

# YOUR 2025 RESEARCH PROJECTS

## ISA REITERATES COMMITMENT TO SOYBEAN PRODUCTION RESEARCH: 22 PROJECTS APPROVED FOR 2025 CROP YEAR

The Illinois Soybean Association (ISA) is funding 22 Soybean Production research projects through the FY25 checkoff. Many research projects span multiple years to more fully understand and address critical issues affecting the future of Illinois soybean production. Projects address both short-term and long-term production questions in conservation practices, in-season agronomy and pest management.

This brochure provides a glimpse into each project. You can find more details, in-progress updates and results about the projects at [FieldAdvisor.org](https://FieldAdvisor.org). We also encourage you to contact the lead researcher to learn more about projects that interest you.

In addition, you can connect with the ISA agronomy team to share ideas for other types of research you'd like to see your checkoff dollars fund. ISA is committed to working with the state's researchers on projects that will enable Illinois soybean farmers to be the most knowledgeable and profitable soybean producers in the world.



# YOUR 2025 SOYBEAN PRODUCTION RESEARCH PROJECTS

CONSERVATION PRACTICES

IN-SEASON AGRONOMY

PEST MANAGEMENT

## **NEW** How much do crop residues feed the following crop's nutritional needs?

**Dr. Andrew Margenot**, Associate Professor, University of Illinois Urbana-Champaign (UIUC), 217-300-7059, [margenot@illinois.edu](mailto:margenot@illinois.edu)

Crop residue is a source of nutrients for the following season's crop, but it has yet to be documented just how much of which nutrients the residue provides. This project aims to track the release of nitrogen (N), potassium (K) and sulfur (S) from corn, wheat and cereal rye residue for soybean uptake. It will also assess how tillage and biologicals that breakdown residue influence nutrients released from residue for soybean uptake.

## **NEW** How can cover crop adoption in targeted zones impact nutrient loss reduction?

**Dr. Shalamar Armstrong**, Associate Professor, Purdue University, 765-496-0256, [sarmstro@purdue.edu](mailto:sarmstro@purdue.edu)

When faced with non-point nutrient loss reduction goals, it truly does take a village. Farmer-led watershed groups are critical to drive cover crop adoption in watershed hot spot areas. Through this project, researchers will use historic and current water quality and conservation practice data for the Lake Bloomington and Evergreen Lake watersheds to conduct a "Nutrient Loss Risk Analysis" that pinpoints high and low risk nutrient-loss zones. They will share the high-risk hot spots with farmer-led watershed groups and agencies, as well as deliver educational resources to help area farmers adopt cover crops and other practices to mitigate nutrient loss.

## **YEAR 2** Can following the MRTN approach reduce tile nitrate loss in conventional and cover cropping systems?

**Daniel Schaefer**, Nutrient Stewardship Director, Illinois Fertilizer and Chemical Association, 217-202-5173, [dan@ifca.com](mailto:dan@ifca.com)

Based on year 1 insights, this year 2 project will focus on validating the maximum return to nitrogen (MRTN) approach as a viable method to determine N rates for corn in a corn/soybean rotation both with and without cover crops. This is particularly important in the tilled fields of central Illinois where it is critical to reduce nitrate loss.

## **YEAR 2** How can I offset some of the potential challenges when planting soybeans into heavy corn residue?

**Dr. Giovanni Preza Fontes**, Assistant Professor and Field Crops Extension Agronomist, UIUC, 217-244-0541, [giovani3@illinois.edu](mailto:giovani3@illinois.edu)

To help more farmers feel confident implementing conservation tillage systems, this project is investigating the interactions across soil types, starter fertilizer, tillage systems and row spacings and how they affect soybean growth, nutrient uptake, and seed yield and quality. The results will help farmers identify management practices that enable them to plant soybeans into heavy residue while preserving the crop's yield potential.

## **YEAR 2** How can I become more confident in identifying conservation practices that will positively impact crop productivity and related environmental factors on my farm?

**Dr. Kaiyu Guan**, Professor, UIUC, 217-300-2690, [kaiyug@illinois.edu](mailto:kaiyug@illinois.edu)

This project aims to quantify the benefits of adopting conservation management practices at the field level. This includes how various conservation practices impact crop productivity, greenhouse gas (GHG) emissions, soil carbon sequestration and N leaching/water quality across the various soybean regions in Illinois. Project output will include reports farmers can use to inform their management decisions and help prepare them to take advantage of ecosystem markets, like carbon credit programs.

## **YEAR 3** Which practices help improve soil health and water quality while also giving me the ability to take advantage of ecosystem markets like carbon credit programs?

