

MARCH 2026

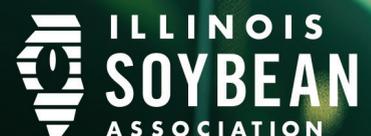
Illinois **Field & Bean**

A PUBLICATION OF THE ILLINOIS SOYBEAN ASSOCIATION

The Genetics Edition

*What's coming next
and how it impacts farmers.*

*Explore the latest breakthroughs in
soybean genetics, AI-powered breeding
and new herbicide-resistance
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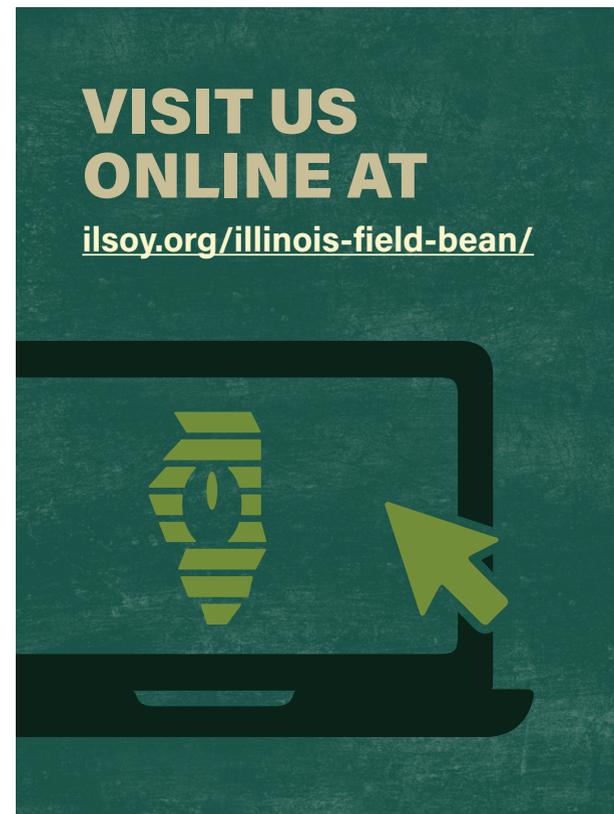
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COVER: In "The Genetics Edition," we're diving into the exciting advancements shaping the future of soybeans. From progress on high oleic and linolenic varieties in Illinois to how AI is transforming the speed and precision of breeding, this issue explores what's in the pipeline and what it means for farmers.

In this issue, you'll also notice a refreshed design created to enhance your reading experience. From a cleaner layout to stronger visuals and improved organization, every change was made with our readers in mind. What hasn't changed is our mission: to tell the stories of Illinois farmers and deliver information that helps you stay informed and ahead.



FROM THE BOARDROOM

Funded by the Illinois Soybean Checkoff



David Wessel

At-Large Director | Illinois Soybean Association



Confidence Heading into Plant 2026

Plant 2026 is fast approaching, and farmers have many decisions ahead that can help make this year more profitable. With economics not as favorable as in the past, and much of Illinois experiencing drought conditions, farmers need to use tried and proven agronomic practices now more than ever. Some practices that I use, and you can use too to ensure 2026 is a profitable year, include early planting, fertility considerations, conservation programs and disease awareness.

EARLY PLANTING

Through personal experience and university research, I can tell you that soybeans planted early have proven to increase yields and return on investment. The optimum early planting window for northern and central Illinois is April 10-30. Early planting results in better light utilization through earlier canopy development, resulting in more soybean nodes and improved pod set. Although much emphasis is placed on the importance of an early planting date, you should make sure the soil is fit and take into consideration insurance dates as well as extended rain forecasts.

FERTILITY

Don't overlook nutrients and assume soybeans can scavenge them on their own. Treat soybeans as the cash crop that they are and feed accordingly. Ensure sulfur and potassium levels, in particular, are adequate. Early planted soybeans have higher photosynthesis potential and increased branches, nodes and pods. This raises the plant's overall nutrient demands. A simple soil test can ensure that you have adequate pH (6.3 – 6.8). If soil tests reveal marginal results, consider phosphorus (P) and potassium (K) maintenance applications or use of removal-based fertility guidelines in high-yield environments to avoid potassium (K) stress. This is especially important in lighter soils and provides phosphorus (P) needed for root development.

CONSERVATION PROGRAMS

Conservation practices such as no-till or cover crops can be a source of added revenue. There are several public or private programs that incentivize farmers for these practices, such as the Fall Covers for Spring Savings program in Illinois. One good starting place to find out about programs for which you might be eligible is Illinois Sustainable Ag Partnership's Financial Incentives Database Tool at ilsustainableag.org/findtool/.

DISEASES

Ideally, you should know your disease pressures and work to protect your yield potential. Some options include planting resistant varieties, utilizing seed treatments or applying post fungicide applications to address whatever pathogens you find. Pay attention and be able to identify stem diseases such as sudden death syndrome, brown stem rot, stem canker, phytophthora, and possibly red crown rot. I have also utilized the free soybean cyst nematode (SCN) testing program funded by the Illinois Soybean Checkoff program in partnership with the University of Illinois to assess SCN pressure. To participate, please contact freeSCNtesting@illinois.edu for a free testing kit.

THE FUTURE

Illinois continues to be the leader in soybean production, and our soybean farmers have proven that they can produce the highest quality, most sustainable soybeans in the world. With a little help from Mother Nature, combined with the resilience of Illinois soybean producers, we will continue to be a world leader in soy production for years to come.

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CEO'S MESSAGE

Funded by the Illinois Soybean Checkoff



John Lumpe

CEO | Illinois Soybean Association

Turning Potential Into Performance



Once again, Illinois led the nation in soybean production in 2025. According to USDA data, Illinois farmers produced more than 639 million bushels of soybeans—an impressive achievement that reflects both continued innovation and the resilience of Illinois agriculture. This distinction is earned through hard work and collaboration, representing the collective efforts of farmers, researchers, industry partners, your soybean checkoff and continued legislative efforts with our elected officials through Illinois Soybean Growers (ISG).

This issue of *Illinois Field & Bean* explores the genetics behind that success, from the traits in today's soybean seeds and the science that drives them to the new tools being developed to advance performance even further. It also serves as a reminder of the mindset that defines Illinois soybean farmers: a commitment to focus, adaptability and long-term endurance.

Genetics matter. But it's the determination behind them that turns potential into performance.

WHAT'S IN THE GROUND AND WHAT'S AHEAD

Our cover story takes you inside some of the most exciting advancements in soybean breeding at the University of Illinois, led by Dr. Eliana Monteverde. From major progress in high oleic and linoleic soybean varieties to new SOYLEIC options made possible through checkoff support, these innovations are expanding market opportunities and delivering real value. Seed innovation doesn't happen overnight; it reflects years of focused investment by Illinois Soybean Association (ISA) to meet both agronomic demands and economic potential.

You'll also explore how artificial intelligence is accelerating plant-breeding research at the University of Illinois. Three Crop Sciences Professors detail how AI is enabling researchers to develop stronger, more targeted soybean traits with unprecedented speed and precision—putting smarter, faster tools directly into farmers' hands.

GETTING TOUGHER IN THE FIELD

Targeted traits are one component of the equation. Equally important is how we manage the genetic challenges posed by environmental pressures, including weed resistance and other agronomic threats.

An article by Dr. Aaron Hager of the University of Illinois examines emerging herbicide resistance issues, including the first confirmed cases of glufosinate-resistant waterhemp and Group 15 resistance in giant foxtail. These challenges are not hypothetical or distant—they are present and impacting growers today.

FARMERS SHAPING THE FUTURE

Genetics doesn't stop at the seed or the weed. In our SpringBoard Challenge feature, you'll hear from ISA Director of Market Development Todd Main on how your checkoff is investing in new uses for soy, driven by farmer-funded research. From feed to fuels to materials, we're pushing for the evolution of market solutions to build demand while diversifying the number and kinds of buyers of Illinois soybeans. We invite fresh research ideas, especially those that challenge the status quo and open doors to markets we haven't yet considered. Innovation starts with bold thinking, and we're committed to turning those ideas into real-world applications for growers.

