

GROWERTALKS

Pest Management

10/28/2016

Out-foxing the Foxglove Aphid

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Aphids can be a constant headache for greenhouse growers, often popping up at the worst times. These small, soft-bodied insects can infest a wide variety of greenhouse crops and various kinds of aphids could be found on nearly all parts of a plant, some even on the roots.

There are many different kinds of greenhouse aphid pests, most commonly including the green peach aphid (*Myzus persicae*), the melon or cotton aphid (*Aphis gossypii*), the potato aphid (*Macrosiphum euphorbiae*) and the foxglove aphid (*Aulacorthum solani*). Of these, the green peach aphid is the most common aphid pest on the majority of greenhouse crops. But according to our survey done in New York and Massachusetts greenhouses—and seconded by greenhouse colleagues in Ontario, Canada—the second most common greenhouse aphid pest in cooler regions of North America is the foxglove aphid.

Because of its importance, Dr. Sarah Jandricic focused her Cornell University Ph.D. studies on this pest. As a result, we've discovered a number of ways that the foxglove aphid differs from the green peach aphid, which could aid growers in their battle against this pest.



Plants attacked by foxglove aphid

Foxglove aphids can infest an impressive variety of ornamental and vegetable plants (both herbaceous and woody), and have been reported on over 95 different plant species. Foxglove aphids can infest just about every ornamental that's attacked by green peach or melon aphid, plus a few more. We've found them infesting pansy, blue salvia, scarlet sage, pentas, calibrachoa, marigold, geranium, snapdragon, petunia, zinnia, garden and potted mums, lilies, alstroemeria, peppers and even poinsettia plants

(Figure 1, pictured left)

. Very few aphids can reproduce on poinsettia. More about this later ...

Identification

Foxglove aphids are slightly larger than green peach or melon aphids at approximately 1.8- to 3-mm long.

They're usually pale green to sometimes yellowish in color and may have a somewhat "shiny" appearance compared to other aphids. One of their most distinguishing features is the presence of a large, dark green patch on their abdomens at the base of each of their two cornicles—the long tubes that look like "exhaust pipes" near the tip of their abdomen
(Figure 2, pictured right).



These dark green patches can easily be seen using a hand lens, especially on adults. They also have darkened joints on their legs and long antennae, which aren't present on green peach aphids.

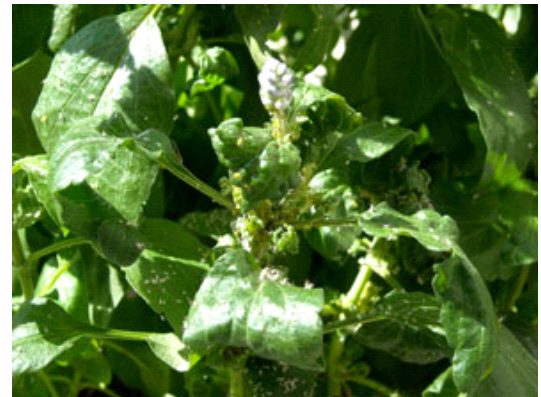
Damage

Like most aphids, foxglove aphids suck plant sap and can cause plant wilting. They also leave behind unsightly white-colored skins that they shed as they grow. Their honeydew excretions leave a sticky, sugary substance that can encourage the growth of dark grayish, sooty molds on plants. But unlike many other aphids, foxglove aphid also has a toxic saliva, which is injected into the plant as it feeds. The toxin can lead to curled and twisted leaves
(Figure 3, pictured below),

spots of dead leaf tissue and can even cause early leaf-drop. Because of this, foxglove aphid may cause irreversible cosmetic damage to ornamental plants at much lower numbers than that seen with other types of aphids.

Foxglove aphid and temperature

Aphids generally have more offspring and develop faster at warmer temperatures, which is one of the reasons why aphids like green peach aphid and melon aphid are usually more of a problem in the summer months and in warmer regions of the U.S. But, according to our research, foxglove aphid actually has more offspring at 50 to 60F (10 to 15C) than at 77F (25C)—almost twice as many in fact. Foxglove aphid also develops faster than either green peach or melon aphid at a cool 60F (15C). So, while most other pest problems are stalled or slow-growing at cooler temperatures during spring production, foxglove aphid develops just fine. Growers who are trying to save money on energy costs by growing at cooler temperatures should be on the lookout for foxglove aphid.



The good news is that foxglove aphid doesn't do well at really warm temperatures. These aphids can't reproduce and can barely survive at constant temperatures of 86F (30C) or above, which explains why this pest is generally not a problem in the summer growing months or in greenhouses in warmer U.S. states, such as Florida and Texas. And though foxglove aphid can infest poinsettias, the crop is generally started during summer temperatures when these aphids can't survive, so perhaps this is why foxglove aphid problems seem to be rare on poinsettias.



Distribution on a plant

Green peach aphids tend to be located on the growing points and mid-to-upper leaves of a plant. But if plants have not yet flowered, foxglove aphid can often be found at very high densities on the undersides of the lowest leaves on a plant

(Figure 4, pictured left)

. We've commonly seen 20 to 40 aphids on the cotyledons of pepper transplants, but nowhere else on the plant.

Although this locale can make adequate spray contact very challenging, this is a situation where systemic insecticides would be needed. When ornamental plants are in flower, foxglove aphids are often found on flower stems and on the flower petals themselves, though some may remain on the lowest leaves.

Control measures

Some growers may have encountered insecticide resistance issues when it comes to controlling the green peach aphid. Various strains of green peach aphid are resistant to several older insecticides to various degrees. The good news with foxglove aphid is that, because it's a fairly recent pest, it hasn't had the chance to develop populations with serious resistance problems yet. So pesticides that are effective against green peach aphid will generally also be effective against foxglove aphid, assuming an effective amount of the active ingredient reaches the places where the aphid is located, either systemically or by contact. It's important to use pesticides sparingly and responsibly, lest we end up with another pesticide-resistant pest.

Several biological control agents are also available for this pest. Though *Aphidius colemani* is the commonly used and effective parasitic wasp against green peach aphid, this wasp is not effective against foxglove aphid. But *Aphidius ervi*, another parasitic wasp, can tackle larger aphids like foxglove aphid and potato aphid.

Be aware that when foxglove aphids detect an *Aphidius ervi* wasp hunting among them, they commonly either begin to crawl off the leaves and down the stems, or they simply fall off the plant in an effort to escape the attacking wasp. So it's possible that foxglove aphids in hanging baskets could fall onto the plants below the baskets. But, thankfully, the wasps will be searching these plants as well.

The predatory midge *Aphidoletes aphidimyza* is a good aphid generalist, which means that it will attack a variety of aphid pests, including foxglove aphid and green peach aphid. However, we've seen that *Aphidoletes* is only sometimes effective against foxglove aphid, mainly because the foxglove aphids on the lower leaves of the plant are usually missed by this predator.

Also, remember that a good rule of thumb for biological control of most greenhouse pests, including aphids, is that control can be better achieved if the natural enemies are released preventatively, i.e., before scarce aphids actually become a problem. **GT**

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