**Dr. Andrew Margenot**, Associate Professor, UIUC, 217-300-7059, [margenot@illinois.edu](mailto:margenot@illinois.edu)

This project is collecting soil health, water quality and climate footprint metrics across the state's growing regions and cropping systems (soy-corn, double-crop wheat-soy with corn rotations). It will help inform practice-based recommendations that protect soil health and water quality, as well as provide insights farmers can use as they explore ecosystem credit programs.

## **YEAR 3** What is the ideal planting window to establish cover crops and obtain optimum crop growth and yield of rotational crops?

**Nathan Johanning**, Commercial Agriculture Extension Educator, University of Illinois Extension, 618-939-3434, [njohann@illinois.edu](mailto:njohann@illinois.edu)

This project is comparing 1) different cereal rye seeding dates and rates before soybean, and 2) different planting dates of two clover species after soybean harvest and ahead of corn. Farmers will gain better insights into cover crop planting and seeding rate recommendations and best management practices for adding cover crops to their cropping systems.

## **YEAR 2 Which preemergence herbicides are more likely to cause crop injury when soybeans are planted early?**

**Dr. Aaron Hager**, Professor and Extension Weed Science Specialist, UIUC, 217-333-9646, hager@illinois.edu

Planting soybeans early often means cold, wet soil conditions that can delay seed germination and prolong plant emergence. These conditions can reduce the plant's ability to metabolize preemergence herbicides, resulting in crop injury. This project is testing several herbicides and classes of chemistry to better understand which are more prone to cause crop injury under early planting conditions.

## **YEAR 2 When is the best time during the soybean growth stages to conduct tissue testing to understand nutrient needs for maximum grain yield?**

**Dr. Fred Below**, Professor, UIUC, 217-333-9745, fbelow@illinois.edu

Because soybeans can remobilize nutrients from lower to newly developing nodes, more information is needed to understand which nutrients and in what quantities are made available to new nodes. This project uses tissue testing to gain these insights and help establish more accurate and timely in-season nutrient recommendations to maximize soybean yield.

## **YEAR 2 Which wheat varieties offer better spring freeze tolerance and allow earlier harvesting for timely double-crop soybean planting to maximize yield potential?**

**Dr. Jessica Rutkoski**, Assistant Professor, UIUC, 217-372-6258, jrut@illinois.edu

Double cropping soybeans after winter wheat is an attractive approach to enhancing profitability in Midwest crop rotations and improving soil health. This project is identifying high-yielding winter wheat varieties that can be harvested earlier and enable earlier planting of double-crop soybeans to maximize yield potential.

## **MULTI-YEAR What are some new SOYLEIC™ varieties that are high yielding and allow me to take advantage of this value-added market opportunity?**

**Dr. Eliana Monteverde**, Assistant Professor, UIUC, 217-300-7658, elianam@illinois.edu

To help Illinois soybean farmers capitalize on market opportunities for high oleic, low linolenic (HOLL) soybean oil, this project continues the breeding efforts to select and license varieties that combine competitive yields with the value-added SOYLEIC™ trait. The team has a full breeding pipeline and intends to release two to four new varieties each year.

## **MULTI-YEAR Which soybean varieties have higher protein and oil content so I can capitalize on premium pricing?**

**Darin Joos**, Research Agronomist, UIUC, 217-778-7047, joos@illinois.edu

Variety trials are planted across the state's major soil types and maturity zones. By using the SCIO CNST NIR technology on the combine, researchers can more quickly determine the protein and oil content of each tested variety. Farmers can access performance data on the UI Variety Trial website at [vt.cropsci.illinois.edu](http://vt.cropsci.illinois.edu).

## **NEW What tools are available to help detect and monitor red crown rot across Illinois soybean fields?**

**Dr. Boris X. Camiletti**, Assistant Professor, UIUC, 217-333-2905, bxc@illinois.edu

Early detection of red crown rot (RCR) in soybean fields is critical in managing this disease that can cause up to 50 percent yield loss. However, manual and drone scouting can be time-intensive and costly. The research team will use both drone and satellite imagery to develop a disease detection model to help farmers and the industry better predict outbreaks and implement management practices.

## **NEW Are there biological-based products that can promote plant growth while also protecting against RCR when soybeans are planted later to avoid heavy pathogen incidence?**

**Dr. Boris X. Camiletti**, Assistant Professor, UIUC, 217-333-2905, bxc@illinois.edu

The team will gather information from farmers and industry about current biological-based products applied to soybean seed, as well as practices used to manage RCR. Based on these insights, the team will develop specific research trials to identify more effective RCR management recommendations.

