Greenhouse Pest Message March 29th, 2024
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With the cloudy, overcast weather, **fungus gnat larvae** can feed upon the tender roots of young plugs, especially if you are growing with a compost-based media.

Inspect incoming plugs for fungus gnat larvae or their feeding damage. Fungus gnats may be introduced into a greenhouse from soilless media or on rooted plant plugs.

Figure 1: Fungus gnat larvae have fed upon tender young roots (on left) and closeup of fungus gnat adult on sticky card on right. Photos by L. Pundt

Adult fungus gnats are attracted to mixes with high microbial activity, or with high amounts of peat moss, compost, or composted hardwood bark.
Avoid using mixes with immature composts less than one year old. However, no potting mix is immune to fungus gnat infestations. Adult females prefer to lay their eggs in protected, humid crevices in the media.
Insect growth regulators and biopesticides can be applied to the growing media to manage fungus gnat larvae. Repeated applications are needed, as most products do not affect the eggs or pupae. There are few insecticides that work effectively against fungus gnat adults due to the development of resistance.

The biopesticide, *Bacillus thuringiensis* var. *israelensis*, (Gnatrol WDG), is most effective against first instar fungus gnats. This bacteria must be ingested by the larvae, after which a toxic protein crystal is released into the insect's gut. Larvae stop feeding and die. BT is only toxic to fungus gnat larvae for two days. Repeat applications, i.e. two or three applications at high rates, may be needed to provide effective control.

Insect growth regulators containing azadirachtin (i.e. Aza-Direct, AzaGuard, Azatin O, Molt X) may be applied to the growing media to manage fungus gnat larvae. Repeat applications may be needed.

Commercially available biological control agents (BCAs) work very well against fungus gnats and include the generalist predatory mites, *Stratiolaelaps scimitus*, entomopathogenic (insect-killing) nematodes*, Steinernema feltiae*, and rove beetles, *Dalotia coriaria.* All these BCA's should be used preventively and applied to moist growing media. They are mutually compatible.

- *Nemasys*, NemaShield) are applied as a drench treatment against fungus gnat larvae during cloudy, overcast weather. Repeated applications every two weeks are needed.
- *Stratiolaelaps scimitus* feed on fungus gnat larvae, thrips pupae and shore fly larvae. These predatory mites are best used when fungus gnat populations are low.
- The rove beetle, *Dalotia coriaria*, is a generalist predator that feeds upon fungus gnat and shore fly larvae in the growing media. The slender, dark brown or black adults are nocturnal, so are best released in the evening. Both adults and larvae tend to hide in cracks and crevices of the growing media.

Powdery mildew on Vegetative Petunia
A sample of powdery mildew on petunia was submitted to the CAES Plant information Office last week.

Figure 2: Powdery Mildew on Petunia. Photo by Dr. Li., CAES

Look for signs of powdery mildew on the lower or interior petunia leaves. Lower leaves may also be necrotic.
E Gro Alert Powdery Mildew on Petunia Michigan State University Greenhouse Disease Management 2023
New England Greenhouse Floriculture Guide https://greenhouseguide.cahnr.uconn.edu/

Preventing Phytotoxicity (Plant Injury) from Pesticide Applications
Whenever considering spray applications to either tender young seedlings or plants in flower, extra precautions are needed.

Before using a new pesticide or a pesticide you may have used before but on a new plant or new variety, test it on a few plants.

Treat similar age, cultivar, and planting date) and hold for 7 to 10 days to see if any phytotoxicity symptoms develop, before widespread use.

Figure 3: Spray damage to tender young basil seedlings, to youngest crassula leaves where product pooled, and to open pansy blooms (from left to right). Photos by L. Pundt

Some Tips on Preventing Phytotoxicity (Plant Injury) From Pesticide Applications

- Read labels carefully. Pay attention to dosage rates, application instructions and phytotoxicity information. Some pesticides are labeled so that the grower accepts all risks from phytotoxicity to greenhouse crops, because the risk is high.
- Read labels carefully for all plant safety information. Pesticide labels usually mention sensitive plant species and cultivars. The sensitivity of unlisted plants to the product or tank mixture is unknown
- Read any technical brochures on the product (often available on the manufacturer's website).
- Apply pesticides in the early morning or evening. Applications made in the early morning allow plant foliage to dry before temperatures reach 85 to 90°F.
- Take special precautions when using pesticides containing either petroleum or paraffinic base oil. Always make applications when conditions allow plant foliage to dry quickly.
- Add surfactants only when recommended on the pesticide label.
- Use care when tank-mixing pesticides as this may increase the chance of harming crops.
- Apply pesticides only after crops have been irrigated. Never apply pesticides to plants that are under water-stress.

As plants grow, the damage will remain on the oldest leaves and the new plant growth will appear healthy. Abiotic disorders tend to follow a regular pattern and may occur "overnight" whereas diseases caused by living organisms tend to be random.
Preventing and Diagnosing Spray Damage in the Greenhouse

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