

Multi-Dimensional Approaches for Improved Productivity, Sustainability and Management of Major Soybean Diseases in the North Central U.S.

Funding: \$500,000

Principal Investigator

Damon Smith, University of Wisconsin-Madison

Co-Principal Investigators

Daren Mueller, Iowa State University
Rodrigo Borba Onofre, Kansas State University
Christopher Little, Kansas State University
Martin Chilvers, Michigan State University
Horacio Lopez-Micora, Ohio Agricultural Research and Development Center
Mitchell Roth, Ohio Agricultural Research and Development Center
Darcy Telenko, Purdue University
Febina Mathew, North Dakota State University
Ahmad Fakhoury, Southern Illinois University
Jason Bond, Southern Illinois University
Dean Malvick, University of Minnesota

Overview of project objectives

Soybeans are susceptible to an array of disease-causing microbes that can result in significant costs for the farmer as well as the environment. The overall goal of this project is to develop improved strategies for the sustainable management of major soybean diseases in the North Central region. There are many factors affecting soybean pathogens in their abilities to cause disease and economic losses to soybean yield and quality including changes in weather conditions, cropping systems, and resistance to fungicides. The objectives of this project include exploring prediction tools for stem canker and sudden death syndrome; monitoring fungicide resistance; conducting foliar fungicide trials for controlling white mold, frogeye leaf spot and *Diaporthe* diseases; and to develop a better understanding of the biology and epidemiology of new and emerging soybean diseases. The results of this work will increase our understanding of several soybean diseases, provide improved prediction and decision tools and management practices for these diseases.

Key results

The team has begun uniform foliar fungicide trials in northern and southern locations, two uniform seed treatment trials for sudden death syndrome and stem rot diseases, and trials for *Pythium* and *Phytophthora*. Modeling work has started on the prediction tools including Sporecaster for several diseases. The team is monitoring for fungicide resistance in several pathogens across the region. Seeds have been collected to begin the work to understand the impact of *Diaporthe* diseases on seed quality. A survey is being conducted to explore *Cercospora* leaf blight and learn of the causes for this disease in the North Central region. The final objective is to communicate results with farmers and agribusiness, which will be done as the project progresses and at completion.

Benefit to farmers

The knowledge gained from this multi-dimensional project will help soybean farmers improve management of major soybean diseases, including fungicide amounts and application timing. This could also indicate a reduction in fungicide application, resulting in improved profitability for soybean farmers.

Links

[Multi-Dimensional Approaches for Improved Productivity, Sustainability, and Management of Major Soybean Diseases in the North Central U.S.](#) USB National Soybean Checkoff Research Database