

IOWA STATE UNIVERSITY

Iowa Soybean Research Center

July 2024 Newsletter



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The ISRC Celebrates 10 Years!

The Iowa Soybean Research Center (ISRC) at Iowa State University celebrated its 10th anniversary on July 1 with a cake reception in Agronomy Hall on campus. Thank you to all who attended and helped us celebrate!

College of Agriculture and Life Sciences (CALs) Dean Dan Robison and ISRC Co-director Greg Tylka offered remarks. Also in attendance were Iowa Soybean Association's Chief Officer, Research and Conservation Christie Wiebbecke and ISA farmer board member Sharon Chism as well as many faculty, staff and students from the agronomy and plant pathology, entomology and microbiology departments.

At right, (from left to right) are ISA's Christie Wiebbecke, ISRC Co-director Greg Tylka and ISRC Research Administrator Jill Cornelis.



Above left are ISU faculty members Silvina Arias, Gustavo MacIntosh and David Kwaw-Mensah. Above right are ISRC Co-director Greg Tylka, ISA farmer director Sharon Chism and CALs Dean Dan Robison. *Photos by Rita Brueland, agronomy*

ISRC Marks 10 Years of Growth and Success

Following is a brief overview of some of the center's major accomplishments and activities as it celebrates its successes and important partnerships.

The ISRC was established at Iowa State University with approval of the Iowa Board of Regents on July 1, 2014, in partnership with the Iowa Soybean Association. Dr. Greg Tylka, Iowa State University professor of plant pathology, entomology and microbiology, was appointed the center's first Director. The center's first industry partners were Bayer, Cornelius Seed and Monsanto. The ISRC began funding soybean research projects in 2015.

In 2017 the center expanded its efforts to include education and outreach activities and it hosted its first annual farm and industry tour for Iowa State faculty, graduate students and staff. Over the years, tours organized and offered by the center have visited several family farming operations in different parts of Iowa, a virtual tour series of Corteva during the Covid pandemic and visits to numerous agriculture-associated industries such as Kemin Industries in Des Moines and the Syngenta Seed Institute in Stanton, MN, to name a few.

After five years of supporting soybean research (2015-2020), the ISRC had 10 industry partners and had awarded \$1 million in funding.



ISA & ISU CALS were instrumental in helping establish the ISRC in 2014. Shown above are ISA Chief Executive Officer Kirk Leads, CALS Dean Dan Robison, ISA's Senior Director of Research (retired) Ed Anderson and ISRC founding director Greg Tylka.



The ISRC held its first SoyFest in 2021.

In 2021, the ISRC organized and held the first-of-its-kind SoyFest event on the ISU campus. The purpose of SoyFest is to educate undergraduate students on the importance of soy and its many and varied uses in our lives. This fun, outdoor, fair-like event is held biennially during National Soybean Month (August) and in the first week of fall classes at ISU. SoyFest typically has more than 15 tents and displays with games, samples of various soy-foods, giveaways, informative exhibits and a cookout featuring pork burgers ("animal-processed soybeans") and veggie burgers containing soy protein.

Also in 2021, the center started an annual volunteer activity in partnership with Meals from the Heartland. Volunteers, mostly from ISU, helped package meals for individuals in need of nutritious food. The meals contained soy protein flour. Cargill generously sponsored purchase of the meal ingredients in 2021 and continues to do so, allowing us to make this an annual event. Meals from the Heartland is based in Des Moines and works to end food insecurity. Coincidentally, they also are celebrating their 10th anniversary in 2024. Many of the meals packaged during the center's events were distributed throughout Iowa, including to the ISU campus food pantry S.H.O.P. Also, some meals packaged at the ISRC-organized event were shipped internationally to places where natural and humanitarian disasters occurred, such as to Haiti and the Ukraine.

By 2022, the center had awarded more than \$2 million in research funding, had successfully recruited 20 industry partners and had over 40 faculty research affiliates.



Above, ISRC Co-director Danny Singh gives an in-field research update to ISA board members.

During its first decade, the center supported a total of 22 research projects related to soybean production, providing nearly \$3 million in funding. In January of 2024 Dr. Asheesh “Danny” Singh, Iowa State professor of agronomy and soybean breeding expert, joined the ISRC as Co-director.

In May 2024 the ISRC held its first omelet breakfast for ISU students in recognition of National Egg Month. Soybean protein is a component of chicken feed, thus the connection of eggs to the center. ISRC hosted the free event in collaboration with the Iowa Egg Council, the Iowa Food and Family Project, North Central Poultry Association and the Iowa Soybean Association. Omelets were served at ISU’s Memorial Union the week before finals. *(Read more about the event on page 8)*

We would like to acknowledge and offer our sincere appreciation for the incredible support generously provided to the center by the Iowa State University College of Agriculture and Life Sciences, the Iowa Soybean Association, our many industry partners and our numerous faculty research affiliates. The center would not have achieved its high level of success and national recognition without such support. Also, very special thanks are extended to the Keith and Virginia Smith family for their continued support of the center’s communications efforts.

