



Arkansas Plant Health Clinic Newsletter

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Tomato

Septoria Leaf Spot

Septoria Leaf Spot, caused by *Septoria lycopersici*, is one of the most damaging diseases of tomato foliage. Septoria is favored by warm temperatures and high humidity. Symptoms of Septoria generally appear on the lower leaves after the first fruit sets. Lesions are circular, about 2.6mm (just below 1/8 inch) in diameter, with dark brown margins and tan to gray centers. A narrow, yellow halo may often be observed around the lesion. Small black fruiting bodies of the fungus (pycnidia) may be observed in the centers of the lesions using a hand lens. Lesions may coalesce to form large, blighted areas. Severely affected leaves turn yellow then brown and fall off the plant. There are no resistant cultivars available. Control measures include crop rotation with a non-host, control of weeds in tomato crops, removal of all crop debris, and avoidance of night watering and overhead irrigation. Protective fungicides at regular intervals during the growing season will be necessary for most growers. Quadris, Cabrio, Flint, Bravo, Mancozeb, and Gavel are labeled for Septoria Leaf Spot control. Homeowners may use Ortho Garden Disease

Control; or Fertilome Liquid Fungicide; or Bonide Fung-onil Multipurpose Fungicide Concentrate; or Garden Tech Daconil Fungicide Concentrate; or Bonide Mancozeb Flowable w/Zinc; or Hi-Yield Maneb Garden Fungicide; or Green Light Tomato and Vegetable Spray. Organic Gardeners may try Bioadvanced Natria Disease Control, or Bonide Liquid Copper Fungicide Concentrate, or Kaligreen, or Bonide Remedy, or Bonide Copper Dust, or Hi-Yield Bordeaux, or AgraQuest Serenade.

Tomato Septoria Leaf Spot- *Septoria lycopersici*



Photo by Keith Gresham, University of Arkansas
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Tomato Septoria Leaf Spot- *Septoria lycopersici*



Photo by Sherrie Smith, University of Arkansas
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Tomato Septoria Leaf Spot spores-*Septoria lycopersici*



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Bacterial Speck

Septoria leaf spot is sometimes confused with Bacterial Speck, caused by *Pseudomonas syringae* pv. *tomato*. Bacterial Speck is favored by low temperatures and high humidity. Lesions on leaves and petioles are round, dark brown to black with a halo developing over time. Lesions may coalesce to blight large sections of affected tissue. On fruit, the specks are surrounded by distinctly greener tissue. Bacterial speck is seed borne and survives for a time in plant debris. Control of Bacterial Speck relies on the use of clean seed, good sanitation, and crop rotation. Copper-containing bactericides can be useful when applied as protectants to young, susceptible plants during cool, wet periods. Apply at 10-14-day intervals until the temperature moves into the 90°F range. For Bacterial Speck, avoid overhead irrigation and working in the garden when foliage is wet. Use clean seed. Clean up crop debris at the end of the season. Practice



a three-year rotation where no peppers, tomatoes, eggplants, or potatoes are grown in that spot. Practice a preventive copper + mancozeb spray program from bloom until the first-formed fruit are 1/3 their final size. After that point, the greatest risk of Bacterial Speck is passed; copper can be dropped from the program.

Tomato Bacterial Speck- *Pseudomonas syringae* pv. *tomato*



Photo by John Gavin, University of Arkansas Cooperative Extension

Tomato Bacterial Speck- *Pseudomonas syringae* pv. *tomato*



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Tomato Bacterial Speck- *Pseudomonas syringae* pv. *tomato*



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Fusarium Wilt

We are seeing a lot of Fusarium Wilt at this time on susceptible tomato cultivars. Fusarium Wilt, caused by *Fusarium oxysporum f. sp. lycopersici*, is most prevalent on acidic, sandy soils. Plants with nutritional issues such as low nitrogen and phosphorous and high potassium are particularly susceptible when grown on these soils. This is a soil borne pathogen that enters through the root system and remains in infested soils for several years. Plants infected at the seedling stage are stunted and often die. More typically, we see symptoms developing on older plants between blossoming to fruit maturation. Older leaves become yellow, often on one side of the plant or one side of the petiole. Eventually all the foliage becomes entirely yellow, followed by wilting and death. When the stem is cut open, a brown discoloration is evident in the vascular tissue of the tomato plant. The pith remains green. This is diagnostic for Fusarium Wilt. The best control for Fusarium Wilt is the use of resistant cultivars. For those wishing to grow heirloom tomatoes that have no resistance, tomato grafting has proved successful. There are many how-to videos on the internet about tomato grafting. Culturally, it has been shown that raising the soil pH to 6.5-7.0 and using nitrate nitrogen instead of ammoniated nitrogen significantly reduces disease incidence. Crop rotation is useful but does not eliminate the pathogen entirely. A long rotation of 5-7 years between solanaceous crops is recommended.

Tomato Fusarium Wilt-*Fusarium oxysporum f. sp. lycopersici*



Photo by Sherrie Smith, University of Arkansas Cooperative Extension

Blackberry

Fasciation is a rare condition of abnormal growth in plants in which the growing tip becomes elongated to the direction of growth, producing flattened, ribbon-like, crested, or extravagantly contorted tissue. This can occur on stems, roots, flowers, or fruits. Fasciation has been documented on over 100 plant species, including aloe, blackberry, cactus, celosia, delphinium, digitalis, euphorbia, forsythia, maple, primrose, prunus spp., soybean, and willow. An exact cause of



Fasciation is unknown, but possible causes include hormonal, genetic, bacterial, fungal, viral, chemical, and environmental.

Blackberry Fasciation-Abiotic



Photo by Sherrie Smith, University of Arkansas Cooperative Extension

Blackberry Fasciation-Abiotic



Photo by Sherrie Smith, 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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