Sherrie Smith
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Southern Plant Diagnostic Network
Issue 20, July 15, 2019

Arkansas Plant Health Clinic Newsletter

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Mulberry

Cercospora Leaf Spot of Mulberry, caused by *Cercosporella mori*, formerly *Cercospora moricola*, can cause considerable loss in yield and nutritive value of mulberry foliage. Additionally, Mulberry plants (Morus spp.) are an important economic crop in many ways including silk production, as they are often cultivated as a monocrop for its leaf to rear silkworm.
Environmental factors like temperature and humidity of the air, amount of rainfall, soil temperature, moisture and fertility affect the initiation and development of the infectious plant disease. These influence disease development through their impact on the growth and susceptibility of the host, the multiplication and activity of the pathogen or on the interaction of host and pathogen relating to the severity of symptom development.

Most of the commercial varieties are reported to be susceptible to this disease. An increase in the intensity of infection by *C. mori* resulted in higher nitrogen and phosphorus but lower potash level in mulberry leaves. It has also been found that *Cercosporella* infection induces changes in the biochemical constituents like amino acids, phenols, and sugars which affect the quality of mulberry leaves. The highest risk for infections occurs when the temperature range is 20-28 ºC and there from 36 to 72 hours of continuous environmental wetness. Humidity increases the succulence of host plants and thus their susceptibility to certain pathogens, which affects the severity of disease. In Arkansas, effects of fertilizer and plant spacing on the development of leaf spot of mulberry have not been studied. The effect of temperature and relative humidity of the air, the application of balanced nitrogen fertilizers to the soil as well as the proper organic fungicides, and appropriate plant spacing will help with managing the development of leaf spot disease in mulberry.

Cercosporella leaf spot infections cause reddish-brown spots on the mulberry tree's leaves. The spots may be round or irregular and vary in size. Some have a purplish outer margin, like a halo. While healthy trees can generally tolerate and recover from Cercosporella leaf spot, the disease may defoliate older trees. Like other leaf spot infections, Cercosporella spreads via splashing water, so the fungus is most active during rainy weather or when the mulberry's foliage is watered. Cercospora may also spread from plant to plant using infected gardening tools.
Organic Treatment: Sanitation is critical for management. Prune out the infection. Cut off infected foliage, twigs and branches and

immediately gather the cuttings, along with any fallen limbs, leaves, weeds, or other plant debris on the ground, and dispose of the material away from the garden. Do not compost the plant debris; burn the material, if local laws allow, to destroy the fungal spores. Disinfect pruning clippers and other gardening tools in between cuts and in between plants. Make sure the mulberry's planting site has good drainage and keep the tree healthy with proper fertilization and irrigation. Prune the tree as necessary to promote good air circulation among the branches and limbs. This helps the foliage to dry more quickly when it rains.

Chemical Treatment: See MP154 for fungicides for ornamentals. https://www.uaex.edu/publications/mp-154.aspx Fungicides are effective at protecting plants from becoming infected rather than treating Cercosporella leaf spot on mulberry trees. The spray should be applied at bud break in early spring and repeated at 10–14-day intervals. Always check the label to be sure the fungicide controls Cercosporella and the proper application rates and instructions are being followed. Unless the tree is valuable, consider removing a severely infected mulberry tree and replacing it with a more resistant ornamental tree. More resistant varieties require fewer applications.

