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## Scouting Foliar Diseases in a Cool Summer

by XB Yang, Department of Plant Pathology

So far this season, weather in Iowa has been cool and wet. NOAA's mid-term weather forecast for the coming 30 days shows that Iowa will have cooler than normal temperatures with above normal precipitation. A cool and wet summer is favorable to soybean diseases, especially foliar diseases. If the weather trend holds, we should see more foliar soybean diseases late this season than a normal year. Fungicide is a means to controlling foliar diseases. To determine if a chemical control should be applied to manage the foliar diseases, scouting is critical.

**White mold.** This season's cool and wet condition is ideal for white mold occurrence. The disease is caused by a fungus *Sclerotinia sclerotiorum* which survives in the soil as sclerotia. The sclerotia will form a mushroom like structure which produces spores when soybean canopy is dense and close. For soybean fields which have a history of soybean white mold, the mushrooms will be produced around mid-July in Iowa with the disease showing up in early August. This season's cool weather may promote an unusually early occurrence.

To control the disease one can use Cobra or other chemicals in a similar family. This measure is commonly used by many Iowa soybean producers in fields that have a high risk of soybean white mold. Some of these chemicals can induce disease resistance in soybean when applied. In early studies, applications were made during later vegetative growth stages to early flowering stage of soybean, a time frame before the fungus enters a soybean stem from senescent flowers. Applications after early flower stage, especially this late (R3 stage), is unlikely to be beneficial.

**Foliar diseases.** Frequent rains and cool weather also are good for several foliar diseases, such as brown spot, bacterial blight and frog-eye leaf spot.

Occurrences of high levels of bacterial blight have been reported. The disease is caused by *Pseudomonas syringae* pv *glycinea*. Young leaves are most susceptible to the bacterial infection; therefore, the disease is first noticed on the top of the plant. The angular lesions enlarge and merge to produce large, irregular lesions. The centers of old lesions often drop out, resulting in a ragged appearance of infected leaves. There is no treatment measure to control bacterial blight during a growing season. The only measure is to select a resistant variety pre-planting. If the disease is high this season, take a good note and avoid using the same variety in next season.



### **Bacterial blight**

Brown spot, a fungal disease, can be confused with bacterial blight in early soybean growth stage. Brown spot first becomes prevalent when the fall is wet and cool and severe in later season, as it primarily attacks aging leaves. Impact to yield from the two diseases depends on the final severity in the fall. In a normal season, soybean plants will grow out of this disease; this year's situation is yet to see.



### **Brown spot**

Frogeye leaf spot is a fungal disease with spots that look like frogeyes. The spot has a gray center with distinct reddish-brown margins. This disease infects younger leaves, so it first appears in the upper canopy. The disease occurs in mid- to late season, and is more common in fields near river bottom fields.



### **Frog-eye leaf spot**

Fungal diseases can be controlled by using fungicides, but should be applied only if the disease risk is high. Fungicide applications will be economically effective when foliar diseases are severe. When disease is prevalent and severe in a season, application of fungicide is likely to increase yields.

Data from ISU Extension and Pioneer suggests that in a wet and cool season, more than 50 percent of the sprays will yield an economic return; over 70 percent of the sprays will provide a positive yield. The higher the foliar disease severity, the greater the return from the use of fungicides.

If you have a high risk of foliar disease and decide to spray, keep in mind that application at R1 or earlier did not pay off. Application at R3 consistently produced highest yields. Application twice in a season was no better than a single application at R3 in Iowa.

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