On Page 20, you'll find an educational policy update outlining what's happening in Springfield and what it means for your operation. From input rules to transportation and land use, we're working to keep soybean farmers represented in every conversation that affects your businesses.

YOUR CHECKOFF AT WORK

A unifying theme throughout this issue is farmer investment. The research, breeding advancements, market development and policy education highlighted here are made possible by your soybean checkoff dollars at work. When we talk about return on investment, we mean strategic, forward-focused programs that expand your options.

Farming evolves. Technology advances. Market opportunities shift. What remains constant is the ability of Illinois soybean farmers to adapt, learn and improve. That spirit is foundational to how you operate. At ISA, we share that mindset by delivering research, programs and partnerships designed to meet today's challenges.

It's a long-term commitment to progress, powered by farmers and built for what comes next.



Funded by the Illinois Soybean Checkoff



High Times For High Oleic Soybeans

By IL Field & Bean Team

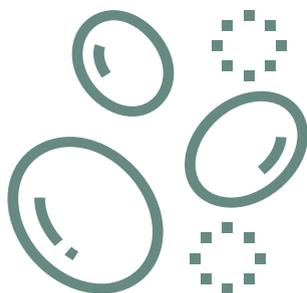


University of Illinois field trials are advancing high oleic soybean varieties that match conventional yields while opening doors to premium, value-added markets for farmers.

Researcher sees big market potential for health-conscious soy varieties

For decades, Illinois soybean farmers have chased yield. But today, yield alone isn't enough. Market access, seed quality and oil composition are fast becoming just as critical, especially as premiums grow for traits that deliver more value per acre. Enter SOYLEIC and other high oleic soybeans.

"I'd like to see these traits widely adopted and be a part of the standard toolbox for Illinois growers, as these varieties not only perform just as well in the field but also open doors to stable, value-added markets," says Dr. Eliana Monteverde, Assistant Professor and soybean breeder at the University of Illinois Urbana-Champaign. "I also hope our research has helped by making these traits easier to use and more accessible."



Funded in part by Illinois soybean checkoff dollars, Monteverde's research is uncovering how these new oilseed profiles can deliver both agronomic confidence and economic upside, especially in the fast-growing dairy sector. The question isn't whether Illinois soybeans can meet new markets. It's how fast farmers and the researchers supporting them can seize the opportunity.

HEALTH PROFILE SETS HIGH OLEIC VARIETIES APART

Researchers at the University of Missouri developed the non-GMO high oleic trait now known as SOYLEIC. The Missouri Soybean Merchandising Council holds the patents and has partnered with several academic institutions including the University of Illinois, where Monteverde works, and with private companies to expand trait to new maturity groups. What sets SOYLEIC soybeans apart is their modified fatty acid profile that increases soybean oil quality. They are high in oleic acid and low in linolenic acid compared to regular soybean oil.

"Oleic acid is an unsaturated fatty acid, which is healthier than saturated fats, while linolenic acid makes oil turn rancid," Monteverde explains. "Regular soybean oil contains relatively higher linolenic acid levels compared to high oleic oils. Historically, the way to go around this was to hydrogenate it to create a more stable oil for food products. This process creates trans fats that have very negative health consequences. The FDA declared partially hydrogenated oils unsafe in 2015, and with this, the demand for soybean oil in cooking products declined."

High oleic soybeans have opened new doors of opportunity with their beneficial profile for human-grade food products and animal feed.

"By being high in oleic and low in linolenic acid, SOYLEIC oil is both healthier and more stable than regular soybean oil," Monteverde says. "SOYLEIC is a non-transgenic trait and it is not regulated as a GMO in the U.S., which allows it to be stacked with

GMO traits without the need to go under the regulation process."

FROM LAB PROMISE TO FIELD SUCCESS

Laboratory research and field trials have taken SOYLEIC and other high oleic soybean varieties from an intriguing possibility to a marketplace reality.

"SOYLEIC varieties carry two genetic mutations that alter the biosynthesis pathway of fatty acids, promoting the accumulation of oleic acid and inhibiting the synthesis of linolenic acid," Monteverde says. "This is achieved by genetic mutations that redirect oil biosynthesis toward higher oleic acid and reduced linolenic acid. These mutations were identified from natural variation (accessions from the U.S. Department of Agriculture's soybean germplasm bank were the donors) and mutagenesis populations and then combined through conventional breeding."

Essentially, scientists have grown lots of soybean plants with seeds

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that have undergone natural genetic mutations. They've also treated some of those seeds with a chemical reagent, producing additional random mutations. Then, they've selected plants that carry desirable high oleic traits for further propagation.

"Thanks to years of breeding, current SOYLEIC varieties developed by our program in Illinois perform as good as any other conventional soybeans," says Monteverde. "In trials compared along with Plenish and other Corteva varieties, Illinois SOYLEIC lines have comparable yields to commercial soybeans under conventional management. These varieties have the same management and harvest requirements as any conventional soybean variety."

As of this writing, Monteverde says, a number of companies today sell soybean lines from relative maturity (RM) 1.2 to 4.1 including Beck's Hybrids, Confluence Genetics, GROWMARK, Kings Agri Seed, Martin Seed, Mid-Atlantic Seed, Seedway and Zeakal. Additional licensees and new soybean varieties are expected in the near future.

DAIRY DEMAND DRIVES HIGH OLEIC MARKET

The biggest factor expanding high oleic markets is U.S.-based dairy demand. Research indicates that rations including high oleic soybeans can boost milk fat yield in dairy cows, add high-quality fat and protein to animal diets, and potentially strengthen dairy farm profits, reduce feed costs or both.

"International use is dependent upon availability because the



domestic demand is superseding the amount of excess SOYLEIC beans we have," Monteverde says. "The next three years will be U.S. dairy demand and use/consumption."

That's just a preview of what could follow.

"With our demand increasing and our licensees growing their seed stock, we can see SOYLEIC grow, too," she says. "USB states that in 2034, there could be upward of 9 million high oleic acres (SOYLEIC and Plenish) grown to feed the dairy herds. We are not sure this will be the case, but we hope to just see annual increases."

HOW TO PREPARE TO PLANT HIGH OLEIC VARIETIES

As interest in high oleic beans grows among buyers, it's a prime time for Illinois soybean farmers to understand the research landscape and to prepare for future plantings themselves.

"The first university and private-sector beans hit large yield trials in 2017 with only one seed company growing 300 acres to test," Monteverde explains. "From 2017, we have grown and have about 40 SOYLEIC varieties that are viable for production, with 17 of those being from the University of Illinois soybean breeding program."



That means more Illinois farmers are likely to plant high oleic varieties in the future than do today in the hope of earning premium prices. Economic benefits of those investments will be dictated by local demand trends and other regional factors.

"It always depends on the delivery location and margins when moving the harvested high oleic beans," Monteverde cautions.

Few changes to existing planting protocols are necessary.

"One misconception may be that high oleic or modified oil soybeans require special management or come with a yield penalty, while in reality these traits are bred into high-yielding varieties, and they can be grown using the same agronomic practices farmers already use," Monteverde says. "Some people may think that oil-quality traits only benefit processors or end users. While that's true, farmers benefit too through access to premium markets and varieties that are developed with strong

agronomic performance in mind."

CHECKOFF-FUNDED RESEARCH PAVES HIGH OLEIC'S NEXT CHAPTER

A native of Uruguay who earned her doctorate in plant breeding from Cornell University, Monteverde is pursuing two ISA soybean checkoff-funded studies this year, including one that will advance the industry's understanding of high oleic soybeans. It is the continuation of 2025 work into high-yielding high oleic varieties.

"Regarding SOYLEIC, the [2026] project is focused on field testing of experimental lines with both high oleic and low linolenic," Monteverde says. "In our program, we are investigating how protein content, and particularly amino-acid profiles, vary across environments, and what environmental parameters affect protein content and amino acid profiles. The objective of this area of research is to develop soybean varieties that show a stable profile across environments or fields."

Multi-location trials are conducted across the state through the variety testing program at the University of Illinois.

"We also run some trials in other states in collaboration with breeding programs in other universities," Monteverde adds. "In total, our trials span roughly 40 acres every year."

