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PlantHealth

Combating fungus gnats

by LYNN P. GRIFFITH

A longtime client called me a few years ago, frantic over swarms of fungus gnats (*Diptera: Mycetophilidae*) in his greenhouse. He was producing small, herbaceous liners from tissue culture in a peat-based substrate. He stored his media outside, where the rain, sunlight and humidity had encouraged algae growth within the bags of media. Fungus gnat larvae and adults were everywhere — on the flats, benches and greenhouse floor.

Even though this was an excellent grower, he was doing everything wrong in terms of dealing with fungus gnats. Although we call them fungus gnats, they really love to feed on algae and prefer high humidity and peat-based media with high microbial activity. They prefer smaller, more vegetative plants, such as liners and bedding plants, though they will also attack hibiscus, poinsettias, orchids and even the taproots of pine trees. The insect feeds on healthy as well as diseased roots, spreading pathogens through its feeding and excrement.

The adults don't do any damage. It is the quarter-inch-long, black-headed larvae that create the feeding and the damage. I have seen thousands of hibiscus and poinsettia cuttings go to the dump because fungus gnats were feeding on the base of the cuttings in the mist bed. Once that basal cambium is removed, the cutting doesn't have enough time to establish roots farther up the stem. The cut-



An adult fungus gnat is trapped on a yellow sticky card.



Fungus gnat larvae are identifiable by their black heads.

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ting simply dies. Generally, in the genus *Bradysia*, fungus gnats have a three- to five-week life cycle, depending on temperature and moisture.

They are often confused with shore flies (*Ephydriidae*). Shore flies have short antennae and are rapid, rather strong fliers. Shore flies don't do any plant damage, though they can be an aesthetic problem

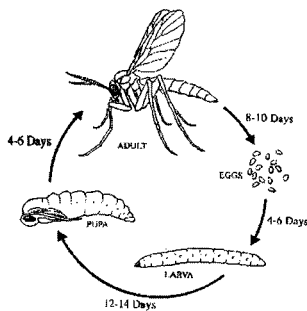
in retail operations or interiorscapes. Fungus gnats, on the other hand, have long antennae, are weak fliers and are often seen walking along the surface of the media, not flying around aggressively.

Controls. As with many insects, the best control of fungus gnats involves a combination of cultural, chemical and biological measures. Cultural factors are most important. Store your media dry in a well-drained area that does not encourage algae or fungal growth. Broadcast hydrated lime to help control algae-laden areas, and maintain the best ventilation you can. Some growers broadcast a light layer of sand on top of the media to discourage fungus gnats, though this isn't always practical. Monitor adult populations with yellow sticky traps, cards or tape. You can also sprout bean seed as a trap crop. Check bean seed or sticky traps two to three times per week to monitor populations.

Several chemical control options are available, and most are rather broadly labeled. The *Bacillus thuringiensis* (*Bt*) product Gnatrol is very safe and effective, though probably not as effective as it once was. Citation and Distance generally do an excellent job, and Distance has excellent longevity. Other options include the neem-based product Azatin, as well as Adept, Merit and Pylon. While fungus gnats are most visible



An adult fungus gnat feeding.



The life cycle of fungus gnat.

in their adult stage, it is the larvae that growers should look to control.

Biocontrols may work in many situations. They include the predatory mite *Hypoaspis miles*, which colonizes the soil fairly readily. The small, fast-moving rove beetles (*Staphylinidae*) eat fungus gnat larvae and eggs voraciously, and they generally stay out of sight. Neither of these treatments may work if you are growing in the southeast quadrant of the US where Talstar incorporation may be required in potting media. Applications of the beneficial nematode *Steinernema feltiae* (ScanMask, NemaShield, Nemasys or Entonem) have also worked well for growers and interiorscapers.

As for my panicked grower friend, I had him order some yellow sticky tape to stretch across the center of his benches. As he and a helper were unrolling the tape, the adult fungus gnats were jumping on it and sticking even before he could get the tape in place. We dried out

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his flats and got fresh, dry media, which he stored indoors in a relatively dark area. We controlled the algae on the greenhouse floors, dried out the houses and applied Gnatrol and Distance to control the larvae. In a couple of weeks, his fungus gnat problem was a thing of the past. Fungus gnats can be a major problem, but a combined, well-focused approach can get them under control quickly.

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