

Developing an integrated management and communication plan for soybean sudden death syndrome

Funding: \$137,000

Principal Investigator

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Overview of project objectives

Sudden death syndrome (SDS) is an annual threat in most of the North Central region. In 2014, this disease alone caused an estimated loss of nearly 62 million bushels in the U.S., valued at approximately \$617 million. The foundational management strategy for SDS in soybean is using resistant cultivars. But it is evident that resistance alone does not provide adequate disease control. The goal for this project is to investigate management options to help ensure resistant cultivars will be as effective as possible.

In a previous project, we looked at the effect of soybean cyst nematode (SCN) management on SDS severity and found that SCN resistance played a critical role on SDS development. Fall season SCN population and SDS were positively correlated. The SCN resistant cultivar PI 88788 has not been keeping nematode populations in check, but results showed that any resistance to SCN led to greater yields, lower SDS and lower SCN reproduction than cultivars with no resistance.

The project objectives include:

- determining how fungicides and nematicide seed treatments affect SDS and SCN
- field evaluation and management of SDS and understanding side effects on *Fusarium virguliforme* population and soil health
- developing models to quantify the negative yield impacts of SDS foliar symptoms and root rot
- studying genetic and virulent variability of *Fusarium virguliforme* using diverse soybean varieties and resistance mapping for foliar yellowing and death
- communicating these results to farmers, agribusiness and other soybean stakeholders.

Key results

Numerous manuscripts have been published based on this project and previous related project results. To communicate results to other researchers and students, several outreach efforts have been done including: a summary report from field-testing the effect of seed treatments on SCN, SDS and yield was presented in Southern Soybean Disease Workers meeting, Pensacola, Florida; poster was presented in virtual annual 2020 APS meeting; presented research reports at group meetings, winter meetings, ICM conferences, on Crop Protection Network, many state or province level talks, seminars, media interviews, field days and conferences for farmers; published articles in state newsletters, several media releases etc.; information was also uploaded to Soybean Research & Information Network.

Benefit to farmers

Results from this project will help farmers to best manage sudden death syndrome in their soybean fields.

Links

[Developing an integrated management and communication plan for soybean Sudden Death Syndrome](#) *USB National Soybean Checkoff Research Database*