Greenhouse Pest Message, March 9, 2023
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Continue to watch for **aphids.**

Two Spotted Spider Mites may be found on their favorite tropical and house plants.

Greenhouse whiteflies have been observed on overwintered stock plants and pet plants. They will easily migrate to young plugs and seedlings.

The powdery white (1/16th inch long) greenhouse whitefly adults have wings that tend to lie flat over their body.

Figure 1: Greenhouse whitefly adults on brugmansia. Photo by L. Pundt

Greenhouse whiteflies have a broad host range feeding on more than 250 ornamental and vegetable hosts. Some of their favorites include: Ageratum, bacopa, fuchsia, gerbera daisies, many different herbs (such as scented geraniums, and lemon verbena), hydrangea, lantana, primula, salvia, tomato, zinnia, etc.

Prevention

- Start with a clean, weed free greenhouse.
- A fallow period of 2 to 4 weeks, when all plants and weeds are eliminated, will help to minimize potential insect problems.
- Avoid over fertilizing crops as this increase their attractiveness to adult whiteflies.
- Inspect incoming plants and cuttings for both adult and immature whiteflies.
- Keep overwintered stock plants separate from young seedlings and plugs

- If whiteflies are observed, on overwintering plants, provided you can obtain good coverage to the underside of the leaves, spot treatments of SuffOil-X work well. Because SuffOil-X is pre-emulsified, it leaves a thinner coating on plant leaves, with faster dry times, helping to reduce the chance of spray burn.
- If you are considering using biological control agents, they are best used preventively and it's best to know what species of whiteflies you may encounter.

Which whitefly species do you have? The easiest way to identify the different whitefly species is to examine the immature pupal stage.

The greenhouse whitefly pupae are white with straight, elevated sides. You can also see a fringe of wax filaments around the edge of the pupal case.

Sweet potato whitefly pupae are yellowish with a more rounded edge. In general, sweet potato pupae have fewer waxy filaments than the greenhouse whitefly pupae. Red eyes indicate adults are ready to emerge.

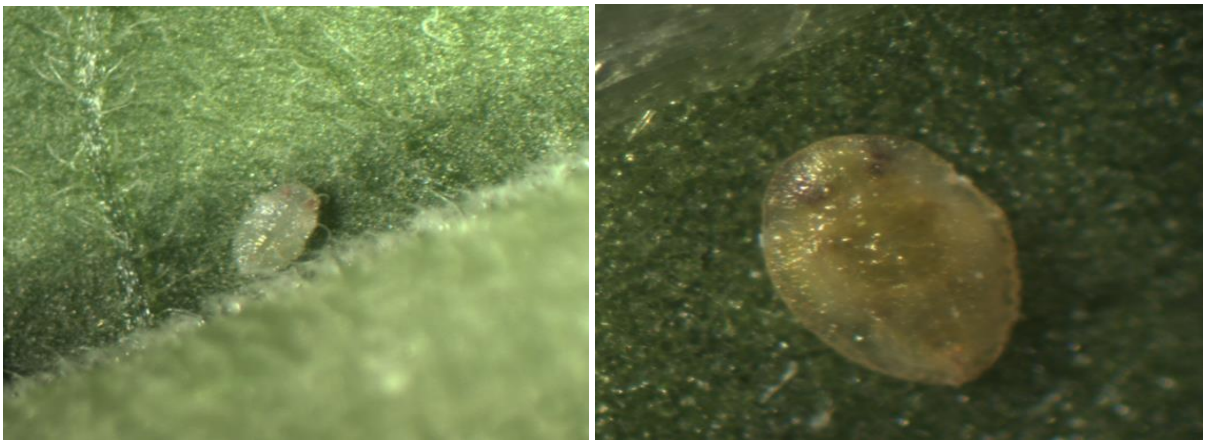

Figure 2 & 3: Greenhouse whitefly pupae (left) and sweet potato whitefly pupae (right). Photos by L. Pundt

Biological Control Agents
Commercially available biological control agents include the host specific parasitic wasps, *(Encarsia formosa* and *Eretmocerus eremicus),* and predatory mites (*A. swirskii*). Predatory beetles (*Delphastus*) may be an option in whitefly HOT spots.

Encarsia formosa
Encarsia is especially effective against the greenhouse whitefly on long term crops. Females prefer to lay their eggs in the 3rd and 4th instar whitefly larvae. They can also host feed on smaller whitefly larvae. Parasitized whiteflies turn

black. Look for a small hole as the adults emerge. Optimum environmental conditions for *Encarsia* are temperatures >68 F humidity between 50-70% and high light. It tends to be a much more effective natural enemy during summer months than in winter. Adults do not fly when ambient air temperatures are below 65°F.

Encarsia are primarily shipped inside black parasitized whitefly pupae which are glued to small cards. They are also available as loose pupae that can be placed in release boxes.


Figure 4 & 5: Close-up of adult *Encarsia* (left) and *Encarisa formosa* pupae glued to a piece of cardboard that is attached to the plant. (right). Photos by L. Pundt

Tips for Using *Encarsia formosa*

- Remove yellow sticky cards before and after releasing *E. formosa* to avoid capturing adults on the cards. Replace sticky cards 3 to 4 days following release.
- Hang the cards in shaded areas in the lower canopy of plants to avoid desiccation from direct sunlight.
- Adults emerge from the pupae and fly upward. Introduce cards weekly starting when whiteflies are first detected.
- In general, for most crops, continue making releases until 80% to 90% of the whitefly population has been parasitized.
- When scouting, look for the distinct, black greenhouse whitefly pupae that are parasitized.

Encarsia is very sensitive to pesticide residues so consult online side effects databases from Koppert, Biobest, Bioline AgriSciences for more information.

Eretmocerus eremicus attacks both sweet potato whitefly and greenhouse whitefly but is more often used against sweet potato whiteflies. *Eretmocerus eremicus* is shipped as pupae that are either glued to paper cards or in blister

packs or in bottles. When using blister packs, remember to open the flaps and do not place the blister back so they would be facing the sun. *Eretmocerus* is also available in a mix with *Encarsia.*

Predatory Mites

Amblyseius swirskii feeds on whitefly eggs and nymphs. This generalist predatory mite also feeds upon western flower thrips, broad mites, spider mites and pollen. It is most effective at warmer temperatures (70˚F) and a relative humidity of 70%. *A. swirskii* is available in breeding sachets, or in bulk that is released unto plant leaves.

For information on chemical options for whitefly management on greenhouse ornamentals: see the **New England Greenhouse Floriculture Guide** at https://greenhouseguide.cahnr.uconn.edu/

See the **New England Vegetable Management Guide**, at http://nevegetable.org for what is labeled on vegetable transplants and greenhouse tomatoes.

New Fact Sheet: The Use of Entomopathogenic Fungi in the Greenhouse

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