For Monteverde, the research represents the convergence of many scientific disciplines she loves. And she sees how it can directly benefit Illinois soybean farmers and the future of the state's agriculture industry.

"I was drawn to plant breeding because I always loved working at the intersection of genetics, plant biology and agriculture, and seeing the impact in the real world," Monteverde explains. "I've always loved being able to

take genetics theory and turn it into something practical that matters in the field and helps farmers and society."

FROM NICHE OPTION TO STAPLE TRAIT

High oleic soybeans might not be mainstream just yet, but Monteverde thinks they're well on their way to more prominent use in Illinois farmers' fields.

"I'd like to see these traits widely adopted and be a part of the standard toolbox for Illinois growers," Monteverde says. "I'd say that the market for soybeans is changing, and seed composition is becoming just as important as yield. High oleic and low linolenic varieties are about creating more opportunities for increased premiums. Our goal is to make them as reliable and competitive as any conventional variety while positioning Illinois

soybeans for stronger, more stable demand."

To learn more about high oleic and low linolenic soybean varieties, or to connect with Monteverde's research, visit FieldAdvisor.org.

FOUR HIGH OLEIC SOYBEAN INSIGHTS FROM A RICE BREEDER

Before leading high oleic soybean research at the University of Illinois, Monteverde worked extensively in rice breeding. That experience continues to shape how she approaches soybean research and variety development today.

- Value isn't just yield: Work in rice breeding illustrates that seed quality and composition traits often determine a crop's value beyond the field, Monteverde says. Total bushels produced isn't

the only key factor affecting a farmer's bottom line.

- Breeding must meet real-world conditions: Successful crop varieties must fit into actual farming systems. They need to perform consistently under real management practices and across different environments.

- Cross-crop insights matter: Rice and soybeans share similar breeding approaches, Monteverde points out. This has enabled her to borrow techniques and lessons learned in rice to inform genetic improvement in soybeans.

- A global mindset strengthens local impact: Working across crops and regions builds perspective, helping breeders develop solutions that serve Illinois farmers while keeping specific markets and end uses in mind.



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2026 SpringBoard Challenge

By Todd Main, Director of Market Development, Illinois Soybean Association

The Soy Innovation Center's SpringBoard Challenge is a statewide innovation and funding program that's designed to spark and support new soy-based technologies and products. As markets continue to shift and sustainability becomes mainstream, this Illinois Soybean Association (ISA) project aims to commercialize price- and performance-competitive products, specifically those that create direct value for Illinois soybean farmers.

Through research funding and commercialization support, the SpringBoard Challenge connects researchers, farmers and industry partners to help move promising ideas from the lab to market with the goal of developing new soy-based products, creating tangible benefits for our farmers and securing long-term demand growth for Illinois soybeans.

The challenge is focused on five key areas: Bioplastics, Lubricants, PFAS Substitutes, Biopolymers and Soy Products on the Farm. The 2025 selected submissions highlighted the many possibilities for soy: *Self-Sealing polymers from Soybean Oil, Soybealon, Low-carbon specialty lipids for liquefied soybean hulls and A novel method of separation,*

concentration, and extraction of rare earth elements utilizing soybean oil and three-dimensional nanoporous micro-ribbons.

Building on last year's momentum, the 2026 SpringBoard Challenge introduces a new category, Soy Products on the Farm, which replaces the former Biofabrics focus. Soy Products on the Farm are, as the title states, soy-based products designed specifically for

“When you say soybean, most automatically think of the ag colleges. This is great, but our real target audiences are material and chemical scientists and engineers. Those are the people that need to be engaged, either from the industry or universities.”

on-farm use, reinforcing the Soy Innovation Center's commitment to farmer-focused innovation.

SpringBoard Challenge Project Lead Peter Creticos who serves as President and Executive Director of the Institute

for Work & the Economy, looks forward to including more farmer emphasis and input this year. “We've heard from several farmers with ideas for soy-based farm products over the last year,” said Creticos. “At this year's SpringBoard Conference, we hosted an entire session covering soy product innovations made for the farm, which resulted in several productive product development discussions.”

To launch this year's effort, the 2026 SpringBoard Conference was held March 4-5 at the ISA Bloomington office. The event featured sessions on commercialization, farmer-led discussions, researcher presentations and panels that linked the farm, research and industry, also known as the “innovation triangle.”

CHALLENGE STRUCTURE

The SpringBoard Challenge takes place in two stages: preproposals followed by invited proposals. All interested project teams must first submit a preproposal to be considered for advancement. From that pool of ideas, select teams will be invited to submit a full project proposal, with funding awarded to proposals

accepted at the conclusion of the invited proposal stage.

Two panels will review submissions received in both stages. One panel is a national technical advisory committee made up of experts in agricultural product utilization, and the second panel consists of ISA leaders.

The preproposal is limited to three pages and should include the project name, project team, team leader, contact information, institutional capacity and partnerships, and a project description. The description should address the innovation being pursued, the applied research problems being investigated, how the applied research problem will be investigated, the kind of research that will be conducted and the foreseeable commercial market or application of the proposed applied research and resulting product. Preproposal papers must be submitted to ISA by 5 p.m. CDT on Wednesday, April 1, 2026.

On April 15, the ISA technical advisory team will invite select groups from each of the five designated areas to submit a full project proposal. Invitations will include feedback and questions that must be addressed in the invited proposal.

Invited proposals will require comprehensive descriptions of the scientific, technical and methodological challenges that will be addressed by the proposed research, along with a summary of how the team plans to tackle them.



SPRINGBOARD CHALLENGE

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Proposals must also include details about the necessary materials and equipment, the existing capacity and the anticipated needs of the project team. Detailed budgets must also be included. Full proposals are due to ISA by 5 p.m. CDT May 22, 2026, and project winners will be publicly announced July 1.

WHO SHOULD APPLY?

The SpringBoard Challenge encourages submissions from innovators across a wide range of disciplines and backgrounds. "When you say soybean, most automatically think of the ag colleges. This is great, but our real target audiences are material and chemical scientists and engineers. Those are the people that need to be engaged, either from the industry or universities," said Creticos.

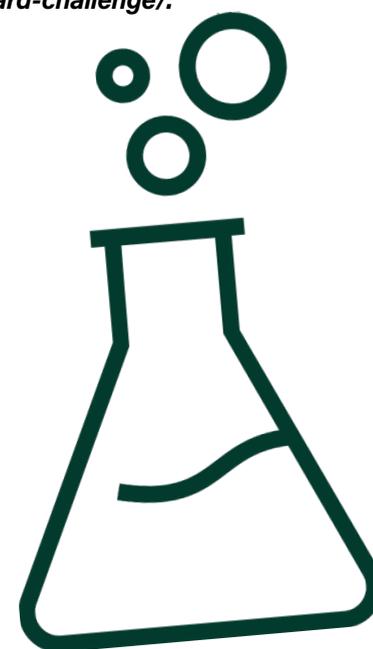
Although agricultural expertise is valuable, applicants are not required to come from traditional ag backgrounds. Teams that combine technical innovation with a clear path to commercialization are strongly encouraged to apply.

SPRINGBOARD'S LONG-TERM VISION

At its core, the SpringBoard Challenge is about more than funding individual projects or annual funding cycles. "My personal vision is to develop a self-sustaining innovation ecosystem, where people are naturally coming up with ideas for how you can use soy to make things, without prompting from us," said Creticos.

By consistently supporting applied research, encouraging cross-disciplinary collaboration and prioritizing product commercialization, the Soy Innovation Center SpringBoard Challenge aims to establish Illinois as a national leader in soy-based innovation. Over time, this approach helps attract new talent, investment and industries, all while reinforcing demand for Illinois-grown soybeans and delivering tangible benefits back to the farmer.

For more information about the 2026 SpringBoard Challenge, visit ilsoy.org/springboard-challenge/.



AI & Breeding

By Ashley Rice Haddon, Lead Writer, Illinois Soybean Association

Artificial intelligence (AI) has been around for decades, but has become hard to miss in the past few years. Today, what many people refer to as AI—OpenAI’s ChatGPT, Microsoft’s Copilot or Google’s Gemini — for example, are a newer advancement in AI called large language models (LLMs). LLMs were developed from machine learning research and use statistical prediction to capture the deeper context of human language and generate text.

