

# IOWA STATE UNIVERSITY

## Iowa Soybean Research Center

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### ISRC Hosts Soy Protein Convening



Katy Rainey, associate professor of plant breeding and genetics at Purdue University and director of the Purdue Soybean Center leads a breakout session with stakeholders.

In October 2021, the ISRC hosted a meeting at Iowa State University called a Soy Protein Convening to discuss how to increase the use of soybean protein in human food. The event brought together dozens of stakeholders in food science, human nutrition, economics, farming, engineering and industry involved in the food production system to address the use of soybean in plant-based diets and to develop public-private partnerships and research projects that could move the industry forward. Similar sessions were held first at Purdue University in October and then in St. Louis, Missouri in November.

The information-seeking sessions were the idea of Katy Rainey, associate professor of plant breeding and genetics at Purdue University and director of the Purdue Soybean Center. The topic of soy protein for human consumption came out of earlier discussions of possible research projects at a Soybean Centers Coordination Group meeting in the fall of 2019. Rainey received funding from the United Soybean Board to support and help organize the collaborative Soy Protein Convening sessions to develop concepts and ideas for future interdisciplinary research proposals. "There is so much potential for soy protein as part of the value chain," said Rainey.

At the Iowa event, stakeholders heard from various experts on topics such as food insecurity and the accessibility and affordability of nutritious foods, consumer perceptions of soybean protein and soybean traits. Iowa State's Danny Singh, professor of agronomy, well known for his expertise in soybean breeding, emphasized the importance of looking at other traits such as oil, carbohydrates, amino acids and enzymes in addition to soy protein. After presentations, participants broke into discussion groups to brainstorm about concepts and ideas for interdisciplinary research.

Following the final, culminating Soy Protein Convening that was held in St. Louis, MO, ideas for three potential multi-state proposals emerged around the topics of economic feasibility, pilot scale processing of soy protein and food science innovation. The concept ideas were submitted for consideration by the United Soybean Board.

Event sponsors included the ISRC at Iowa State University, the Foundation for Food and Agricultural Research, the Missouri Soybean Center at the University of Missouri, the Purdue Soybean Center at Purdue University and the United Soybean Board.



Attendees of the Iowa Soy Convening



At left, ISU professor of agronomy Danny Singh, in red shirt, discusses an idea about soy protein with ISU assistant professor of agronomy Mark Licht, soybean farmers and Iowa Soybean Association directors April Hemmes and Dave Walton and ISA director of analytics Peter Kyveryga. At right, Jake Gratzon from Old Capitol Food Co. shares thoughts from his group. [Old Capitol Food Co.](#), based in Iowa City specializes in making organic tofu from Iowa-grown soybeans.

# ISRC Welcomes Two New Industry Partners



The ISRC welcomes [AGCO](#) and [Latham Hi-Tech Seeds](#) as its newest industry partners. The companies provide financial support to the center and have representatives serving on the ISRC's industry advisory council, which provides guidance on research funding priorities for the center. AGCO and Latham Seeds join representatives from AMVAC, BASF, Bayer, Cornelius Seed, Corteva Agriscience, FMC, GDM, Innvictis/Simplot, Merschman Seeds, Syngenta and UPL.

"The research the Iowa Soybean Research Center provides has a tremendous impact on soybean production in the state. It's very exciting for Latham Seeds to partner with an organization that shares our vision of providing solutions to the challenges soybean growers face," said John Latham, president of Latham Hi-Tech Seeds. "This partnership will give Latham growers a voice in soybean research needs as well as access to all the great information the ISRC provides."

"AGCO is eager to work with the Iowa Soybean Research Center at Iowa State University. Collaborating on their research to provide smart and innovative technologies that will help farmers achieve their future goals is important," said Alex Lundgren, product manager, CropCare at AGCO Corporation.

