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Pansy problems: Leaf spot, powdery mildew, and Myrothecium crown rot

In the southeastern USA, bedding plant production and landscape installation in the fall is dominated by pansies and violas. Plant diseases can greatly affect the quality and longevity of these beautiful bedding plants. Pansies and violas are affected by numerous plant diseases including black root rot, Pythium root rot, powdery mildew, Botrytis blight, and Cercospora leaf spot. During the winter and spring of 2020, there was also a major problem with Myrothecium crown rot. Pansy is also affected by downy mildew. However, the disease occurs sporadically and much to my dismay (I love downy mildew diseases!), in my 25+ years in Georgia, I have not seen it on pansy. There are e-GRO Alerts covering identification and management of black root rot, caused by the fungus *Berkeleyomyces basicola* (formerly known as *Thielaviopsis basicola*) (http://www.e-gro.org/pdf/2016_512.pdf and http://www.e-gro.org/pdf/2016_513.pdf), Pythium root rot (http://www.e-gro.org/pdf/2019_804.pdf), and Botrytis blight (http://www.e-gro.org/pdf/2019_810.pdf and <http://www.e-gro.org/pdf/2021-10-21.pdf>), so I won't cover these diseases here. This alert will focus on Cercospora leaf spot, powdery mildew, and Myrothecium crown rot.

The most common leaf spot disease on pansy is Cercospora leaf spot, caused by the fungus, *Cercospora violae*. Symptoms of Cercospora leaf spot begin as small, purplish spots with a fringed margin (Figures 1 and 2). Leaf spots enlarge and may develop a tan center. *Cercospora* spores are produced within the center of each spot and may be seen on their spore-bearing stalks with a hand lens. Prolonged periods of leaf wetness, high humidity, poor air circulation and moderately cool temperatures favor infection and disease development.

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Cercospora leaf spot is a constant problem in both pansy production and landscape installations. The fungal pathogen is specific to pansy and viola. Contaminated seed and infected plant debris may be sources of initial infection. Once present, the spores are easily spread by water-splash, air currents, and worker activity touching wet plants. Within plug trays, the disease can spread quickly and even kill plants (Figure 3). Remove severely infected plants to reduce disease spread. All plant debris should be discarded or destroyed at the end of the production cycle to reduce pathogen survival. Reducing leaf wetness periods by changing irrigation pattern, timing, and type so that plant foliage will dry quickly can reduce disease development. Spray applications of fungicides containing azoxystrobin, chlorothalonil, copper hydroxide, mancozeb, myclobutanil, potassium bicarbonate, propiconazole, pyraclostrobin, tebuconazole, trifloxystrobin, and triflumizole can reduce *Cercospora* leaf spot infection.

With the overcast, humid conditions in the southeastern USA, powdery mildew disease has been a problem in pansy production within greenhouses. However, if the current wet weather trends continue, it is unlikely that the disease will be of concern in landscape installations because wet foliage is not conducive to powdery mildew disease development. Powdery mildew infection causes patches of white fungal growth usually seen on the upper leaf surface. If infection is severe, leaves may become distorted and purplish (Figure 4). Powdery mildew develops under high humidity conditions. Plants that are nutritionally stressed are more susceptible to powdery mildew infection than non-stressed plants.



Figure 1: *Cercospora* leaf spot on pansy showing purplish, fringed margin with a tan center. Spores are produced on both the upper and lower leaf surfaces. (Image by J. Williams-Woodward)



Figure 2: Multiple small, purplish leaf spots with a fringed bordered due to *Cercospora* leaf spot on pansy. (Image by J. Williams-Woodward)



Figure 3: *Cercospora* leaf spot on pansy can spread quickly and kill infected leaves and small plants. (Image by J. Williams-Woodward)

The fungicides used to reduce *Cercospora* leaf spot infection can also reduce powdery mildew infection.

Myrothecium crown rot was a major problem in pansy and violas in 2020. The crown rot caused by the fungus, *Myrothecium roridum*, starts as a brown, soft rot of stems and petioles that can be confused with *Pythium* root rot symptoms (Figure 5). The entire plant can collapse from infection. *Myrothecium* infection often follows wounding. Plants injured during mechanical- or hand-transplanting are very susceptible. Increased fertilization rates can also lead to infection. One of the earlier symptoms of crown rot disease is the lush plant canopy easily separating from the roots. As the rot progresses, *Myrothecium* sporodochia can be seen as a mass of darkly colored spores on a tuft of white fungal growth (Figure 6). The spores are easily spread by water-splashing. *Myrothecium* infection may often be overlooked because of the symptom similarity to other crown and root rots caused by *Pythium*, *Phytophthora*, and *Berkeleyomyces* (*Thielaviopsis*). Fungicides used against these root diseases often have limited to no effect on *Myrothecium*. Fungicides containing azoxystrobin, chlorothalonil, fludioxonil, fluopyram + trifloxystrobin, triflumizole, and thiophanate methyl can provide some protection. The best protection is achieved by reducing transplant injury, following good sanitation practices, and removing decaying plant debris from production facilities and landscape beds.

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Figure 4: White patches of fungal growth is the primary sign of powdery mildew infection. Often purplish or yellow discoloration is associated with powdery mildew. (Image by J. Williams-Woodward)



Figure 5: *Myrothecium* crown rot causes a brown, soft rot of pansy stems. Plant will collapse and die from infection. (Image by J. Williams-Woodward)



Figure 6: *Myrothecium* sporodochia consisting of a mass of dark spores on a tuft of white fungal growth can be seen on infected tissues. (Image taken and used by permission from J. Sumner)

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