shoreflies. Fungus gnat adults have a long, thin body with long antennae and are lazy fliers

like mosquitoes. Shorefly adults have a short, thick body with short antennae and are vigorous fliers like flies. Larvae of fungus gnats have a black head capsule, whereas shorefly larvae do not. Use yellow sticky cards placed 2 inches above the crop to determine what insects you have and how many are present. Change cards every week. When populations are high, you will see either little black or white spots on the lowest leaves of infested plants. These spots are feces from adults.

CONTROL

Now that you know how to tell if you have fungus gnats, shoreflies or both, it's time to talk about how to control them. Both of these insects like standing water. Try to keep the ground under benches free of standing water. Clean up plant and soil debris around growing areas, as fungus gnats love decaying organic matter. Practice proper moisture management by not watering so frequently, and control algae on soil and floor surfaces. You can use hydrogen peroxide (ZeroTol in water systems, Green Clean on floor surfaces) on a regular basis or copper ionization to clean up algae in the water.

Chemical control is best targeted at the larval stage, not the adult stage. You can use insect growth regulators such as Adept, Distance, Citation and Azatin/Ornazin to disrupt the larval development. These chemicals are not designed to give an instant kill. Use them every month, and rotate with other chemicals, such as Duraguard (not on plugs, please!), Marathon (or another imidicloprid-type chemical) or drenches of ZeroTol at a 1:100 ratio. For controlling adults, you need to use autofog, ULV or total release canisters to knock out shoreflies, which move away from sprays over crops. The best chemicals for this purpose include Decathlon, Talstar, Thiodan and Orthene. I would suggest using a control for adults only when populations on sticky cards get pretty high (like 25-50 adults per week). Otherwise, stick with sprenches or drenches for controlling larvae on a monthly basis.

There are a number of biological controls that can be used, but most of them are only effective on fungus gnats. (See more about biological and biorational control on page 44.) For fungus gnats, you can use drenches of Gnatrol, or a drench with Nemasys or a similar nematode product. Make sure the nematodes are alive when received (curved and moving), and follow directions closely for storing and applying to your crops. Nematodes like moisture, so they are best used in direct-stick culture or on crops that are going to stay wet with mist for a longer time. *Hypoaspis miles* can be broadcast over the crops and under the benches. These mites are scavengers and will roam over the soil surface, eating larvae of fungus gnats, thrips and, to a lesser extent, shoreflies. Remember, mites do not swim, so avoid broadcasting under benches where standing water is the norm. The best biological control for both fungus gnats and shoreflies is the Atheta beetle. This insect can easily be released in the greenhouse, as it is very mobile. It too is a scavenger and will feed on thrips pupae on the soil. Another benefit of Atheta beetles is you will eventually find them in other zones as they move and multiply. Keep in mind that these live biological controls can be knocked down by some of the pesticides you use for other insects. Consult with your biological control supplier about compatibility of your biological control and your pesticide program.

Well, there you have it, all the information you need to battle those flies. Just realize that you cannot control them just once in a while. These pests have a wide host range and just love moisture, decaying organic matter and algae. So you will have them whenever you have crops growing in the greenhouse. Take an integrated approach to control, and don't let up! GPN

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