

Sudden Death Syndrome Found In Soybeans

Adapted from Iowa Soybean Association and Monsanto's Agronomic Spotlight

We continue to see localized disease pressure and hear growing reports of Sudden Death Syndrome (SDS) in soybeans. The July 17th *Agronomic Directions* included a short report on SDS but we want to expand on that with SDS being the hot topic lately.

SDS is caused by *Fusarium, virguliforme*. The soil borne fungus overwinters in crop residue or soils and can infect soybean plants as early as one week after crop emergence. It enters the plant through the roots and causes root rot. Planting into cool, wet soils favors the disease because those conditions are optimal for root infection. High soil moisture during the vegetative growth stages and unseasonable cool temperatures prior to or during flower and pod set also favor SDS. In addition, moderate to high populations of soybean cyst nematode (SCN) can be associated with SDS and may increase the severity of the disease.

Infection occurred at the seedling stage, however foliar symptoms are now being observed. SDS usually begins as scattered areas within a field, but symptoms can quickly spread. The best time to scout is between R1 and R6 stages. Foliar symptoms begin in the upper leaves as small yellow spots between leaf veins. The yellow spots gradually enlarge and develop a brown necrotic center, as the interveinal tissues are killed. A green vein pattern will remain on the leaves until defoliation. Leaves and pods



may eventually drop, leaving the petioles (leaf stems) attached. SDS can be confused with stem canker, but the shed leaves and pods are what differentiates the two diseases. By splitting the stems, SDS can be differentiated from Brown Stem Rot. Stems of plants with SDS will have a white center (pith) and if the pith is brown, the plant is most likely showing symptoms of Brown Stem Rot.

Yield losses from SDS are dependent on disease onset and severity and typically seen in the 10-20% range but can reach nearly 100%. Yield losses are caused by reduced seed number (resulting from flower and pod abortion if symptoms develop during early reproductive stages) and reduced seed size (if symptoms appear during pod fill).

Disease development is highly dependent on the environment, making SDS one of the most challenging soybean diseases to manage. Fungicides are not an option for SDS control due to the nature of the disease, so a management strategy should be developed to help reduce infection.

- Plant soybeans with good disease packages. Select soybeans with high ratings for tolerance to SDS as well as those with high ratings for resistance to SCN, as the two often appear together.
- Delay planting into cool, wet soils and plant fields with a history of SDS last, but avoid planting too late and incurring a yield penalty.
- Crop rotation is not helpful as the SDS pathogen can survive in corn stover and roots.
- Cultural practices that improve drainage in low spots and reduces soil compaction may need to be considered while maintaining soil quality and minimizing soil erosion.

Cornelius soybean varieties with optimal ratings for SDS & SCN

Variety	RM	SDS rating	SCN rating
CB21R24	2.1	8	8
CB23R98	2.3	8	8
CB27R83	2.7	9	8
CB28R58	2.8	8	8
CB30R15	3.0	8	8
CB33R43	3.3	8	8