Cercosporella Leaf Spot Lesion-

Cercosporella mori

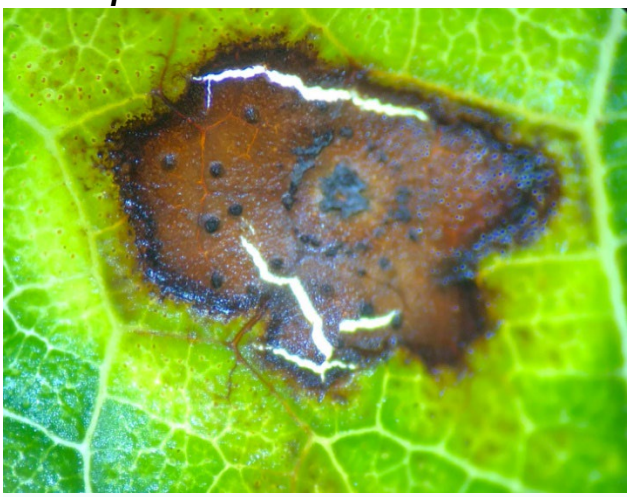

Photo by Mallory Martin, M.S. student Plant Pathology, University of Arkansas

Cercosporella Leaf Spot Spores-

Cercosporella mori

Photo by Mallory Martin, M.S. student Plant Pathology, University of Arkansas

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Cercosporella mori

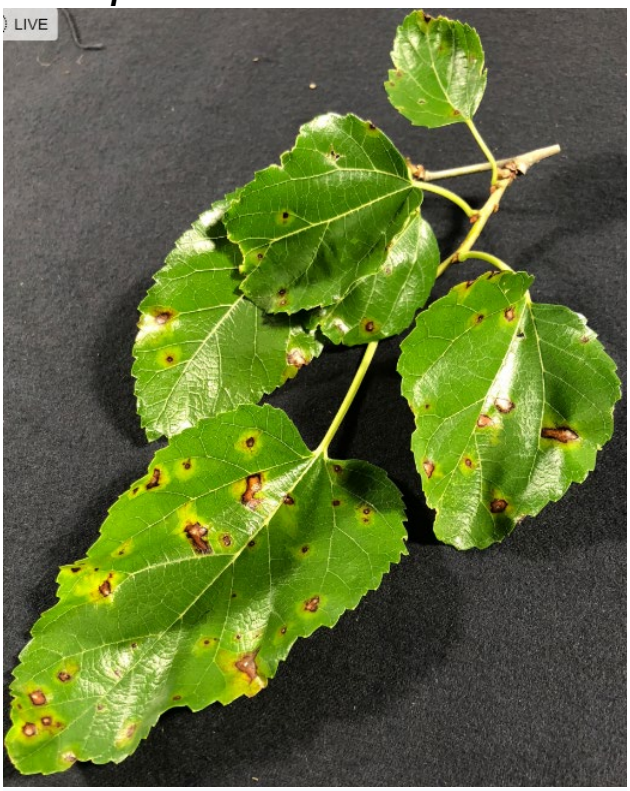

Photo by Mallory Martin, M.S. student Plant Pathology, University of Arkansas

Azalea

The Azalea Leafminer, *Caloptilia azaleella* (Brants), also known as the Azalea Leaftier, is found almost wherever azaleas are grown. The adult is a very small purple and yellow marked moth. She lays her eggs on the underside of the leaf along the midrib. When the egg hatches, the larva enters the leaf directly beneath its eggshell and begins feeding within the leaf. The mined area first resembles a blister, then later turns brown. Finally, the larva moves to the leaf surface and folds the leaf tip over itself by means of silk, creating a protected pocket to feed within. We now call the larva a leaftier instead of a leafminer. Premature leaf fall may occur because of the feeding activity. Although unsightly, this pest causes no serious damage to established plants. The easiest control is handpicking the affected leaves and crushing the larvae.

Azalea by Keiddy Urrea

El minador de hojas de la azalea con nombre científico Caloptilia azaleella (Brants), se encuentra en casi todos los lugares donde se cultivan azaleas. El adulto es una polilla muy pequeña que tiene marcas púrpuras y amarillas, la cual pone sus huevos en la parte inferior de la hoja a lo largo de la nervadura central. Cuando el huevo eclosiona, la larva entra en la hoja directamente debajo de su cáscara y comienza a alimentarse dentro de la hoja. El área invadida primero se parece a una ampolla, luego se vuelve marrón. Finalmente, la larva se mueve hacia la superficie de la hoja y dobla la punta de la hoja sobre sí misma por medio de seda, creando un bolsillo protegido para alimentar el interior. La caída prematura de la hoja puede ocurrir como resultado de la actividad de alimentación. Aparte de causar danos estéticos, esta plaga no causa daños graves a las plantas establecidas. El control más fácil es recoger las hojas afectadas y aplastar las la rvas.

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Azalea Leafminer-*Caloptilia azaleella*

Photo by Sherrie Smith, University of Arkansas Cooperative Extension

Tomato

Adult stink bugs are shield-shaped insects with piercing sucking mouthparts. They get their common name “Stink bug,” from the strong odor they emit when disturbed. Several species of stink bugs feed on tomato fruit as well as on many other vegetables, fruits, nuts, and field crops. Stink bug species in Arkansas include the Green stink bug, *Acrosternum hilare* (Say), the Southern green stink bug, *Nezara viridula* (Linnaeus), the Brown stink bug, *Euschistus servus* (Say) and the Rice stink bug, *Oebalus pugnax* (Fabricius). Stink bugs pierce tomato fruit and inject enzymes from their salivary glands to liquefy and pre-digest the plant material. Damage on green tomato fruit appears as dark pinpricks surrounded by a light discolored area. On ripe fruit the area around the feeding site usually turns yellow. If the skin of the fruit is peeled back, white spots may be observed on the flesh of the tomato. For stink bug control, homeowners may use Ortho Max Flower, Fruit, Citrus, and Vegetable Insect Control, or Bio Advanced Insect Control, or Spectracide Insect Control, or permethrins. Scouting and handpicking can eliminate a few. Stinkbug traps are also available.

