Greenhouse Pest Message March 4, 2022
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Everyone is very busy planting and filling up (hopefully very clean) greenhouses. In my travels I have seen a little **botrytis** blight on damaged plant tissue on young plugs. As you know, Botrytis is best managed by a combination of cultural, environmental, and chemical controls paying close attention to proper sanitation, plant spacing and management of humidity levels.


Figure 1: Botrytis sporulation. Photo by L. Pundt

Heat and vent to manage sporulation and then consider treatments so you do not spread the spores around! These are some of the fungicides that are generally considered effective against Botrytis:

- Daconil (MO5)
- Decree (17) – some resistance populations have been reported in the NE
- Affirm WDG (19)
- Astun (7)
- Broadform (7/11)
- Orkestra (11/7)
- Palladium (9/12)
- Mural (11/7)
- Medallion (12)

The cloudy weather can also favor **fungus gnats** (whose adults can also help spread Botrytis spores around). See previous pest message (2/18/2022) with tips on using beneficial nematodes, which are very effective provided treatments are started as soon as material is planted and they are applied during cloudy, overcast weather.

Xanthomonas or bacterial blight on geraniums has been confirmed in the eastern US this week! So, it is back this growing season after many years. We have not paid as close attention to isolating geraniums by source, like we used to, so there has been time for splashing water to spread the bacterium from plant to plant. We need to keep a closer eye on our geraniums this year and scout them more carefully.

Bacterial blight of geraniums caused by *Xanthomonas hortorum* pv. *pelargonii* is most likely to infect zonal geraniums (*Pelargonium x hortorum*), and ivy geraniums. There have been a few reported cases on (*Pelargonium peltatum*), Regal or Martha Washington geraniums (*Pelargonium domesticum*). Cranesbill or perennial geranium (*Geranium sanguineum*), which primarily suffer from leaf spot infections and not a systemic infection, have been known to be a source of the disease for those growing both annual and perennial geraniums. Geraniums grown from seed can become badly diseased if they are grown with an infested cutting crop. Only plants in the family Geraniaceae are susceptible to this Xanthomonas pathovar.

Symptoms vary depending upon the species or cultivar of geranium affected and environmental conditions. Both leaf spots and systemic infections can develop in geraniums.

Warm temperatures favor bacterial diseases such as *Xanthomonas*. Symptoms can develop in as little as seven days at 81F but may develop in three weeks at 60F. Temperatures below 50F may prevent development of symptoms. At first, there may just be an occasional wilted leaf, that could be confused with root damage from fungus gnats or root rot on geraniums.

Xanthomonas causes tiny, round, water-soaked, brown leaf spots from 1/16 to 1/8 of an inch in diameter. These spots develop first on the leaf undersides and later become visible on the upper leaf surface.

Yellow to brown v-shaped wedges may develop on the leaves (that could be confused with Botrytis blight) that are often followed by leaf wilting. In hot, humid weather, the bacteria also enter the vascular system (xylem) of the plant causing the leaves to wilt while the roots remain healthy. These systemic infections can kill the plant. Black stem cankers can develop at the base of the petioles.



Figure 1 & 2: Bacterial Blight on Geraniums. Photos by L. Pundt

For more photos:
https://ag.umass.edu/greenhouse-floriculture/photos/geranium-xanthomonas
https://greenhouse.cornell.edu/pests-diseases/gallery/

Ivy geraniums are very susceptible to bacterial blight, but infected plants do not develop very distinctive symptoms. Infected plants may be off-color resembling a nutrient deficiency symptom or two-spotted spider mite feeding damage.

Avoid placing ivy geranium hanging basket crops over bench or floor grown zonal geraniums to eliminate potential disease spread as water drips unto susceptible zonal geraniums below. Do not grow ivy geraniums above zonal geraniums.

When scouting geraniums, you simply cannot tell from looking if you have Xanthomonas blight, you can just tell if you have suspicious symptoms, so you know that more diagnosis is needed.

Take digital photographs, talk to your broker or supplier to ask exactly what confirmation they need for you to obtain credits.

Here are the diagnostic laboratories in Connecticut:

CAES Plant Information Office https://portal.ct.gov/CAES/PDIO/PDIO-Home/PDIO-Home

UConn Plant Diagnostic Laboratory: https://plant.lab.uconn.edu/

AgDia https://www.agdia.com/ also has test strips available for Xanthomonas that are easy to use, but check with your broker on what confirmation is needed.

If you discover an outbreak in your greenhouses, after confirmation, discard plants with symptoms and those within 3 feet of them and then protect the rest of the crop with copper sprays. Continue to scout your geraniums for the rest of the season.