Just last fall, the University of Illinois launched Illinois Chat, an LLM-based chatbot that is available to students and employees of the university. This AI software tool developed by the National Center for

Supercomputing Applications (NCSA) allows users to create personalized LLM-based chatbots with local data and privacy safeguards.

CROPWIZARD

It just so happens that one of the first significant research applications built on the Illinois Chat platform was designed for the agricultural community. The application, called CropWizard, serves as an interactive question-answering and decision-support service powered by AI. Users can ask CropWizard about pest management, crop rotation or nutrient requirements, or even upload images about which they have questions.

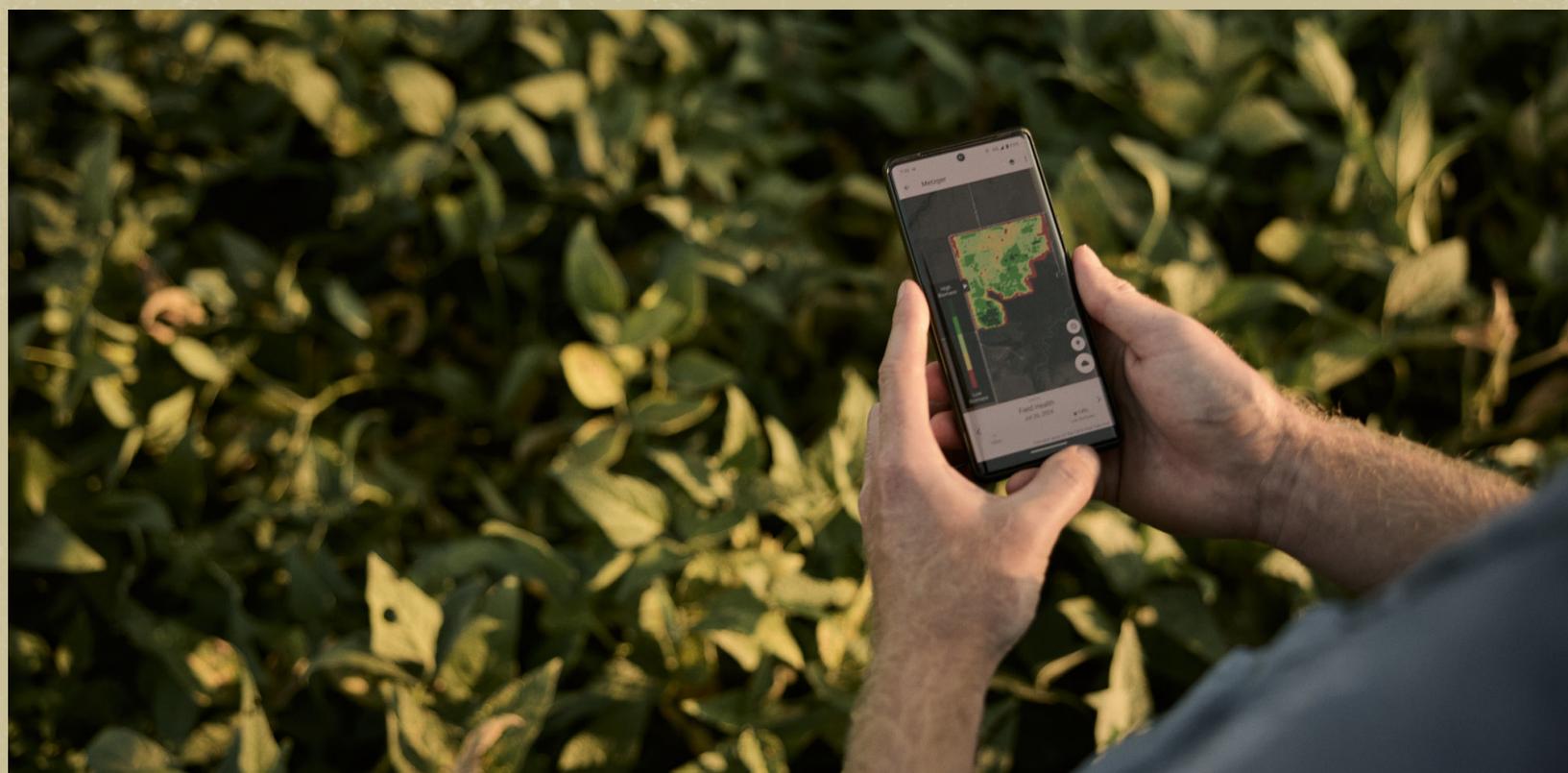
Once a question is inputted, such as “What are the best pest control options for aphids in my soybean crop?” CropWizard then consults over 200,000 trusted agricultural publications. The publications are mainly Extension documents from land-grant universities, a growing set of open-access research papers and a portfolio of computational tools specific to agriculture to answer data-driven questions.

The result is a virtual agronomist capable of offering tailored farming advice, research insights and computational analyses of user data. CropWizard can be found at uiuc.chat/cropwizard.

This tool, developed by the Center for Digital Agriculture, AI for Future Agricultural Resilience, Management and Sustainability (AIFARMS), and NCSA, is just one example of AI being used in agriculture.

AI IN RESEARCH

“AI is a big field with a long history,” said Matthew Hudson, Ph.D., Crop Sciences Professor at the University of Illinois. “There is a lot of machine learning and machine vision technology that is used in plant-breeding research. AI in the broader sense is very widely used in research around phenotyping, genomic selection and DNA sequencing, as well as increasingly in automated farm equipment.”



Hudson's research project that is partly funded by the Illinois Soybean Checkoff, "Using Genetic Engineering to Help Control Soybean Cyst Nematode (SCN)," is researching new ways to reduce SCN reproduction and survival. The project utilizes some AI tools in the background of the research, especially around DNA. Using an AI-based algorithm, Hudson's team is able to more quickly analyze the genome sequence to define DNA markers.

"The underlying thing about all of this is machine learning," said Hudson. "Rather than programming a computer to do exactly what you want it to do, you teach it to learn. The way the machine learns is customized, for example to identify different kinds of pests or to make a breeding selection."

AI technology has the potential to reduce the time it takes to develop new crop varieties—something that usually takes several years.

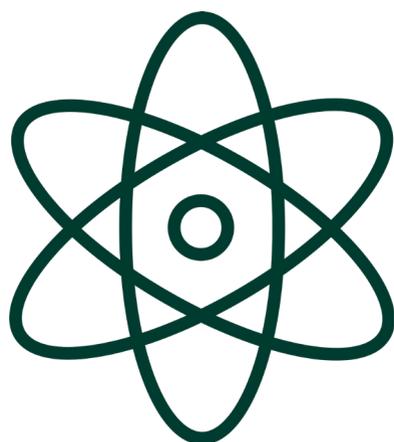
One area of advancement has been in phenotyping, which is the process of measuring and analyzing observable plant characteristics.

For example, images of plants can be taken, and AI can examine those images for stress, or traits related with yield. This can be done, for example, by a rover or drone going through the field to take photos or videos. These then get analyzed using AI, which can count details such as the number of pods in a soybean plot or spikes in a wheat plot.

"There is a lot of interesting work going on to try to get those measurements," said Jessica Rutkoski, Ph.D., Crop Sciences Associate Professor at the

University of Illinois. "These are measurements we don't normally collect because it wouldn't be possible to collect the number of pods or spikes manually on a large scale. With AI, we are now able to collect a lot of data that we wouldn't be able to collect before."

One interdisciplinary research team at the University of Illinois is going beyond phenotyping to collect data via rovers in soybean fields before any signs of distress might be visible. The team's rover,



created by 3-D printing, is about the size of a shoebox. It collects information via sensors and can move under and around the soybean canopy.

"These multimodal data systems give us what we call a 'data cube' that basically stacks different data points per time point coming from different sensors," said Elhan Ersoz Ph.D., Crop Sciences Clinical Assistant Professor at the University of Illinois. "This gives us high fidelity and repeatability capabilities and reduces our error rates."

