

Brown Spot of Soybean

Travis Faske and Terry Kirkpatrick
Plant Pathologist

Brown Spot or Septoria leaf spot has been reported throughout the southern U.S. soybean growing region. This disease can cause premature defoliation that contributes to yield losses when susceptible cultivars are planted and conditions favor disease development. This disease is of minor importance in Arkansas because it rarely causes significant yield losses.

Irregular small brown leaf spots vary in size from small speck to 1/5 inch in diameter develop on the upper and lower leaf surfaces. Adjacent leaf spots may coalesce resulting in irregular shaped blotches. The lesions gradually darken to blackish brown and often develop a yellow halo around the leaf spot (Fig. 1). Additionally, irregular shaped, brown lesions with undefined margins may form on the stem, petioles, and pods. Though leaf spots are generally confined to the lower canopy the disease may progress to the upper canopy under favorable environmental conditions. As the plant nears maturity, severely infected leaves appear rusty brown and may drop prematurely.



Figure 1. Brown lesion with yellow halo caused by brown spot

A visual examination of infected leaves by holding them to light reveals that brown spot leaf lesions are dark and opaque. In contrast, bacterial blight lesions, which may appear similar to the casual observer, are translucent.

Brown spot is caused by the fungus *Septoria glycines*, which overwinters on crop residue and in infected seed. Initial infections develop on cotyledons and leaves from conidia (spores) discharged from pycnidia, which are flask-shaped fruiting structures that form on crop debris. Conidia germinate on leaf surfaces and enter the plants through stomata. Secondary infection occurs as conidia are dispersed upward in the canopy by wind or splashing rain on leaves, petioles, stems, and pods.

Infection and disease development may occur at any time during the season. Optimum conditions for disease development are warm (79 to 83 °F), wet weather. Hot, dry weather conditions, on the other hand, suppress disease development. Consequently, brown spot is most severe when soybeans are planted early, particularly after extended periods of rainfall, where soybeans are grown continuously in the same field, or when the crop is planted in poorly drained fields.

Soybean cultivars vary in susceptibility to brown spot, so planting less susceptible, adapted cultivar, will suppress this disease. Cultural practices that may help minimize brown spot include planting high quality seed, rotating with non-host crops (corn, cotton, rice, or grain sorghum) for two years, and implement tillage practices that reduce crop residue on the surface of the field. In rare situations where brown spot is severe enough to pose a threat to yield, and where yield potential is high and conditions favor continued disease severity, a fungicide application timed between beginning pod fill (R3) and initial seed formation (R5) can be effective in minimizing yield loss.