

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

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## Overview of Project Objectives

The goal of this project is to develop improved strategies for the sustainable management of major soybean diseases in the North Central region. Soybeans are susceptible to an array of disease-causing microbes that can result in significant losses in soybean yield and quality, as well as increased costs for the farmer and negative environmental impacts. Many factors can affect soybean pathogens including weather, cropping systems, and fungicide resistance. Researchers will exploit field research data to develop and validate prediction and management tools for stem canker and sudden death syndrome; monitor fungicide resistance; and conduct foliar fungicide trials for white mold, frogeye leaf spot and *Diaporthe* diseases to better understand their biology.

## Key Results

The research team conducted multi-site-year product efficacy trials on foliar fungicides that contribute to a holistic approach to control white mold, frogeye leaf spot and stem canker. Data from this year will be combined with the previous year for a larger analysis. A separate white mold protocol was established to focus management treatments for this disease. Seed treatment trials were conducted for sudden death syndrome, brown stem rot, Phytophthora root rot and Pythium root rot. Also, using the Sporecaster framework, a prediction tool is being developed for stem canker. A prediction tool for sudden death syndrome is in development as well. Isolates of several pathogens have been collected to monitor fungicide resistance. Lastly, a survey was conducted to help understand the Cercospora leaf blight pathogen complex in the region.

## Benefit to Farmers

Soybean farmers will benefit from this research by an improved understanding of key management strategies for soybean diseases, resulting in improved yield and profitability. Using decision tools for timely fungicide application, farmers can improve efficacy and reduce unnecessary applications, thus reducing input costs, preserving the effectiveness of fungicides and other control methods, and promoting sustainable integrated disease management strategies.

## Links

[Multi-Dimensional Approaches for Improved Productivity, Sustainability and Management of Major Soybean Diseases in the North Central US](#)

*USB National Soybean Checkoff Research Database*

[Multi-Faceted Plant Pathology Project Reflects Collaborative Intention of NCSRP](#)

*SRIN article*