

Expect sudden death in 2008



Soybean Source

By PALLE PEDERSEN

LAST year, many soybean growers had their first real experience with sudden death syndrome. In the past, SDS has only been a real problem in central and southern Iowa; but in 2007, it expanded to cover most of the state. SDS is the second most devastating bean disease in Iowa, only following soybean cyst nematode. You can expect to see SDS here this August, too.

Sudden death syndrome is a mid- to late-season disease caused by soilborne *Fusarium virguliforme*. SDS was first seen in Arkansas in 1971 and for many years was just a problem in southern Illinois, Indiana, Missouri, western Kentucky and Arkansas. It was first confirmed in Iowa in 1993. Yield losses due to SDS vary widely from slight to nearly 100%.

Initial symptoms usually develop during the soybean plants' early reproductive growth stages, but symptoms can vary by conditions. Moisture is important, as with many fungal pathogens.

Rainfall and high soil moisture early in the season will increase the amount of root rot — the first phase of SDS.

Key Points

- Sudden death syndrome is the second most devastating soy disease in Iowa.
- Moisture is important, as it is with many fungal disease pathogens of crops.
- Variety selection is key to managing SDS if there's a history of it in a field.

Heavy rain during the early reproductive stages seems to accelerate the foliar symptom development.

The effect of SDS on yield depends on when initial symptoms occur and the speed and severity of foliar symptom development. The root mass of SDS-affected plants is reduced and discolored, and these precede foliar symptoms.

Foliar symptoms of SDS are similar to those of brown stem rot. However, SDS and brown stem rot can be distinguished by splitting the stem and looking for the internal stem discoloration of the pith, which is associated with rot.

While environmental conditions are a key factor for any disease, the exact conditions for SDS are not known. A lot of inconsistency exists and very little data exists from the upper Midwest. SDS is favored by cool and wet conditions; hot and dry weather appears to slow or arrest the disease.

Soil conditions seem to be another factor driving this disease. SDS seems to be most severe in saturated soils,

such as in low spots or areas prone to puddling. SDS also seems more severe in no-till fields and fields that are compacted. Headlands with a lot of compaction from heavy traffic are areas where the plant has restrictive root growth and is quite often the first place where the disease is confirmed.

No single tactic will control SDS, but the use of multiple management tactics will help to minimize losses. Using cultural practices that reduce plant stress and control SCN is documented by many since SCN is often associated with severe SDS. Variety selection is the key to managing this disease.

Can SDS be managed?

Varieties tolerant to both SCN and SDS should be planted if there is a history in a field. Finally, drainage should also be improved, and fields that are compacted should be tilled to improve the restrictive root growth.

It was possible to find SDS in close to half of Iowa's soybean fields in 2007. We dealt with wet conditions in the spring, and it can be speculated that the poor root development from the sidewall compaction in addition to the excessive rainfall in late July and early August, helped to accelerate the incidence.

Learn from your experience and be more critical when you select your varieties. A lot of inconsistency exists in the effect of agronomic practices on



YIELD ROBBER: Necrotic streaks on the leaves are the advanced foliar symptoms of SDS in soybeans.

SDS. Plus, the majority of the research published was conducted in the South. For that reason we have expanded research on this pathogen significantly in 2008. ISU's soybean research program has hired two graduate students who have started working on potential connections with SDS and our soybean management practices this year, to investigate how we can best manage SDS without jeopardizing yield potential.

Pedersen is an Iowa State University Extension soybean agronomist.

Not your father's tillage

By CAROL BROWN

IF you ask members of Generation X to define tillage, their answers differ from their fathers' or grandfathers'. Today's tillage isn't limited to the moldboard or chisel plow. The trend to expose Iowa's black soil is going by the wayside in an effort to retain the nutrients held underneath.

Doing tillage "because that's the way Dad did it" is not acceptable anymore. Today's generation of farmers are thinking differently. They're feeling the pressures of being green, dealing with high fuel and feed prices, and trying to balance the books amidst it all.

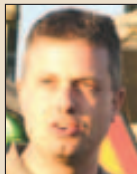
Iowa Learning Farm farmer-cooperators Gary Nelson and son Dave are examples of how changing perspectives and practices between generations can work successfully. A 30-something Dave recently returned home to farm with his dad, but wanted to try a new technique he'd worked with in his previous career with Monsanto: strip tillage. Gary was reluctant to try it, but agreed.

Now, after years of moldboard and chisel plowing, Gary has come around. The Nelsons are tenants of the Smeltzer Demonstration Farm at Otho in Webster County, and have fully adopted no-till and strip till on the farm. They've seen the short-term benefits and are able to predict the

ENERGY-DRIVEN:

"With skyrocketing fuel, fertilizer and machinery costs, you have to look at really reduced tillage like strip till and no-till.

—Dave Nelson



ADDS UP: "We're saving more money on fuel, labor and machinery by reducing tillage and creating healthier soil to improve yields."

—Gary Nelson

long-term results of high residue and increased organic matter.

The ILF project backed Dave up with proof, which helped Gary change his thoughts. "The research we're doing with the Iowa Learning Farm is looking under the soil surface and evaluating what's going on when you change tillage practices," says Gary.

The ILF exhibit at the Farm Progress Show will focus on strip till, a next-best approach to no-till. While many farmers aren't ready to make a full commitment to no-till, strip till is a fine alternative, marrying the best aspects of conventional tillage with the benefits of no-till.

Brown is communications specialist for Iowa Learning Farm.

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