

Sudden Death Syndrome in Soybean

- Sudden death syndrome (SDS) is one of the most important diseases of soybean in North and South America.
- Soybeans are at greater risk for SDS when planted into cool, wet soils, when soybean cyst nematode (SCN) is present, and when summer rains cause saturated soils.
- Managing SDS can involve several practices such as relieving soil compaction, delaying planting, and selecting soybean products with a good disease tolerance package.

SDS Symptoms

SDS is caused by the soil borne fungus, *Fusarium virguliforme*. Disease symptoms usually appear after flowering and during pod fill. Foliar symptoms begin as small yellow spots on the upper leaves. Spots gradually enlarge and develop a brown necrotic center, while the interveinal tissues are killed (Figure 1). A green vein pattern will remain on the leaves until defoliation. Infected plants often have increased flower and pod abortion and reduced seed size and quality. SDS can affect entire fields of soybeans, but usually begins as scattered areas within a field. Unfortunately, if SDS symptoms appear, there is no treatment for the current year's crop.

SDS symptoms can resemble those of other diseases such as southern stem canker. However, leaves and pods affected with SDS are shed from the plant, as opposed to remaining on the plant as they are with southern stem canker. Unlike a soybean plant infected by brown stem rot, a SDS-infected soybean should have a white, decay-free pith (Figure 1). Although the pith remains white, discoloration of the stem occurs as the vascular tissue deteriorates along with the lateral roots and root nodules.



Figure 1. Foliar symptoms and white pith typical of sudden death syndrome.

SDS Disease Cycle

Yield losses from SDS can range from slight to nearly 100% and are dependent on disease onset and severity. The fungus overwinters in crop residue or soils and can infect soybean plants as early as one week after crop emergence. SDS is favored by high-yield environments and is especially prevalent in

years when cool temperatures occur prior to or during flowering and pod set. High soil moisture during vegetative growth also favors the disease. SDS is usually most severe in saturated soils, such as in low spots or in areas prone to ponding. Compacted areas such as around field entrances or where machinery has been driven previously may also exhibit more severe SDS symptoms. In addition, moderate to high populations of soybean cyst nematode (SCN) can be associated with SDS and may increase the severity of the disease.

SDS Management

A management strategy should be developed before planting to help reduce infection. Fungicides are not an option for SDS control due to the nature of the disease. An integrated management plan for SDS may include the following:

- **Plant soybeans with good disease packages.** Soybeans that have good to excellent ratings for tolerance to SDS and also those that are described as resistant or moderately resistant to soybean cyst nematode should be chosen. Consult your seed guide for SDS and SCN tolerance ratings.
- **Delay planting or plant earlier maturing products** to possibly help soybeans escape infection from SDS. Cool, wet soils promote infection.
- **Cultural practices** that improve drainage in low spots, reduce SCN populations, or remove soil compaction layers may lessen SDS severity.

Sources:

¹Coker, C. et al. Soybean diseases and their control. Arkansas Soybean Handbook. University of Arkansas; Dorrance, A. and P. Lipps. Sudden death syndrome of soybean fact sheet. The Ohio State University. AC-44-98; Sudden death syndrome. University of Minnesota Extension; Bradley, C. 2007. Late-season diseases showing up. The Bulletin. University of Illinois.

For additional agronomic information, please contact your local seed representative.

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