

Bacterial Blight in Soybean

- Bacterial blight is favored by cool (70° to 80° F), wet weather; however, it is held in check by hot, dry weather.
- Rotating away from soybean and planting soybean seed products 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*.¹ The disease is favored by cool (70° to 80° F), wet weather, but is held in check by hot, dry weather. Bacterial blight seldom causes significant yield loss; however, losses of 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.^{1,2} 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.

Typically water-soaked lesions can be observed 5 to 7 days after soybean leaves are infected.¹ Nine different races of bacterial blight have been identified

Symptoms

Bacterial blight can be identified as having 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).

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.



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



Figure 2. Chlorotic soybean leaves caused by bacterial blight.

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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.

Bacterial 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.

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 become infected and be eventually covered 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 selecting soybean products resistant or tolerant to bacterial blight and crop rotation. Rotate away from soybean for one year or more to a non-host crop such as corn, sorghum, alfalfa, clover, or cereal grains.³

Additional management practices include completely covering soybean plant residue after harvest by clean plowing where feasible. Also, avoid cultivation when the 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.²

Sources:

¹ Hartman, G. L. et al. 1999. Compendium of soybean diseases, 4th edition. American Phytopathological Society Press.

² Giesler L. J. Bacterial diseases of soybean. NebGuide G2058. 2011.

University of Nebraska-Lincoln Extension. <http://ianrpubs.unl.edu/> (verified 6/25/14).

³ Bacterial foliage diseases of soybeans. Report on plant disease no. 502.1990. University of Illinois, Integrated pest management. <http://ipm.illinois.edu/> (verified 6/25/14).

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.

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