## **NEW How does infection timing and soybean cyst nematode impact infestation of RCR in soybean fields, and what options do I have for control?**

**Dr. Boris X. Camiletti**, Assistant Professor, UIUC, 217-333-2905, bxc@illinois.edu

There has been some correlation between soybean cyst nematode (SCN) and RCR, as well as infection timing and disease severity. This project will evaluate the timing of infections, interactions with SCN and efficacy of commercial products to provide farmers with best management practices.

**CONTINUED ON BACK COVER >**

### **NEW How can genetic engineering be used to help manage SCN populations?**

**Dr. Matthew Hudson**, Professor, UIUC, 217-244-8096, mhudson@illinois.edu

This project aims to use genetic engineering to impede soybean cyst nematode (SCN) reproduction and survival. Researchers will explore several methods and strategies, such as using CRISPR gene editing which has been used to create sterile male mosquito populations, and test in a controlled laboratory setting to identify the most viable option(s).

### **NEW What new types of varietal resistance to SCN are being developed?**

**Dr. Eliana Monteverde**, Assistant Professor, UIUC, 217-300-7658, elianam@illinois.edu

This project continues work to develop additional lines of varietal resistance to SCN. Researchers have identified three- and four-gene combinations and will develop lines with those stacks so farmers can rotate different genetic modes of resistance to manage and reduce SCN populations.

### **NEW How do environmental factors impact glufosinate efficacy against waterhemp, and how can I mitigate those challenges?**

**Dr. Patrick Tranel**, Ainsworth Professor and Associate Head, UIUC, 217-333-1531, tranel@illinois.edu

There have been reports over the past three growing seasons of sub-par waterhemp control from glufosinate in soybeans. This project will dig into how environmental factors, such as humidity, temperature and light intensity, interact with time of application and impact glufosinate efficacy. Researchers will also investigate the resistance mechanism with the goal of developing a rapid resistance diagnostic test, similar to those developed for glyphosate and Group 14 herbicides.

### **YEAR 2 How extensive is resistance to Group 15 herbicides in Illinois waterhemp populations?**

**Dr. Aaron Hager**, Professor and Extension Weed Science Specialist, UIUC, 217-333-9646, hager@illinois.edu

Waterhemp populations from soybean fields across Illinois are being collected and screened to better understand the level of resistance to Group 15 herbicides. Results will be used to provide farmers with recommendations on how best to incorporate these herbicides into integrated weed management programs. Resistant populations will be used in subsequent research to identify the gene(s) conferring the metabolism-based resistance.

### **YEAR 2 Which insect pests and at what threshold levels warrant an insecticide application or an insecticide seed treatment in soybeans?**

**Dr. Nicholas Seiter**, Assistant Professor and Extension Field Crops Entomologist, UIUC, 812-593-4317, nseiter@illinois.edu

This multi-year project aims to identify insect pests responsible for reducing soybean yield and grain quality and which control mechanisms, including seed treatment and foliar insecticides, provide a return on investment. Insights will be used to determine threshold levels for these pests, as well as integrated management recommendations.

### **YEAR 3 Which cover crops can help suppress populations of SCN?**

**Dr. Jason Bond**, Professor of Plant Pathology, Southern Illinois University, 618-453-4309, jbond@siu.edu

This project is using 13 established cover crop fields throughout Illinois to determine how different types of cover crops affect SCN populations. Insights will be used to provide the state's soybean farmers with improved management recommendations.

### **YEAR 4 Which stem diseases and insects should I be concerned about in my soybean fields?**

**Dr. Jason Bond**, Professor of Plant Pathology, Southern Illinois University, 618-453-4309, jbond@siu.edu

**Dr. Nicholas Seiter**, Assistant Professor and Extension Field Crops Entomologist, UIUC, 812-593-4317, nseiter@illinois.edu

Continuing work already underway across Illinois' soybean fields, this project aims to identify new and emerging stem disease and insect pests that negatively impact soybean production and yield. Pests of particular concern include dectes stem borer, soybean gall midge, RCR and stem canker. Researchers will use the insights to prioritize future research that will help determine best management practices.

## **SEE UPDATES AND LEARN MORE ABOUT THESE PROJECTS AND RESEARCH TEAMS AT:**



FieldAdvisor.org



Field Advisor on



## **CONTACT THE ISA AGRONOMY TEAM:**

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The Illinois Soybean Association (ISA) checkoff and membership programs represent more than 43,000 soybean farmers in Illinois. The checkoff funds market development, soybean production and government relations efforts, while the membership program, Illinois Soybean Growers (ISG) and the Illinois Soybean Growers PAC actively advocates for positive and impactful legislation for farmers at local, state and national levels. ISA upholds the interests of Illinois soybean farmers through promotion, advocacy, research and education with the vision of becoming a trusted partner of Illinois soybean farmers to ensure their profitability now and for future generations.