Sudden Death Syndrome (SDS), caused by *Fusarium virguliforme*, is a soybean disease that has grown in importance for farmers over the past 20 years. Today, it is ranked second only to soybean cyst nematode (SCN) as the most detrimental cause of annual damage to soybean yields. As the soybean-growing region has expanded to the North and the West, SDS continues to spread to new fields and to larger areas of fields that have already been infected. The severity of SDS damage varies from area to area and field to field, but yield reductions associated with SDS typically range anywhere from 20 to 70%.

**SDS FAST FACTS:**
- Survives in the soil and infects roots
- The fungus colonizes only the crown and the roots of the plant
- Can infect two to three weeks after planting
- Produces a toxin that moves from the roots to shoots

SDS infection occurs early in the season, but symptoms are usually not visible until mid-summer. During the vegetative growing season, foliar symptoms can appear and then be obscured by rapidly growing new leaf tissue until the disease catches up and manifests in more widespread foliar damage. The above-ground symptoms are caused by a toxin produced by the fungus that is then translocated throughout the plant. The appearance of symptoms is often associated with weather patterns of cooler temperatures, overcast skies, and high rainfall during the late flowering (R2) to early pod-fill (R4) growth stages.

**CONDITIONS FAVORING SDS DEVELOPMENT:**
- Cool, moist conditions early in the growing season, but often result in higher disease incidence
- Early planting, high rainfall, and/or low-lying, poorly drained or compacted field areas
- If SCN is also a problem in the field, SDS may be more severe

Both industry research and farmer experience have verified that today, cultural practices and integrated pest management (IPM) actions are critical in managing SDS. This starts with maintaining adequate soil fertility and reducing compaction from all field operations. Also, controlling weeds, diseases, and insects can help minimize external stresses, which will ultimately improve soybean growth and plant health. The ultimate goal is to enable the plant to better withstand the effects of SDS.

**MANAGEMENT STRATEGIES:**

**Variety Selection:** The number one priority for battling SDS

**Actively Manage SCN:** SCN pressure tends to make SDS more severe

**Improve Field Drainage:** Root health is critical to managing SDS, and proper drainage will decrease the saturated environments where SDS pathogens thrive and spread

**Lower Residue Levels:** Reduce the environmental conditions conducive to SDS

**Plant Problematic Fields Last:** Make sure infected fields are planted into good conditions with adequate soil temperatures

**Minimize Herbicide Stress:** An early application window is always best
DIFFERENTIATE BETWEEN SDS AND BROWN STEM ROT

Both diseases will result in similar foliar damage. Sudden Death Syndrome will show symptoms on the outside of roots, but the pith at the center will be white, firm, and healthy. Brown Stem Rot creates brown piths in the root system. See Figure 3 above.

MANAGEMENT NOTES:

- Although foliar fungicides are not effective in reducing damage to soybeans from SDS (a soil-borne pathogen), they are integral in reducing plant stress from both diseases and overall plant health perspectives.
- Manage competition with weeds by using a foundational pre-emergence herbicide as part of a complete weed control system. Reduced weed pressure can mitigate impact of SDS.
- Appropriate insect management, especially soybean aphid control, throughout the critical soybean reproductive period reduces stress on the plants.
- Today, there are several new seed-applied products that have demonstrated improvements in the management of SDS. Beck’s Escalate® | Nemasect™ | SDS+ seed treatment includes two modes of action to suppress SDS development.

SDS cannot be treated once the fungus has infected the plants. The best strategy to limit the impact on your fields is to employ long-term management strategies. Investing in tile drainage, protecting your seed with a comprehensive seed treatment, and managing SCN pressure can all make a difference in your fields.

FURTHER READING: https://soybeanresearchinfo.com/soybean-disease/sudden-death-syndrome/

2 https://fieldcrops.cals.cornell.edu/soybeans/diseases-soybeans/