The rovers, through AI, algorithms and data transmissions, have allowed the researchers to cut their workload significantly because

seed composition components, such as soybean oil and protein content, and stressors such as disease or insect pressure, can be determined in real time through different sensors.

"We can collect this data while the plant is growing instead of waiting for the plant to grow, dry, be harvested and then measuring the composition," said Ersoz.

One of the biggest challenges of a plant breeding program is the scientific difficulties of collecting information and the time it takes to develop new breeds.

"Breeding is a numbers game," explained Ersoz. "We are lacking the infrastructure to get the numbers we need in a public breeding program. With AI and all of this technology, we are finding ways to do that without having people physically in the fields."

DATA CHALLENGES

With AI comes an increase in the quantity of data collected and available.

"It's amazing because we have all of this data, but how are we going to use that?" said Rutkoski. "We know how we use yield data, but we don't entirely know how we're going to use these new data sources that we didn't have before."

In general, researchers are trying to figure out where AI might be used in their work. But one large challenge is that a lot of the AI models are not built with crop research methods in mind. This means researchers are trying to utilize something made for a completely different industry or purpose and apply it to breeding.

U.S. SOYBEAN GENETICS COLLABORATIVE

The U.S. Soybean Genetics Collaborative (USSGC) is a new checkoff-sponsored project that aims to share expertise, build strategic alignment and drive technology advancement across public soybean breeding and genetics programs. Partially funded by the Illinois Soybean Checkoff for fiscal year 2026, USSGC is led by Bryan Stobaugh, Director of Licensing and Commercialization at the Missouri Soybean Association and Missouri Soybean Merchandizing Council.

"Public soybean breeding and genetics programs have played a vital role in developing traits, germplasm and, most importantly, training and educating future scientists," said Stobaugh. "However, accessibility to public-bred soybean varieties, traits and other technologies has been hindered over the last 30 years. Varieties developed from public breeding programs currently occupy less than 10% of the U.S. soybean acreage."

To address these challenges, USSGC is engaging with individual breeding programs to gain a comprehensive understanding of their strengths, weaknesses, opportunities and threats. The Collaborative then will compile current public breeding assets and formulate a way to promote those assets and facilitate industry engagement, in addition to fostering a network for knowledge and resource sharing among stakeholders.

Ultimately, USSGC aims to create a Seed Guide for all publicly bred soybean lines to allow for U.S. soybean farmers to find their checkoff return on investment in one spot.

Meet District 18 Director Martin Duffy

At the December 2025 meeting of the Illinois Soybean Board, Martin Duffy of New Haven, Ill., was elected as the Illinois Soybean Association (ISA) District 18 Director, representing Alexander, Franklin, Gallatin, Hamilton, Hardin, Johnson, Massac, Pope, Pulaski, Saline, Union and Williamson counties.

A lifelong southern Illinois farmer and COUNTRY Financial Adviser, Duffy brings decades of experience and a strong commitment to protecting the future of Illinois soybean farmers. He recently sat down with ISA's *Illinois Field & Bean Magazine* to share more about his farming operation, career and what motivated him to join the ISA Board of Directors.

TELL US ABOUT YOUR FARM.

"I've been on the farm my entire life. I started farming with my dad and uncle, and over time I ended up farming about 750 acres. When the Conservation Reserve Program became available, we enrolled some acres and planted trees, which have since matured. Since then, we've also established a whitetail hunting lodge, which keeps us very busy.

Today, my son and I farm together while both still working full time. We currently farm a little over 200 acres. We started with

about 100 acres and have doubled that in the last three years, which may not sound like much to some, but it's a big deal for us. We raise corn, wheat and soybeans."

WHAT'S YOUR FAVORITE MEMORY ON THE FARM?

"When my boys were little and having them come ride the combine with me and seeing the excitement on their faces. That's always been my all-time favorite memory."

WHY DID YOU DECIDE TO JOIN THE ILLINOIS SOYBEAN BOARD OF DIRECTORS?

"My biggest concern is commodity prices and what we can do to strengthen them so farmers can remain viable and stay in business. That's my top priority and one the main reasons I wanted to get involved and serve on the board."

WHAT CHECKOFF-FUNDED PROJECT ARE YOU MOST EXCITED ABOUT?

"We plant a lot of soybeans, and I'm around many farmers in our county who grow both corn and soybeans. I've always been really interested in agriculture, especially everything that we can do to improve yields through science and research."

TELL US ABOUT YOUR ROLE AT COUNTRY FINANCIAL.

"I started at COUNTRY Financial on Oct. 1, 1995, and have been there for more than 30 years. I've already submitted my retirement date and will be turning in my keys for the final time in June 2027!"

WHO HAS INFLUENCED YOU MOST IN YOUR CAREER?

"My manager who hired me, Fred Keppner. He had a tremendous impact on my career and was truly one of the best."

WHEN YOU'RE NOT FARMING OR WORKING, HOW DO YOU LIKE TO SPEND YOUR TIME?

"I play a lot of golf, and in the fall, we spend a lot of time at the hunting lodge, taking care of our hunters and feeding them, keeping a fire built, and all those fun things that go along with it."

The Country Lodge is located in New Haven, Ill., and is a great destination for both new and experienced whitetail deer hunters. Visit their Facebook page to learn more: [facebook.com/thecountrylodge/](https://www.facebook.com/thecountrylodge/).

To learn more about the Illinois Soybean Board of Directors, visit ilsoy.org/board-of-directors/.





Facing New Resistance

What Illinois Farmers Need to Know

By Dr. Aaron Hager, Professor and Faculty Extension Specialist, University of Illinois



Herbicide resistance is not a future concern for Illinois farmers — it is a present reality. Over the past several months, the University of Illinois has confirmed two significant developments that underscore how rapidly the weed management landscape continues to change: the first confirmed case of glufosinate resistance in waterhemp and Group 15 herbicide resistance in giant foxtail. Although neither discovery came as a complete surprise, both serve as important reminders that our current approach to weed control must continue to evolve.

In both cases, collaboration drove the confirmations. Applicators and farmers first identified the glufosinate-resistant waterhemp population after noticing poor field control and requesting assistance. This type of exchange has played a critical role in documenting many resistance

cases in Illinois over the years. In contrast, industry partners collaborated to identify the Group 15-resistant giant foxtail population after raising concerns about reduced herbicide performance. After researchers screened these populations in the greenhouse, they confirmed resistance.

THE HIDDEN COST OF WEEDS

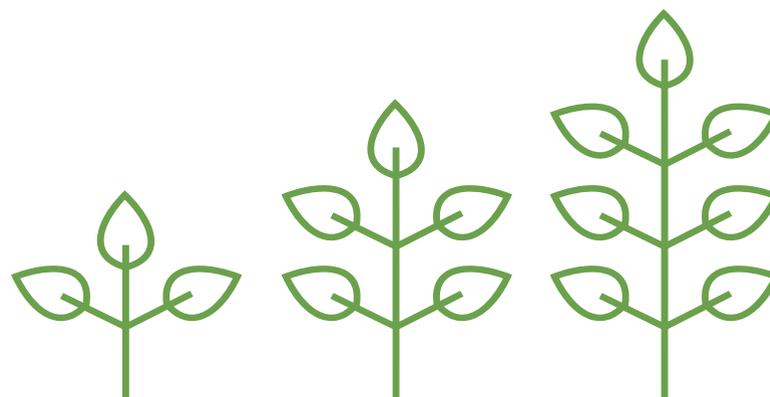
Weeds that grow alongside crops never increase yield, they only reduce it. Herbicides and other weed management tools are investments made to preserve a row crop's genetic yield potential. When a product that once worked no longer performs as expected, farmers face a double loss: the cost of the failed application and the yield loss associated with uncontrolled weeds. In many cases, that failure also requires an additional application or management pass, further increasing costs.

It is important to note that herbicides themselves do not increase yield. Plant breeders are responsible for improving yield potential; weed management exists to protect that potential. Weeds compete with crops for the same essential resources including water, nutrients and sunlight. When they remain in the field, it causes a diversion of resources away from the crop.