Tomato Stinkbug Damage-

Pentatomidae

Photo by Sherrie Smith, University of Arkansas Cooperative Extension

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Tomato Stinkbug Damage-

Pentatomidae

Photo by Sherrie Smith, University of Arkansas Cooperative Extension

Watermelon

Bacterial Fruit Blotch, caused by *Acidovorax avenae* subsp. *citrulli,* can attack all members of the cucurbit family, including honeydew, musk melons, cantaloupe, pumpkin, citron, squash, and watermelon. However, watermelon is the primary host for Bacterial Fruit Blotch. Symptoms on cotyledons are irregularly shaped, water-soaked lesions that become red brown with age. Infection can cause seedlings to collapse and die, Leaf lesions begin as small, water-soaked, irregular spots that enlarge, and turn brown to black with angular edges. The fruit develop irregularly shaped water-soaked lesions that are dull gray green to dark green that rapidly enlarge to cover most of the fruit. Older lesions may become brown to red-brown, and necrotic with white colored bacterial oozing from the lesion. These areas may turn black as secondary decay organisms colonize the fruit. Watermelon cultivars with dark green striped rinds tend to have smaller lesions on the lighter green stripe. This is a seedborne pathogen. Only seed that has been tested and found to be free of the fruit blotch bacterium should be planted. Transplants with suspicious symptoms should be destroyed. Practices in the greenhouse should include hand washing before and after handling plants; decontamination of plant containers, and tools; and avoidance of overhead irrigation. Greenhouses with contamination should be disinfected with a 10% bleach solution and remain empty of plants for a minimum of two to three weeks. All plant debris in the field should be plowed under. Wild cucurbits and volunteer watermelons should be destroyed. Working in the field while foliage is wet must be avoided. Fungicide applications of copper have reduced the incidence of Bacterial fruit blotch symptoms when applications were started prior to fruit set. At least two to three copper applications and thorough coverage of the foliage are essential for good disease control. Applications should begin at first flower, or earlier, and continue until all fruit are mature. Fungicides applied after fruit is infected are ineffective. Include symptomatic leaves when submitting a sample to the Plant Health Clinic.

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Watermelon Bacterial Fruit Blotch- *Acidovorax avenae* subsp. *citrulli*

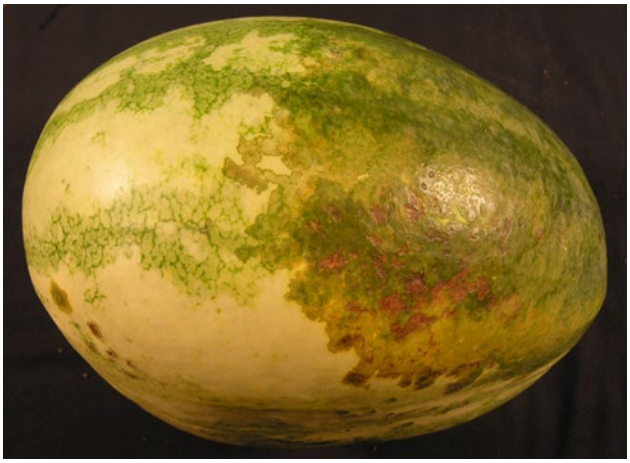

Photo by Sherrie Smith, University of Arkansas Cooperative Extension

Watermelon Bacterial Fruit Blotch- *Acidovorax avenae* subsp. *citrulli*

Photo by Sherrie Smith, University of Arkansas Cooperative Extension

Watermelon Bacterial Fruit Blotch- *Acidovorax avenae* subsp. *citrulli*

Photo by David Freeze, University of Arkansas Cooperative Extension

This bulletin from the Cooperative Extension Plant Health Clinic (Plant Disease Clinic) is an electronic update about diseases and other problems observed in our lab each month. Input from everybody interested in plants is welcome and appreciated.

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