

USING MULTISPECTRAL PLATFORMS TO MANAGE THE SOYBEAN CYST NEMATODE



DR. JASON BOND

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The Director of the Illinois Soybean Center at SIUC, Dr. Bond's research and teaching program focuses on disease management in Midwestern row crops. He also serves as the advisor for the Agronomy Society, which provides leadership and professional development opportunities for undergraduate and graduate students. Dr. Bond earned his PhD at Louisiana State University (LSU) and still watches LSU football but gets so nervous he plans activities during the game so he can escape if it takes a turn for the worse. He's also a fan of Saluki Athletics and enjoys following the rivalry between the Cubs and Cardinals.

ADDITIONAL RESEARCHERS

- **Dr. Ahmad Fakhoury**, Professor, Southern Illinois University
- **Dr. Ruopu Li**, Associate Professor, Southern Illinois University
- **Xian Liu**, PhD, Center for Ecology, Southern Illinois University

TRIAL LOCATIONS

- **Southern Illinois**

QUESTIONS THIS PROJECT WILL ADDRESS

- ❓ How can we gain a better understanding of what soybean cyst nematode (SCN) is doing in a soybean field without collecting more time- and cost-intensive soil samples?
- ❓ How can we use technology to better detect infestation levels of SCN and help guide management decisions?



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WHY ARE YOU DOING THIS RESEARCH

- ! SCN has earned the title of #1 soybean pathogen not just because of the economic loss it inflicts, but also because of its adaptability in overcoming varietal resistance. Current monitoring methods tend to lack accuracy and efficiency at the field and farm level. In addition, crop damage thresholds are difficult to establish.
- ! While remote sensing technology is becoming more common in detecting crop diseases, little testing has been done in soybeans. This multi-year research project has already discovered that drone-based remote sensing provides cost-effective, reliable monitoring of SCN damage. It also identified Red and Near Infrared bands as most sensitive to SCN infestation and gained a better understanding of the sensitivity of different vegetation indices to SCN infestation and crop yield.
- ! However, more research is needed to understand how soybean phenology impacts different levels of SCN infestation. Collected data will be used to develop a set of algorithms and tools farmers can use to detect, monitor and manage SCN.

GOALS OF THIS RESEARCH

- 🎯 By advancing technology capabilities, farmers will have a more clear and specific view of SCN population levels, activity and density across their fields. This will allow them to be more precise in their management of SCN.

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