RECENT RESISTANCE DISCOVERIES

The confirmation of glufosinate resistance in waterhemp is

particularly significant because it means Illinois now has confirmed resistance to every postemergence herbicide that was once effective against this species in soybean systems. Over the past 30 years, waterhemp has gone from a relatively minor weed to one of the most challenging species in the state. That rise has been driven not only by resistance but also by waterhemp's biology. Prolonged emergence throughout the growing season, high seed production and efficient seed movement



make it exceptionally well-adapted to modern farming practices.

Today's farming operations also contribute to the rapid spread of resistant weeds. Larger acreage, fields spread across broad geographic areas and greater equipment movement all increase the likelihood of transporting seed from field to field. Combines, in particular, are highly efficient at moving weed seed long distances.

In addition to being aware of resistance issues, farmers in northern Illinois should also pay attention to Asian copperleaf, a nonnative species recently identified in the region. We know very little about this weed's biology, including competitiveness

It is important to note that herbicides themselves do not increase yield. Plant breeders are responsible for improving yield potential; weed management exists to protect that potential.

or herbicide sensitivity. Because of those unknowns, early identification and prevention of spread are critical. Simple management steps — such as harvesting affected fields last or tilling them after all other fields — can help reduce the risk of moving seed to new locations.

MANAGEMENT PRACTICES TO ENHANCE YOUR BOTTOM LINE

When farmers suspect herbicide resistance in their fields, confirming the issue can be challenging, particularly for soil-applied products where environmental conditions also influence performance. Although molecular tests exist for some

Funded by the Illinois Soybean Checkoff

resistance mechanisms, many cases — especially those involving metabolic resistance — still require greenhouse screening and careful field evaluation. This uncertainty underscores the importance of focusing on outcomes within our control.

We cannot solve a problem created by herbicide use simply by changing how we use herbicides. Nature will not allow it. For decades, the assumption was that a new product or technology would arrive to solve resistance issues. That approach has not found success. Even if a new, highly effective herbicide were to enter the market, intense selection pressure would quickly erode its usefulness if management practices remained unchanged.

One of the most essential principles in resistance management is limiting weed seed production. At present, the only outcome we can predict with certainty is that if no seed is produced at the end of the season, the frequency of resistance will not increase. Waterhemp's greatest weakness is its seed. Seed does not remain viable forever, and consistent efforts to prevent seed return over several consecutive seasons can dramatically reduce populations.

APPLYING RESEARCH TO ON-FARM DECISIONS

Today, building a weed management program with resistance in mind requires a mindset shift. Residual herbicides must be applied at effective rates based on soil characteristics, and multiple effective modes of action should be used together, not rotated in isolation.



Waterhemp seedlings. Photo Credit: Dr. Aaron Hager

Postemergence applications should be made in combination systems where possible to preserve remaining tools. Most importantly, non-chemical tactics such as equipment sanitation, strategic tillage and even manual removal of survivors must be part of the conversation.

The uncomfortable reality is that doing less will eventually cost

more. Reducing weed control expenses may seem appealing in the short term, but inadequate control ultimately reduces revenue through lost yield. The question is no longer whether resistance will continue to evolve, because it will. The real question is how willing we are to adapt our management strategies now to protect productivity for years to come.

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Visit FieldAdvisor.org to discover applicable agronomic advice today.

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Session Preview: Affordability Amid Budget Challenges



As Illinois lawmakers return to Springfield for the 2026 spring session, “affordability” is the guiding theme. House Speaker Emanuel “Chris” Welch has pledged to focus on household budgets and job growth, as economic concerns rank highest for nearly 40% of Illinois voters. Yet a projected multibillion-dollar budget deficit for fiscal year 2027 and uncertainties about federal funding create significant hurdles. In this challenging environment, the Illinois Soybean Growers’ (ISG) legislative priorities represent strategic investments in agricultural sustainability, economic growth and long-term rural viability.

ESTATE TAX REFORM: PRESERVING FAMILY FARMS

Illinois’ estate tax poses a unique threat to family farms seeking generational transfer. The state’s \$4 million exemption lags far behind the federal threshold of \$15 million, creating a financial strain that can force the sale of land or family assets.

Raising the estate tax exemption and aligning it more closely with federal standards would help preserve family-owned farms and ensure multigenerational operations remain intact. With 96% of Illinois farms being family-owned, estate tax reform is not just a private concern, it affects the broader agricultural economy. Rising farmland values often surpass farm income, creating tax liabilities that threaten the continuity of farming operations. Reforms that prevent such burdens would protect both individual families and the agricultural sector as a whole.

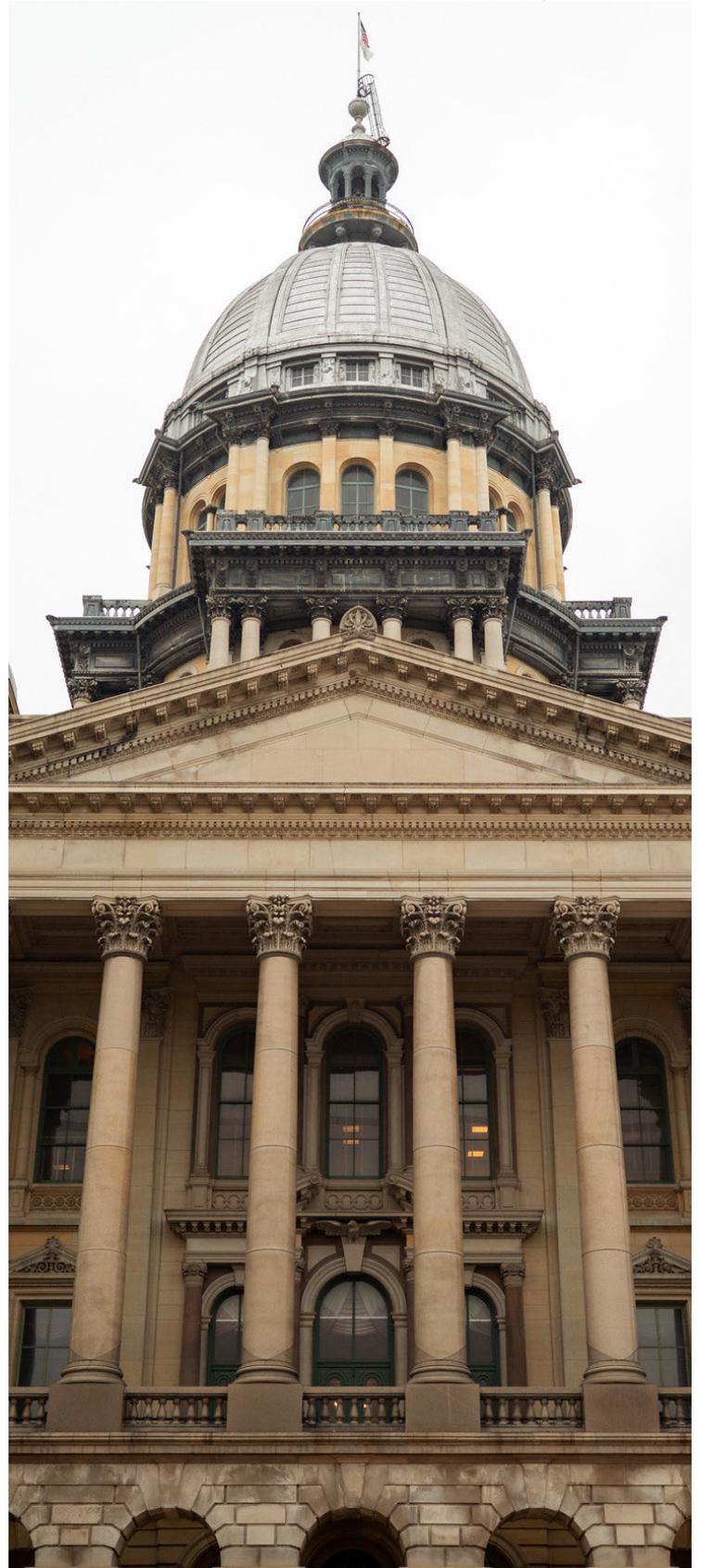
ANTICIPATED LEGISLATIVE CHALLENGES

Beyond budget negotiations and priority legislation, Illinois agriculture is facing increased scrutiny in Springfield, particularly related to pesticide use and wetland regulation. Several proposals under consideration would expand state oversight of land-management practices, potentially introducing new notice, reporting or permitting requirements that affect how and when farmers operate.