"We are delighted to have AGCO and Latham High-Tech Seeds join our center as industry partners," said Greg Tylka, ISRC director. "AGCO is the first equipment manufacturer and provider to partner with us, and their input on research needs and priorities will be unique and valuable. Latham Seeds was one of the first companies I worked with when I arrived at Iowa State as a researcher in the early 1990s, and I have interacted with them on many occasions through the years. Knowing the quality of their personnel first-hand makes me especially excited to have them join the lineup of industry partners for the center. We look forward to having them share their perspectives on research needs."

"We welcome AGCO and Latham Seeds' support of the center and in our shared vision of optimizing productivity and sustainability for Iowa's soybean farmers through innovative research," said Ed Anderson, senior director of research for the Iowa Soybean Association and chair of the Iowa Soybean Research Center's industry advisory council.

## CropsTV Returns for Season 2

Iowa State Extension and Outreach's CropsTV has returned for Season 2. Each episode is studio recorded specifically for CropsTV and covers a variety of ag-related topics. Episodes may be viewed at the subscriber's convenience. Each presentation includes links to additional resources and publications to enhance the educational experience. CCA credits for calendar year 2022 will be available for each episode.

Cost is \$100 for 30 episodes covering crop, pest, nutrient and soil and water management. Viewing opened January 3 and continues through mid March. For a complete schedule and to register, visit the [CropsTV website](#).



# Crop Advantage Series Hitting the Road

Iowa State University Extension and Outreach is hosting the Crop Advantage Series at 14 locations across Iowa in January. The meetings provide farmers with the most up-to-date, research-based crop production information ahead of the growing season. Some of the topics that will be covered include on-farm trial results, nutrient input recommendations, crop market outlooks and crop disease, pest and weed management.

Each Crop Advantage meeting is approved for Iowa private pesticide applicator recertification and continuing education credits for certified crop advisers. Crop Advantage 2022 is sponsored by the Iowa Soybean Association and the Iowa Corn Growers Association. For more information and to register, visit the [Crop Advantage Series website](#).



# ISA to Hold Innovation to Profit Conference

The Iowa Soybean Association will host its Innovation to Profit Conference on Thursday, February 17, from 9am - 3pm at the FFA Enrichment Center adjacent to the Des Moines Area Community College campus in Ankeny. ISA's Research Center for Farming Innovation team will discuss research results, explain how to integrate in-field and edge-of-field strategies on the farm and give ideas to improve profitability. ISA staff and partners will provide an inside look at everything from supply chain squeezes to the growing demand for renewable fuels. For more information, visit [ISA's website](#).



# Integrated Crop Management Conference Returns

Iowa State University's Integrated Crop Management Conference was held in December 2021 following a hiatus in 2020 due to the pandemic, and it was apparent that attendees, as well as presenters, were happy to be back. Considered one of Iowa's best crop production education events, the conference draws a large number of farmers, crop advisers, industry members, researchers and educators from across Iowa.



ISU agriculture economist Chad Hart gives an update on soybean exports.

A number of ISRC affiliates participated in the conference including cropping systems and modeling specialist Sotirios Archontoulis, agriculture economist Chad Hart, agricultural engineer Matt Helmers, weed specialist Prashant Jha, Iowa Soybean Association director of analytics Peter Kyveryga, cropping systems specialist Mark Licht, soil and fertility specialist Antonio Mallarino, crop plant pathologists Daren Mueller and Alison Robertson, nematologist Greg Tylka and agriculture economist Wendong Zhang. The two-day conference covered 32 topics across crop, pest, soil fertility and soil and water management areas.



At left, agricultural engineer Matt Helmers talks about nitrogen management practices. At right, nematologist Greg Tylka gives an SCN update.

## Researcher Spotlight: Antonio Mallarino

ISRC affiliate Antonio Mallarino is a professor of agronomy and nutrient management at Iowa State University where he has been a faculty member since 1993. Previously, he was an associate professor at the University of Uruguay until 1989 and a postdoctoral research associate and assistant scientist at Iowa State until 1992. His research and extension focus at Iowa State has been on agronomic and environmental issues of nutrient management with emphasis on phosphorus, potassium, lime and micronutrients.



