Sudden death syndrome (SDS) of soybeans is quickly becoming more common in Ohio. Since first being reported in 1995, SDS has continually spread to new fields throughout the state. Yield losses associated with SDS have been highly variable depending on the timing and severity of the initial infection, subsequent weather conditions, the timing of defoliation, and the level of soybean cyst nematode (SCN) infestation in the field.

Symptoms
In Ohio, symptoms of SDS occur after flowering, around middle pod-fill. Small yellow spots appear between the leaf veins on the topmost leaves of the soybean plant. The small spots become brownish-tan lesions, usually with a yellow halo, which continue to expand between the veins until the entire leaflet and leaf are dead (Figure 1). The dead leaf tissue usually drops to the ground leaving the dead petiole attached to the main soybean stem. Leaf symptoms are the most dramatic and happen quickly after infection. The crowns of SDS-infected plants are usually discolored, and roots are discolored and decayed. Occasionally, the blue-green spores of the fungus can be seen on the tap root (Figure 2). This is best seen 1 to 3 days after a good rain.

Brown stem rot (BSR) has very similar leaf symptoms to SDS. Plants infected by BSR have a tan to brown pith at or near the crown, and often at the leaf nodes. SDS-infected soybeans retain a white pith.
Causal Organism

The causal agent of SDS is a fungus known as *Fusarium virguliforme* (or *Fusarium solani f. sp. glycines*). SDS is a soil-borne pathogen and, once present in a field, can be easily spread with soil movement. Initial infections occur on the roots and crowns of young soybean plants as early as the seedling stage. As the fungus colonizes the roots, it produces a toxin that is translocated to the leaves which then causes the typical interveinal leaf symptoms. The fungus overwinters by producing survival structures known as chlamydospores, which can survive in fields for years.

SDS Management

**Later Planting Dates**

SDS is most severe when soybean is planted in cool, wet soils and has delayed emergence. Planting later in the spring, with warmer soil temperatures, can help slow or eliminate SDS infection. As with SCN, if a field has a history of SDS, try to plant and harvest it last in order to minimize spread between fields. Planting earlier maturing varieties is thought to reduce the impact of this disease.

**Resistant Varieties**

Use high-quality seed known to have SDS and SCN resistance. Seed that has a fast germination rate can also be a critical piece to variety selection and SDS management.

SCN Management

In many instances, fields in Ohio with SDS also have measurable levels of SCN in the same field. Pressures from SCN root feeding further weaken plants, making them more vulnerable to attack from other pathogens like SDS. Fusarium fungal spores have been found on and in SCN cysts, meaning this disease can easily be moved with the cysts. Selecting SCN-resistant soybean varieties and having SCN field counts checked will help reduced the impact of SDS.

**Drainage Improvement**

Wet soils are a key component to SDS infection. By using drainage tile or tillage to improve field drainage in wet spots, infection may also be prevented or limited.

**Reduction in Soil Compaction**

SDS is often found in the most compacted areas, such as field edges and lanes. For clay soils, research has shown that chisel plowing to break up compacted areas can also help reduce SDS symptoms as well as improve yields.

**Additional Information**

Ohio Field Crop Disease
http://www.oardc.ohio-state.edu/ohiofieldcropdisease

NSCRP-Plant Health Initiative
http://www.planthealth.info/sds_basics.htm