Although these initiatives are often framed as environmental protection or public safety measures, they risk creating regulatory uncertainty, increasing operating costs and reducing flexibility for working farms. ISG will remain actively engaged as a backstop for farmers, advocating for policies that are grounded in sound science, respect established farm practices and balance environmental goals with the realities of agricultural production. Ensuring that new regulations do not undermine productivity or long-term farm viability will remain a core focus as these discussions evolve.

CONSERVATION FUNDING: MEETING GROWING DEMAND

Conservation programs remain critical for Illinois agriculture, yet state funding has lagged behind demand. ISG prioritizes increased support for Fall



Covers for Spring Savings, Soil and Water Conservation Districts and Illinois Extension.

The Fall Covers for Spring Savings program incentivizes cover crops by offering up to a \$5-per-acre crop insurance premium discount. In 2025 through 2026, the program allocated funding for 190,000 acres. Requests for more than 241,650 acres exhausted funding in under one hour, demonstrating overwhelming farmer demand. Since inception, the program has supported cover-crop adoption on 700,000 acres statewide.

Soil and Water Conservation Districts face a different challenge with funding cuts. State appropriations for Illinois' 97 conservation districts dropped from roughly \$13 million to \$7.5 million in fiscal year 2026, nearly a 50% reduction. This leaves districts with only \$40,000 per year, enough for roughly one full-time staff member, though two are needed to meet program and technical assistance demands.

Illinois Extension, which provides research-based education and technical support in all 102 counties, has seen modest funding increases, yet demand continues to outpace available resources. Extension specialists play a crucial role in helping farmers implement conservation practices, interpret research and navigate regulatory requirements.

COLLABORATIVE CONSERVATION PARTNERSHIPS

The Illinois Soybean Association (ISA) emphasizes collaboration to expand conservation funding, recognizing that water quality, soil health and ecosystem services extend beyond traditional agricultural constituencies.

Illinois has secured \$106.1 million dollars in conservation funding over five years through partnerships with both public and private stakeholders. This includes \$73 million from the Climate Pollution Reduction Grant and more than \$20 million from USDA's Natural Resources Conservation Service. Programs such as the Climate Smart Agriculture Program, which provides \$67 million in combined state and federal cost-share funding for no-till and strip-till practices, exemplify these collaborations.

Nontraditional partnerships are increasingly important. Environmental organizations, public health advocates and urban communities are recognizing the links between agricultural practices and broader outcomes including drinking-water quality and air quality. For instance, the Trinity Health Benefits Study highlighted that increased biodiesel use could reduce diesel particulate matter-related cancer risks, garnering urban support for agricultural biofuels.

By working with diverse stakeholders, Illinois agriculture can secure durable conservation investments that deliver public benefits beyond commodity production, building political and community support for these initiatives.

BIODIESEL LEADERSHIP: MAINTAINING COMPETITIVE ADVANTAGE

Illinois is the No. 1 soybean-producing state in the nation and ranks

fourth nationally in biodiesel production, with an annual capacity of 192 million gallons. As of 2024, the state uses 175 million gallons of biodiesel annually. Additionally, tens of millions of gallons are used off-road in rail and in marine applications. With increasing blend incentives, the in-state capacity and usage will increase. According to a new study commissioned for ISA, the biodiesel industry supports nearly 33,300 jobs and generates more than \$2.3 billion in state economic activity.

Since 2003, qualifying biodiesel blends have been exempt from the 6.25% state sales tax. Landmark 2022 legislation extended this exemption and gradually increased required blend levels through 2032. As of April 1, 2026, the minimum qualifying blend will reach B20, with winter reductions to B11 from December through March. Once this legislation is fully implemented, Illinois' biodiesel market will approach 300 million gallons, surpassing California and Texas.

These policies help Illinois capture growing biodiesel demand, support in-state soybean processing and prevent soybean oil from being shipped out of state. Illinois produced nearly 700 million bushels of soybeans last year, with approximately one-third processed domestically for soybean oil. Policies supporting biodiesel consumption directly benefit farmers by boosting demand and improving market basis.

CONCLUSION

ISG's 2026 legislative priorities respond to immediate economic pressures while positioning Illinois agriculture for long-term sustainability. Estate tax reform would help preserve family farms, while enhanced conservation funding addresses both environmental goals and strong farmer demand. Strategic partnerships further expand conservation investments and demonstrate agriculture's commitment to stewardship and public benefit.

At the same time, Illinois agriculture must remain vigilant as new regulatory proposals emerge. Growing attention to pesticide use, wetland regulation and land-management practices underscores the need for active engagement to ensure policies are practical, science-based and workable for farmers. Proactive advocacy will be essential to prevent unintended consequences that could increase costs, limit flexibility or threaten farm viability.

Biodiesel policy leadership remains a cornerstone of Illinois' competitive advantage, supporting soybean demand, strengthening in-state processing and reducing emissions. Together, these priorities reflect a comprehensive approach to advancing an agricultural sector that is economically resilient, environmentally responsible and responsive to evolving policy challenges.

As the 2026 legislative session unfolds amid budget constraints and election-year dynamics, ISG will continue to engage lawmakers, build broad coalitions and clearly communicate agriculture's value to the state. Sustained advocacy and collaboration will be critical to protecting farmers' interests while shaping policies that support Illinois agriculture's long-term success.

2026 Field Advisor Forum Recap

By Abigail Peterson, CCA, Director of Agronomy, Illinois Soybean Association

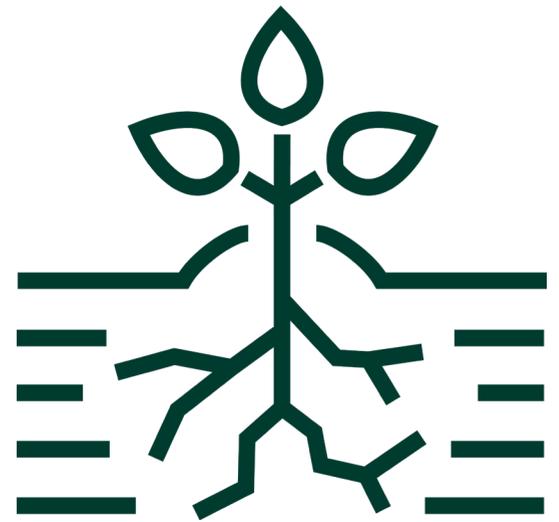
On Thursday, Jan. 15, the Illinois Soybean Association (ISA) Agronomy team hosted the 2026 Field Advisor Forum at the University of Illinois Atkins Golf Club in Urbana. The event attracted nearly 230 in-person and virtual attendees, including farmers, Certified Crop Advisers (CCAs), researchers, industry partners, and ISA board and staff members.

The annual Field Advisor Forum is a daylong winter event designed to deliver practical agronomic information, insights from ISA-funded research and tools to improve on-farm decision-making. This year, we welcomed several expert presenters who brought insights from academia, industry and the field to help farmers and advisers navigate the 2026 growing season.

The program opened with Dr. David Kohl of Virginia Tech, who joined virtually to share an overview of the current global economy and explored ways farmers can "thrive in economic chaos." ISA Outreach Agronomist Stephanie Porter, CCA, followed with an overview of the ISA On-Farm Trial Network (OFTN) sulfur trials, highlighting results that varied across plot locations and showed a greater sulfur response in sandy soils.

WCIA-TV (Channel 3) Meteorologist Jacob Dickey then discussed the transition from La Niña to El Niño and its potential impacts on Illinois weather, as well as seasonal and





drought outlooks. To close the morning sessions, Purdue University's Dr. Shaun Casteel explored stressors that can impact soybean emergence, including seed size and soil temperatures in the first 24 hours after planting.

At lunch, RFD Radio Network's DeLoss Jahnke, who served as emcee for the forum, recognized this year's Field Advisor Award winners: Karen Corrigan, who received the 2026 Master Adviser Award, and Kris Reynolds, the recipient of the 2026 Dave Rahe Excellence in Soils Consulting Award.

