Soybean Foliage Diseases

Purdue University Cooperative Extension Service
SOYBEAN FOLIAGE DISEASES

Six foliage diseases of soybeans commonly occur in Indiana. The prevalence and importance of these diseases varies from year to year. Each has certain symptoms by which they can be distinguished visually. The use of disease-resistant varieties is the best method of controlling these diseases. Unfortunately, there are no adapted varieties which are resistant to all of these diseases. Development of resistant varieties requires many years. Until such varieties are available, we must depend on other methods to control losses, such as crop rotation and the use of clean, sound seed of adapted varieties.

Bacterial Blight

In Indiana, bacterial blight is one of the first diseases of the season to appear on soybeans. It is favored by cool, rainy weather. The disease can be recognized by small, angular, brown to black spots, which appear on the leaves of infected plants. The dark, central area of the leaf spot is usually surrounded by a water-soaked margin. As the spots dry, they become sunken and surrounded by a narrow, yellow border, which is most noticeable on the top side of the leaf. Diseased tissue may drop out, giving the leaf a ragged appearance. The bacteria which cause this foliage blight are seed-borne and also overwinter in diseased crop residue. Rotation and disease-free seed will help reduce damage from bacterial blight. Hawkeye is the only available, commercial variety of soybeans resistant to this disease.

Bacterial Pustule

Bacterial pustule is a warm weather disease, usually appearing in July. The first symptoms are small, yellow-green spots with reddish-brown centers. These spots are most conspicuous on the upper surface of the leaf. The central portions of the spots are slightly raised and develop into small pustules, especially on the underside of the leaf. The pustules rupture and dry in later stages, therefore making this difficult to distinguish from bacterial blight. Bacterial blight, however, in the early stages develops a narrow water-soaked area around the center of the spot, whereas bacterial pustule does not. The disease-producing bacteria are carried over from year to year on diseased leaves and, perhaps to some extent, on the seed. All of the varieties grown in Indiana are susceptible. Resistant southern varieties are being used as parents in breeding programs to add resistance to the varieties adapted to Indiana.

Wildfire

Wildfire is a bacterial disease that occurs occasionally in the southern half of Indiana. It can be distinguished from the other soybean diseases by the prominent yellow halo around a central area of brown, dead leaf tissue. Bacterial pustules are almost invariably present
in the central area. There is evidence to indicate that wildfire and bacterial pustule are closely associated and that the presence of bacterial pustule lesions is required for wildfire infection. As yet, there is no control for wildfire. However, reducing or eliminating bacterial pustule should have a depressing effect on this damaging foliage disease.

Brown Spot

Brown spot is a fungus disease and generally is one of the first leaf diseases to appear on young plants. It causes an angular, brown or reddish-brown spot on the leaves. Infected leaves turn yellow and fall off. The lower leaves, including the unifoliate leaves, are the first to become infected. The disease may move progressively up the plant, but generally it is confined to the leaves on the lower half of the plant. The causal fungus is carried through the winter on diseased stems and leaves. Crop rotation will help control brown spot, until resistant varieties are available. All of the currently recommended varieties are moderately susceptible to brown spot disease.

Downy Mildew

Downy mildew is a widespread fungus disease. It usually is most noticeable in the northern half of Indiana. The first sign of the disease is the appearance of small, pale green spots on the upper surface of the leaves. The spots enlarge and generally grow together as they change from green to yellow to brown as the leaf tissue is killed. Downy mildew can be distinguished readily from other diseases by the presence of grayish tufts of moldy growth on the lower surface of the leaf. The fungus overwinters on diseased foliage and seed. Diseased seed has a white, crusty appearance. Crop rotation and disease-free seed will help control mildew. None of the recommended varieties are resistant, but Harosoy, Lincoln and Clark are less susceptible than Blackhawk, Hawkeye and Perry.

Frog-Eye Leaf Spot

Frog-eye is a fungus disease which, until recent years, was very common in the southern half of the state, but rarely occurs now because of the use of resistant varieties. It can be recognized by the spots formed on the leaves. The gray-to-tan central area is bordered by a narrow, darker, somewhat purplish circle. The dark border and tufts of spores in the center of the spot produce an eye-like appearance. There is no yellowing around the spots. The fungus survives the winter on diseased crop residue and seed. Wabash, Lincoln, Shelby, Harosoy, Lindarin, and Clark are resistant. Perry is moderately susceptible. Hawkeye and Blackhawk are susceptible, but the disease has never developed in their area of adaptation.

For a more complete description of the above diseases, consult U. S. Department of Agriculture Circular No. 931, "Disease of Soybeans and Methods of Control."
HOW TO RECOGNIZE SOYBEAN FOLIAGE DISEASES

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