Bacterial Blight in Soybean

• Bacterial blight is favored by cool (70 to 80 °F), wet weather and is inhibited by hot, dry weather.
• Rotating away from soybean or planting soybean products that are tolerant or resistant to bacterial blight is recommended for problem fields.
• Foliar fungicide applications are ineffective in controlling bacterial blight.

Bacterial blight of soybean is the most common bacterial disease of soybean and is caused by the bacterium *Pseudomonas savastanoi pv. glycinea*. The disease is favored by cool (70 to 80 °F), wet weather and is inhibited by hot, dry weather. Bacterial blight seldom causes significant yield loss; however, losses of up to 40% have been reported on susceptible soybean products.

Disease Cycle

The bacterium overwinters on crop residue and infection usually occurs when the pathogen is carried by splashing or wind-driven rain from infected plant residue to soybean leaves. Disease outbreaks usually follow a rain event with high winds. Bacteria can enter the plant through natural openings (stomata) or plant wounds. The leaf surface must be wet for infection to occur through natural openings. Seedling infection can occur by planting infested seed. Also, the pathogen can spread from infected leaves to uninfected leaves when the leaves rub against one another during cultivation (especially when there is dew), rain, or wind.

Symptoms

Bacterial blight can be identified by small, angular, translucent, water-soaked, yellow to light-brown spots on the leaves and petioles. As bacterial blight progresses, affected leaf tissues dry out, turn reddish-brown to black, and become surrounded by water-soaked margins bordered by yellowish-green halos (Figure 1). In advanced stages, lesions enlarge and their interiors tend to produce large, irregularly shaped dead areas. Frequently, the leaves are badly shredded after strong winds and/or hard rains. This gives affected leaves a very ragged appearance. Infected young leaves frequently are distorted, stunted, and chlorotic (Figure 2).

Figure 1. Bacterial blight lesions on soybean leaves. Note leaf lesions with yellowish-green halos.

Typically, symptoms can be observed 5 to 7 days after soybean leaves are infected. Nine different races of bacterial blight have been identified.

Figure 2. Chlorotic soybean leaves caused by bacterial blight.

Bacterial blight has primarily been found on leaves that developed during cooler weather when conditions favored the disease. Leaves above the infected region are often disease-free, primarily because of higher temperatures during development.

Leaf symptoms of bacterial blight may be confused with soybean rust and Septoria leaf spot. However, bacterial blight will be in the mid-upper canopy and have green leaves below the affected area while soybean rust and Septoria leaf spot tend to appear lower in the crop canopy.

Bacteria blight lesions may first appear on the cotyledons, usually at the margins. These lesions enlarge and turn dark brown as the tissue collapses. Young seedlings grown from infected seed commonly are stunted, blighted, and usually die.
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Soybean pods, petioles, and stems are also susceptible to bacterial blight. Initially, lesions on the pods are small and water-soaked; however, after enlarging, they merge to involve much of the pod. Lesions eventually turn dark brown to black. Seeds within affected pods may also become infected and coated with a slimy bacterial growth. Stored seeds may appear healthy or may develop a variety of symptoms including shriveling, sunken or raised lesions, or slight discoloration.

Management
The most effective management practices to reduce the impact of bacterial blight on yield potential are crop rotation or selecting soybean products that are resistant or tolerant to bacterial blight. Rotate away from soybean for one year or more to a non-host crop such as corn, sorghum, alfalfa, clover, or cereal grains.  

Additional management practices include completely covering soybean plant residue after harvest by clean plowing where feasible. Also, avoid cultivation when foliage is wet.

Foliar fungicides seldom provide an economic benefit as bacterial blight is caused by a bacterial pathogen. Some copper-based bactericides are labeled for control of bacterial blight on soybean; however, application needs to occur early in the disease cycle to be effective.

Sources
Web sources verified 6/15/16. 140626100104

For additional agronomic information, please contact your local seed representative. Individual results may vary, and performance may vary from location to location and from year to year. This result may not be an indicator of results you may obtain as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible. ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS. ©2016 Monsanto Company. 140626100104 062514DLB