

Whitefly control with biocontrols

Features - Pest & Disease

Learn how to defeat these pests in your poinsettia crops.

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If you grow poinsettias, whiteflies are the bane of your existence. Almost as soon as poinsettias enter the greenhouse, the whiteflies are on them. For such a predictable pest, you'd think management would be easy, that we'd have it all figured out. But, as you know, multiple complications, such as insecticide resistance, insecticide residue, and phytotoxicity, make whitefly management in poinsettias a challenge. For these and other reasons, many growers are turning to biological controls to manage whiteflies and other poinsettia pests.

Know your pest

The most common whiteflies in greenhouses are greenhouse whitefly (*Trialeurodes vaporariorum*) and sweet potato whitefly (*Bemisia tabaci*).

Whiteflies typically lay eggs on the undersides of leaves. Tiny crawlers hatch that settle on leaves and molt into immobile nymphs. They feed by inserting flexible hollow mouthparts into phloem tissue and sucking the sugary fluid. This results in light green or yellow chlorotic spots on the tops of leaves where nymphs are sucking out fluid below. Like other phloem feeders, whiteflies produce honeydew that leaves shiny

patches on leaves where black sooty mold can grow.

Monitoring best practices

Monitor for adults with yellow sticky cards and by brushing plant foliage to watch for whiteflies that flit around and resetttle. Scout for nymphs by turning over leaves to look for them and also look for shiny, sticky honeydew on leaves. Poinsettias are destined to have whiteflies. Scouting to catch infestations early is critical for any management plan but for biological control you need to start before or as soon as pests are found.

Whitefly biocontrol options



Close-up view of a whitefly pupae

Photo: Matt Bertone, NCSU

***Encarsia* and *Eretmocerus* parasitoids.** The most common biological control agents for whiteflies are *Encarsia* and *Eretmocerus* parasitoids. These tiny wasps lay eggs inside or beneath whitefly nymphs. The



Whitefly eggs, nymphs, and adults on the bottom of a leaf

Photo: SD Frank, NCSU

wasp larvae then feed and develop within the nymph and pupae and emerge as an adult to kill more whiteflies.

It is important to know which whitefly species is on your plants before investing in parasitoid



Close-up view of an adult whitefly

Photo: Matt Bertone, NCSU

wasps. *Eretmocerus mundus* is a specialist of sweet potato whitefly, the most common poinsettia pest. *Encarsia formosa* is a specialist of the greenhouse whitefly. *Eretmocerus eremicus* can parasitize both species. These parasitoids are usually sold as pupae within whitefly pupae glued on cardboard strips that can be hung on plants. Parasitoid adults emerge from the pupae into your greenhouse to search for whitefly nymphs to parasitize.

- ***Amblyseius swirskii***. The predatory mite *Amblyseius swirskii* is another important biological control agent to complement parasitoids in poinsettia production. These tiny predators eat whitefly eggs and small nymphs but also are fantastic predators of thrips. *Amblyseius swirskii*, and all predatory mites, are tiny and don't fly so you have to be the one to distribute them throughout your crop. Thus, they are generally sold in a can with a shaker top so you can shake them out on each plant or they are packaged in small sachets or envelopes that you hang on plants. The mites crawl from the sachets onto the plants.
- ***Delphastus catalinae*** are tiny black lady beetles. They are less than 2 mm long but the adults and larvae feed voraciously on whitefly eggs and nymphs. However, they need to eat so many whiteflies to survive and reproduce that *Delphastus* beetles are often not appropriate for poinsettias. If you have enough whiteflies to sustain them you probably have way too many whiteflies for an aesthetically optimal crop.
- ***Beauveria bassiana***. Finally, pathogens like *Beauveria bassiana* are also good biological control options for whitefly management. Many people do not think of pathogens as biological control because you spray them on your crop like an insecticide. However, *Beauveria bassiana* is a live fungus that grows and feeds on insects and kills them. *Beauveria bassiana* and other insect pathogens kill pests like thrips, mites and aphids too. So, these products can complement your whitefly biological control agents and help keep tabs on other pests that pop up.

Biological controls do not provide rapid suppression of large populations. They are best applied preventively so they stay ahead of the pests. You know whiteflies will show up on your poinsettia crop, right? And, you know they are there before you notice them. Release biological control agents before you think you need to. It's not wasteful, it's wise.

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