



GROWER 101: **Whiting Out** **Whiteflies**



With whitefly control,
it is best to get on
the starting block
as soon as young
plants arrive at
your greenhouse.

Here's how.

By Stanton Gill

Whiteflies can be very damaging to greenhouse crops and field and greenhouse-grown cut flowers because of their broad host range, resistance to insecticides and potential to vector a variety of plant virus diseases. High populations of whiteflies can weaken plants, causing chlorotic foliage and reduced vigor.

There are several whitefly species, but the two that cause the majority of problems to greenhouse growers are the silverleaf whitefly, *Bemisia argentifolii*, and the greenhouse whitefly, *Trialeurodes vaporariorum*. One reason these whiteflies are serious pests is that they attack a wide range of floral crops. In addition, their sheer presence deters customers, causing economic loss to growers and sellers of plants.

Whitefly is a general pest of many greenhouse plants, but not all plants are prime hosts for whitefly. Whitefly magnets include verbena, fuchsia, regal geranium, lantana, nicotiana, ageratum and of course, poinsettia. If you are growing herbs, keep a close

eye on rosemary, Balm of Gilead, African blue basil, sage, lavender and salvia for whitefly feeding.

IDENTIFYING

Whitefly eggs appear very tiny and spindle-shaped, usually stand vertically on the leaf surface and are attached to the leaf by a tiny pedicel or "stalk" at the base of the egg. For many species, eggs are white when first laid and turn dark gray (greenhouse whitefly) or amber-brown (silverleaf whitefly) with time. The four nymphal stages are identified by their relative sizes; length and width increase with each successive molt. The best life stage to use for identification is the "pupal" stage, which is the last nymphal stage before adult emergence. A 10x hand lens or dissecting microscope will be needed to examine pupae closely enough to see these characters and differentiate accurately between the species.

Pupa of the greenhouse whitefly are oval and have elevated sides that are very straight and perpendicular to the leaf surface. Seen from above, the greenhouse

whitefly, unlike the silverleaf whitefly, has a tiny “fringe” of wax filaments around the top “rim” of the pupa. There are several pairs of long wax filaments that arise from the top surface of the pupa, especially on hairy leaves. Adult greenhouse whiteflies are somewhat larger than silverleaf whiteflies. The wings lie fairly flat over the abdomen, almost parallel with the leaf surface. When viewed from above, the body of the silverleaf whitefly can be seen through the wings when at rest. From the same viewpoint, the body of the greenhouse whitefly cannot be seen through the wings.

The pupa of the silverleaf whitefly appears from side view to be more rounded, dome-shaped or even pointed. Several pairs of longer wax filaments may arise from the top surface of the pupa, but these are usually shorter on silverleaf whitefly compared to greenhouse whitefly. The color of silverleaf whitefly nymphs tends to be more yellow than the whitish greenhouse whitefly nymphs. The wings of the adult silverleaf whitefly are held close and tent-

like against the abdomen at approximately a 45-degree angle to the leaf surface.

MONITORING

Sampling for whiteflies is critical to establish whether a treatment threshold has been reached and determine whether a treatment is effective. Whitefly infestation can be monitored using a combination of yellow sticky traps and foliage inspection. Yellow sticky cards work in greenhouses but are impossible to use outdoors. They attract so many other species of insects that the cards become “unreadable.” The location and relative numbers of adults can be monitored with yellow sticky traps, while nymphs must be monitored by frequent foliage inspection. Monitoring for nymphal stages is crucial for predicting infestations.

Sticky cards are best used at 1-2 cards per 1,000 sq. ft. of growing area and should be checked on a minimum of a weekly basis. The threshold of adults found on a card per day and the numbers of nymphs per leaf often changes according to the maturity of the


crop. Early in a crop cycle, a grower may tolerate 0.5 whiteflies per day on cards. Near sale, growers may have an increased tolerance of adults, allowing two whiteflies per card per day.

ELIMINATING

If you have a small number of plants, you can do a visual inspection of the foliage for the presence of whitefly eggs, sessile stages and adults. Separate infested plants and make plans to treat them. For a large number of plants, immediately put out sticky cards (at least one card per 1,000 sq ft), and determine if you have whitefly “hotspots” that need to be treated. A good choice in summer is to treat with an insect growth regulator (IGRs).

A decision pops up in late August or early September after you pinch back poinsettia plants. The standard practice for most greenhouse managers growing poinsettia crops has been to treat the substrate with a drench or granule application of imidacloprid (Marathon) about 7-10 days after pinching the plants. Syngenta Professional Products

is still working on EPA approval of its systemic insecticide Thiamexthoxam (Flagship) for greenhouse use. In our trials, Thiamexthoxam has worked well on whitefly, but it looks like growers will have to wait for EPA approval for this product.

If whiteflies are a problem on your poinsettia crop, later in the season you can usually clean up a population with applications of Sanmite (pyridaben), Avid (abamectin) or Dithio (sulfotepp — if you can find it on the market). More information about pesticide efficacy can be found on page 58. 

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