

Cercospora Leaf Blight and Purple Seed Stain

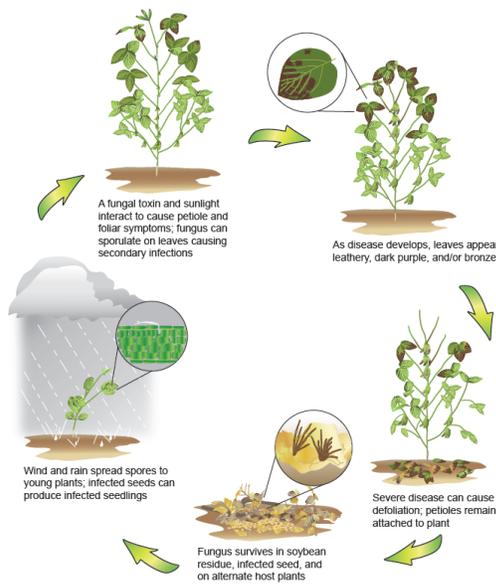
Cercospora leaf blight (CLB) and purple seed stain (PSS) are caused by a necrotrophic species of fungi belonging to the genus *Cercospora*. These diseases occur throughout all soybean growing regions. Yield losses of up to 50% have been recorded under extreme severity. Symptoms of these two diseases occur on leaves, petioles, pods, and seeds.

Symptoms on the leaves: First symptoms may appear on petioles when plants begin to flower with foliar symptoms becoming prominent as seeds begin to fill pods. Leaf symptoms may be enhanced by bright sun and turn purplish, reddish-purple or bronze on the upper surface. In severe cases, necrotic patches may develop, creating a patchy or tattered appearance and the entire leaf may become necrotic. Lesions on petioles and stems are slightly sunken and reddish-purple. Lesions may coalesce causing discoloration of the whole petiole. Severely affected upper leaves may drop but the petioles remain on the plant while the lower leaves of the plant remain green and attached.

Symptoms on the seeds: Specks to large irregularly shaped blotches varying from pink or pale purple to dark purple develop on seeds. Seed discoloration starts from the hilum and may sometimes extend to the whole seed. Some infected seeds do not show symptoms, but the pathogen can be detected by assaying seeds on agar media.



Purple discoloration on soybean leaf caused by *Cercospora* species



Disease cycle of *Cercospora* Leaf Blight, courtesy of Crop Protection Network.

Disease Cycle: Disease development is favored by warm and wet weather. The fungus survives in soybean residue and infected seeds as mycelia, which form the source of primary inoculum. The spores are blown by wind or rain-splashed to new soybean plants where infection occurs. Early infection may arise from infected seeds.

Disease bulletins provide information about disease and pest identification, development, and management for economically important diseases and pests impacting soybean production in Sub-Saharan Africa. Bulletins are written by MS Maria Malvino, and Drs. Harun Murithi, and Glen Hartman. For more information on soybean disease management, please email us at soybeaninnovationlab@illinois.edu

Diagnosing CLB and PSS in the Field: The most distinct characteristic of CLB is the purple-bronze discoloration of the upper surface of leaves on the top canopy. Discoloration starts from the leaf tip and moves towards the base of the leaflet. This may be confused with sunburn. However, sunburn typically occurs on some portions on the underside of the leaf.

Symptoms of CLS may be observed as early as flowering and are more pronounced through seed fill to maturity. Seed symptoms of PSS are the purple discoloration of seed coats.

Impacts on Yield: Yield losses attributed to CLB are due to reduced photosynthesis caused by discoloration of the upper leaves, premature defoliation and a reduction in seed quality. Heavily infected seeds produce diseased and weak seedlings and can reduce crop stands. Yield losses due to PSS are related to seed quality due to seed discoloration.

Disease Management: Cultural practices, fungicides, and use of resistant cultivars may provide some reduction in the severity of CLB and PSS.

Crop rotation with non-host plants, planting non-infected seeds, and tillage may reduce the inoculum levels and subsequent infection of the plant.

For CLS, fungicides can be applied during the late vegetative through most of the reproductive stages. Fungicide classes should be rotated to avoid pathogen resistance to fungicides. Triazoles have been reported to perform better than strobilulins. Purple seed stain can be controlled by foliar application of fungicides late in the season to protect seed infection. Seed fungicides may be applied if seed germination issues are problematic due to PPS.

Soybean varieties vary in their response to *Cercospora*, and a high level of resistance is not currently available. Nevertheless, some commercial varieties demonstrate at least some degree of tolerance. The majority of the varieties in the Soybean Innovation Lab's Pan-African Soybean Variety Trials (PATs) showed low disease severity, implying that they are tolerant. For more information please visit the Soybean Innovation Lab's Pan-African Soybean Variety Trials (PAT) database at <https://soybean-innovation-lab.github.io/PAT-trials/main/>

References: Hartman, G. L. et al. Compendium of Soybean Diseases and Pests (APS Press, St. Paul, MN, USA, 2015).



*Pink or pale purple discoloration on soybean seeds caused by *Cercospora* species.*



*Necrosis of entire leaf, symptomatic of *Cercospora* species.*