Antonio Mallarino. Photo by Christopher Gannon, Iowa State University

Mallarino's research program studies soil and plant-tissue sampling and testing, fertilizer and manure placement methods to increase nutrient use efficiency and crop yield, use of variable-rate technology, and phosphorus management impacts on water quality. He integrates conventional field plot and laboratory research with innovative on-farm research and demonstrations utilizing precision agriculture technologies developed in cooperation with producers, agribusiness and extension agronomists. Mallarino was an integral part of the teams that developed the Iowa Phosphorus Index and Iowa Nutrient Reduction Strategy.

"I had never worked with soybean before I came to Iowa State. My work in soybean as well as the collaboration with the Iowa Soybean Association and the ISRC have been very enjoyable high points of my research and extension professional career." Mallarino said.

Mallarino represents Iowa State on regional and national committees for Soil Testing and Plant Analysis for the North Central Region (NCERA-13) and Minimizing P Losses from Agriculture (SERA-17/IEG). He

has served on the oversight committee for the North American Proficiency Testing Program and as an associate editor for the Agronomy Journal and the Soil Science Society of America Journal. He is a Fellow of the American Society of Agronomy (ASA) and the Soil Science Society of America (SSSA) and is a recipient of the W.L. Nelson Award for Diagnosis of Yield-Limiting Factors (ASA) and the SSSA Applied Research Award. He has published numerous peer-reviewed scientific articles and technical or extension articles and has mentored more than 50 graduate students.

Mallarino has a BS in Agronomy and Animal Science from the University of Uruguay, and an MS in Soil Fertility and Crop Production and Physiology and a PhD in Crop Production and Physiology from Iowa State University.

## Get to Know IAC Rep: Jon Massman, Corteva Agriscience



Jon Massman

Jon Massman is the soybean technology lead for North American plant breeding at Corteva Agriscience, where he leads a group of scientists working at the intersection of cutting-edge science and breeding to develop the next generation of technology that will ultimately drive higher yields and more stable products. His team works on a variety of technologies from field phenotyping to genetic analysis. Additionally, he manages a portfolio of innovation projects, which through a collaboration with Corteva's open innovation portal, seek to identify and partner with internal and external efforts to advance soybean breeding worldwide.

Massman has served as Corteva's representative on the ISRC's Industry Advisory Council for the past two years and says, "Working with the ISRC has been very exciting. Leveraging expertise and collaborations with public partners has become foundational to private plant breeding success. I have had the opportunity to interact with many great industry and public soybean scientists, and through that work have hopefully had a

positive impact on the soybean farmers of Iowa."

Massman was born in Grinnell, IA, but he mostly grew up in central Illinois in a small farming community. He returned to Iowa to attend Iowa State University for engineering, but his interests changed during his sophomore year when his roommate helped him get a job pruning apple trees at the ISU Horticulture Farm. With an interest in plant science, he changed his major to agronomy the following year, eventually graduating with a BS in agronomy. He went on to earn his MS and PhD in plant breeding at the University of Minnesota.

# Iowa State Researchers Funded by NCSRP

The [North Central Soybean Research Program](#) (NCSRP) approved \$3.75 million in research funding for fiscal year 2022 to support nine university-based projects. The following Iowa State researchers and ISRC affiliates are involved in six of those projects.