The afternoon featured University of Illinois faculty, beginning with Dr. Rachel Vann, who compared late-season soybean challenges to the fourth quarter of an Illini basketball game and shared how Science for Success desiccation research can help manage late-season issues such as green stem. Dr. Andrew Margenot then explored findings from his research project that looked at liming recommendations for Illinois croplands, noting that though liming is key to soil productivity, it is not directly associated with yield. The forum concluded with a panel discussion on integrated pest management (IPM) practices in Illinois featuring

Dr. Boris Camiletti, Dr. Aaron Hager and Dr. Nick Seiter, and moderated by Stephanie Porter.

Those who were unable to attend the 2026 Field Advisor Forum can watch the full

event recording at <https://fieldadvisor.org/field-advisor-forum/>.

For more information and other upcoming event details, visit FieldAdvisor.org.



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Managing Soybeans in Conservation Tillage Systems

By Federico Rolle, graduate student, University of Illinois, and Dr. Giovanni Preza Fontes, Assistant Professor & Field Crops Extension Agronomist, University of Illinois

There has been renewed attention on soil conservation following several dust-storm events in Illinois and across the Midwest in recent years, particularly after the tragic May 2023 event near Springfield that caused an 80-vehicle pileup, eight fatalities and dozens of injuries. These incidents emphasize that soil loss is not only an agronomic issue but also a public and environmental concern. Practices such as no-till and cover crops are proven to reduce wind and water erosion. Yet despite their well-documented benefits including improved water quality, soil health and nutrient cycling, these systems are often associated with potential yield penalties.

This project, funded by the Illinois Soybean Checkoff program,

began in direct response to these challenges. The objectives were to evaluate whether growers can maintain soybean productivity using practices that protect soil and reduce erosion risk, specifically reduced tillage and cover crops. A second objective was to determine whether starter fertilizer (nitrogen and sulfur) could help overcome early-season challenges such as cool soils, heavy residue and slower early growth in these systems.

In 2024 and 2025, research trials were conducted at six sites across central and northwestern Illinois and eastern and north central Iowa (Figure 1). Illinois locations included sites near Monticello in Piatt County (both years), Fulton in Whiteside County (2024) and Roseville in Warren

County (2025). In Iowa, trials were established near Tipton in Cedar County and Hampton in Franklin County. Soil organic matter at these locations ranged from 3.7% to 4.2%, with adequate pH, phosphorus and potassium.

A total of 12 treatments were evaluated, representing combinations of four tillage systems including conventional tillage (CT), strip tillage (ST), no-till (NT) and no-till with a cereal rye cover crop (NT+CR), along with three liquid starter fertilizer strategies. These included an unfertilized control (UTC), 15 lb. N/acre (N), and 15 lb N plus 10 lb. S/acre (N+S), applied as a 2x2 placement at planting. N was applied as UAN 32%; 32-0-0, and S as ATS; 12-0-0-26. When we averaged our

findings across Illinois sites, we generally observed an early-season (V4 growth stage) response to starter fertilizer. On average, applying 15 lb. N/acre at planting increased biomass by about 17% compared to the unfertilized control. However, this early advantage did not persist through the remainder of the season. By the R2 growth stage, tissue testing revealed that N and S concentrations were similar across all treatments and above established sufficiency ranges reported in the literature; 4.3% for N and 0.265% for S. These results indicate that soybeans eventually met their nutrient needs through biological nitrogen fixation and soil organic matter mineralization, even in the absence of starter fertilizer.



Funded by the
Illinois Soybean Checkoff

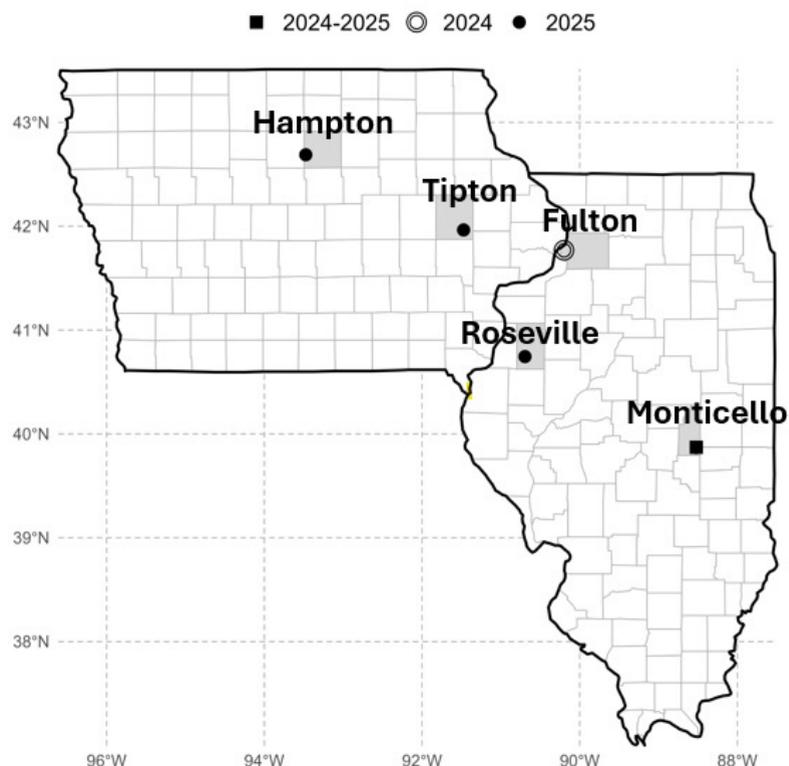
Across all locations and years, soybean grain yield ranged from about 60 bu./acre to 95 bu./acre, but starter fertilizer did not increase yield in any tillage or cover-crop system. This was consistent across individual sites as well as the combined dataset. Although soybeans grew faster early on with starter fertilizer, this did not translate to higher grain yield.

Differences among tillage systems were relatively small. When averaged across the six site-years, CT and ST both averaged 79 bu./acre, while NT averaged 77 bu./acre. No-till with cereal rye yielded slightly lower at 76 bu./acre (Figure 2). Overall, results highlight the short-term potential to grow high-yielding soybeans under conservation practices, even without starter fertilizers.

These findings are particularly relevant when accounting for

the costs of tillage operations, estimated at \$34/acre for conventional tillage, \$26/acre for strip-tillage, no additional cost for no-till and \$55/acre for cereal rye cover-crop management. In years characterized by low commodity prices and high input costs, management practices that maintain yield while reducing field operations can improve profitability and support soil conservation.

Additional research might be needed to better define the conditions under which starter N and S responses may occur in high-yielding soybean systems, particularly under long-term conservation practices. Factors such as soil compaction and greater plant residue could influence N and S availability and help explain occasional early-season responses.



The objectives were to evaluate whether growers can maintain soybean productivity using practices that protect soil and reduce erosion risk, specifically reduced tillage and cover crops.

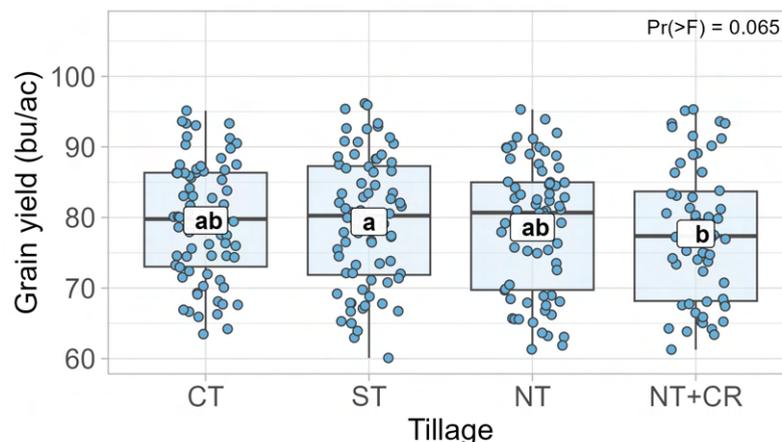
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Soybean grain yield across years and locations by tillage system. A significant tillage effect was observed ($P = 0.065$). Different letters indicate significant differences among treatments at the $\alpha = 0.10$ significance level based on Tukey's multiple comparison test.

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