- **Thomas Baum and Greg Tylka**, plant pathology and microbiology, will serve as co-principal investigators (PIs) with others in a project led by Andrew Scaboo, University of Missouri, titled “An Integrated Approach to Enhance Durability of Soybean Cyst Nematode (SCN) Resistance for Long-term, Strategic SCN Management (Phase III)”
- **Erin Hodgson and Matthew O’Neal**, entomology, will serve as co-PIs on a project led by Kelley Tilmon, The Ohio State University, titled “Research and Extension on Emerging Soybean Pests in the North Central Region”
- **Prashant Jha**, agronomy, will serve as a co-PI on a project led by Kevin Bradley, University of Missouri, titled “Comparison of Non-Chemical Control Methods as Part of an Integrated Weed Management Strategy in Soybean: Comparison of Weed Electrocution to At-Harvest Weed Seed Destruction as Part of an Integrated Weed Management Strategy in Soybean”
- **Daren Mueller**, plant pathology and microbiology, will serve as a co-PI on a project led by Damon Smith, University of Wisconsin, titled “Multi-dimensional Approaches for Improved Productivity, Sustainability, and Management of Major Soybean Diseases in the North Central US”
- **Danny Singh**, agronomy, will serve as a co-PI with others on a project led by Leah McHale, The Ohio State University, titled “SOYGEN2: Increasing Soybean Genetic Gain for Yield and Seed Composition by Developing Tools, Know-how and Community Among Public Breeders in the North Central US”
- **Greg Tylka**, plant pathology and microbiology, will serve as a co-PI on a project led by Sam Markell, North Dakota State University, titled “The SCN Coalition: Building on Economic Impact”

More information about these projects can be found on the [National Soybean Checkoff Research Database](#), which also provides information about project researchers, objectives, progress reports and final results including how farmers will benefit from the work.

# USB Funds Eleven ISU Researchers

The [United Soybean Board](#) (USB) approved \$78 million in funding for 181 projects for fiscal year 2022, of which Iowa State University is involved in 14. Following is the list of projects led by or involving Iowa State researchers and ISRC affiliates.



- **Madan Bhattacharyya**, agronomy, will serve as lead PI on a project titled “Identification of High Yielding Soybean Lines with Sudden Death Syndrome (SDS) and Phytophthora Resistance and Molecular Markers Linked to Novel Genes Encoding SDS and Phytophthora Resistances”

- **Eric Cochran**, chemical and biological engineering, will serve as lead PI and **Chris Williams**, civil, construction and environmental engineering, will serve as a co-PI on a project titled “Accelerated Joint Development of Poly (acrylated epoxidized high HOSO) Asphalt Modifier and Partially Epoxidized HOSO”
- **Prashant Jha**, agronomy, will serve as a co-PI on a project led by Bill Johnson, Purdue University, titled “Take Action Multi State Herbicide Resistant Crops and Weeds Educational Program”
- **Prashant Jha**, agronomy, will serve as a co-PI on a project led by Bryan Young, Purdue University, titled “Integrating Best Management Practices for Herbicide-Resistant Weeds and Herbicide Stewardship in Soybean Production”
- **Leonor Leandro, Gary Munkvold, and Silvina Aria**, plant pathology and microbiology, will serve as a co-PIs on a project led by Jason Bond, Southern Illinois University, titled “Seedling Pathogens in the Soybean Production Cycle: Management and Communication”
- **Daren Mueller**, plant pathology and microbiology, will serve as lead PI on a project titled “Crop Protection Network: A Collaborative National Resource to Deliver Soybean Research Results to Farmers”
- **Daren Mueller**, plant pathology and microbiology, will serve as a co-PI on a project led by Tessie Wilkerson, Mississippi State University, titled “Screening and Breeding Soybeans for Resistance to Mature Soybean Seed Damage”
- **Daren Mueller**, plant pathology and microbiology, will serve as a co-PI on a project led by Ahmad Fakhoury, Southern Illinois University, titled “ Developing and Disseminating a Comprehensive and Sustainable Management Program for Foliar Diseases of Soybean”
- **Alison Robertson**, plant pathology and microbiology, will serve as a co-PI on a project led by Anne Dorrance, The Ohio State University, titled “Developing the Perfect Molecular Markers and New Germplasm for Rapid Incorporation of Resistance to Soil Borne Pathogens in Soybean”
- **Danny Singh**, agronomy, will serve as a co-PI on a project led by George Graef, University of Nebraska, titled “Increasing Genetic Diversity, Yield, and Protein of US Commercial Soybean Germplasm”
- **Danny Singh**, agronomy, will serve as a co-PI on a project led by Rouf Mian, USDA/ARS, titled “Discover and Deploy Novel Genes to Develop New Varieties and Germplasm with Elevated Meal Protein and Essential Amino Acids from Diverse Sources, Including Cultivated and Wild Soybeans”
- **Danny Singh**, agronomy, will serve as a co-PI on a project led by Ben Fallen, USDA/ARS, titled “Drought Resiliency for the Farm-Yield Limitations of Commercial Soybean Varieties Under Drought: Identifying and Overcoming Weaknesses Via “Team Drought’s” Public Breeding Pipeline”
- **Danny Singh**, agronomy, will serve as a co-PI on a project led by Zenglu Li, University of Georgia, titled “Discovering and Deploying Genetic Solutions Across Maturity Groups for Durable Resistance to Multiple Nematodes”

- **Greg Tylka**, plant pathology and microbiology, will serve as a co-PI on a project led by Carl Bradley, University of Kentucky, titled “SCN Coalition: Reinforcing and Maintaining Local Efforts and Sustainable Yields”

## Amy Kaleita Named ABE Chair



Amy Kaleita

In November 2021, Amy Kaleita was named chair of the Department of Agricultural and Biosystems Engineering (ABE) at Iowa State University. Kaleita had been serving as the department’s interim chair. Her permanent appointment officially began on December 1. The department is jointly administered by the College of Engineering and College of Agriculture and Life Sciences. This also means that Kaleita will continue to serve on the ISRC’s Management Team. [Full article](#)

## ISRC Affiliates recognized by Iowa State University



From left, Liang Dong, Gustavo MacIntosh, Michelle Soupir and Steve Whitham were honored for their contributions to Iowa State University.

The following faculty and ISRC affiliates were recently recognized for their accomplishments and contributions at Iowa State.

**Liang Dong**, professor of electrical and computer engineering (ECpE), was the inaugural recipient of the newly created [Vikram L. Dalal Professorship in Electrical and Computer Engineering](#). His core research areas are agricultural, biomedical and physical sensors, microelectromechanical systems and biochips. He is a faculty scholar with the ISU Plant Sciences Institute and associate director of the ISU Microelectronics Research Center. The endowed position provides an important source of funding for faculty in the ECpE department, and it is given to faculty with expertise in microelectronics and/or photonics.

**Gustavo MacIntosh**, professor of biochemistry, biophysics and molecular biology was awarded the [LAS Dean’s Professorship](#) for his innovative research in plant science. His research into the

interactions between soybean plants and aphids has enabled key soybean industry stakeholders to improve pest-management practices and selectively breed more pest-resistant plants. Additionally, he studies how cells recycle their own structures, such as ribosomes, which influence disease development. This research helps provide insight into plant cellular mechanisms and in understanding the causes of human diseases. Funding for the professorship comes from the Transforming Liberal Arts and Sciences endowment at Iowa State.

**Michelle Soupir**, professor of agricultural and biosystems engineering, received a university award for Mid-Career Achievement in Research. The award recognizes faculty members who demonstrate exemplary performance or scholarship in research and/or creative activity as documented by peers or experts in the field.

**Steve Whitham**, professor of plant pathology and microbiology, received the Regents Award for Faculty Excellence. The award is presented by the state Board of Regents to recognize faculty members who are outstanding university citizens and have rendered significant service to the university or the state of Iowa.

## Upcoming Events

- Wednesdays at noon – [Weekly Iowa Learning Farms Webinars](#)
- January, several dates & locations across Iowa – [Crop Advantage Series](#)
- February 8-9, Iowa State Fairgrounds, Des Moines, IA – [Agribusiness Showcase & Conference](#)
- February 17, 9am-3pm, Ankeny, IA – [ISA's Innovation to Profit Conference](#)
- March 10-12, New Orleans, LA – [Commodity Classic](#)



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