AIIRA and ISRC Host Research Day at ISU



Above, agronomy graduate student Carolina Freitas shows ISA researchers and board members how soil moisture levels are measured in a research project funded by ISRC on continuous soybean production.

stated, “The goal of the experiment is to contrast cropping systems in regard to productivity, environmental performance and profitability. Several measurements are being taken: SCN counts, drone flights, biomass collections, hydrology measurements, soil sampling.” Freitas showed how sensors are used to measure soil moisture, water table depth and soil temperature. She explained that these data support the Agricultural Production Systems sIMulator (APSIM) model and are used to evaluate performance of soybean-based cropping systems and how they can be best managed in Iowa.

While in the field, Freitas and the farmers discussed patterns of crop water use, the importance of the water table for crop resiliency, the use of cover crops to aid in crop diversity and sustainability of soybean-based systems, soybean varieties and pest pressure. This project began receiving funding from the ISRC in 2022 and currently is in its second growing season of experimentation.

The ISRC and the ISU AI Institute for Resilient Agriculture (AIIRA) hosted a research day on June 18 for 25 Iowa Soybean Association farmer board members and research staff during which they observed and learned about soybean-related research funded by the soybean checkoff, industry and Iowa State. The group visited ISU’s Agricultural Engineering and Agronomy (AEA) Farm and the Field Extension Education Laboratory (FEEL) near Boone.

The day began by examining Dr. Sotirios Archontoulis’ continuous soybean project experiment in a field at the AEA Farm. Graduate student Carolina Freitas, a researcher on the project, explained the experimental methods being used there. She



Above, ISA Board Member Rick Juchems experiences virtual augmentation with help from mechanical engineering graduate student Shambhavi Joshi.

In the afternoon, the group moved to the nearby ISU FEEL facility, where researchers in the AIIRA described projects, provided technology demonstrations, and participated in a research poster session. Individuals who were instrumental in organizing the activities at FEEL included Arti Singh and Danny Singh, agronomy, Soumik Sarkar and Baskar Ganapathysubramanian, mechanical engineering, and their graduate students and staff. The AIIRA team described and explained the many possibilities for and good uses of artificial intelligence (AI), especially in the form of new technologies.

ISU Ag Specialist Brian Scott provided an overview of AIIRA and the soybean-breeding efforts in the research program of Danny Singh. Arti Singh demonstrated her program's weed and insect identification app that uses AI and a database of millions of images. The ISRC funded some early work on the app. Sarkar provided an overview of cyber-agricultural

systems, which use AI to make systems more efficient and sustainable through technologies such as sensors, machine learning and robotics. Graduate students led discussions on use of drones for "see and spray" herbicide applications and an abiotic stress tolerance study called N-FAST. And Ganapathysubramanian explained 3D phenotyping during the final presentation of the day.

A poster and demonstration area at FEEL featured projects using AI including sensors, 3D phenotyping, virtual augmentation and drones and gave attendees an opportunity to test out some of the latest technologies. The farmers in attendance also got to see small-scale farming equipment that is used for in-field soybean research.

The day concluded with the Iowa Soybean Association farmer board members traveling back to campus where they were given a guided tour of the new Veterinary Medicine Diagnostic Laboratory by Dean of Veterinary Medicine Dan Grooms and Lead Public Health Veterinarian Katie Woodard. College of Agriculture and Life Sciences Dean Dan Robison joined the group a gave an update on the college and participated in a discussion on the future of agricultural education.



Top left, the group toured the new Vet Med Diagnostic Laboratory. Top right, ISA Board member Randy Miller, Chief Officer of Research and Conservation Christie Wiebbecke and Director of Research Joe McClure talk among the small-plot research farming equipment on display. Left, all of the field day attendees and presenters at the ISU FEEL facility.

Valent Joins the ISRC

The Iowa Soybean Research Center is excited to welcome Valent as its newest industry partner. A representative from Valent will serve on the center's industry advisory council and the company will provide financial support to the center. The funds, along with funds from other center industry partners, will be leveraged with soybean checkoff funds from the Iowa Soybean Association to support soybean research at Iowa State.



"Valent is honored to join the group of industry partners associated with the Iowa Soybean Research Center and looks forward to the collaboration," said Kenneth Seebold, senior director of field research and development for Valent. "We are committed to developing technologies that equip growers to protect their crops, enhance yield and quality and drive sustainability

"I am pleased to welcome Valent as the newest partner of the Iowa Soybean Research Center," said ISRC Co-director Greg Tylka. "I have worked with Valent scientists evaluating products for control of the soybean cyst nematode for numerous years and have admired their approach to developing pest management solutions for soybean farmers."

"We look forward to adding Valent's perspective to the ISRC Industry Advisory Council as we continually strive to identify researchable questions and gain insights to improve soybean farmers' productivity, profitability and sustainability," said Christie Wiebbecke, chief officer of research and conservation for the Iowa Soybean Association and chair of the Iowa Soybean Research Center's Industry Advisory Council.

ISRC Hosts Omelet Breakfast in Honor of National Egg Month



Above left, students stand in line for an omelet. Above right, Kennedy Henry from the Iowa Food and Family Project asks students soybean-related questions as they play a trivia game and win prizes.

The ISRC, Iowa Egg Council, North Central Poultry Association, Iowa Food and Family Project and the Iowa Soybean Association hosted an omelet breakfast for Iowa State students on May 2 in recognition of National Egg Month. The free event was held at the Great Hall of the Memorial Union and aimed to educate students about soy and poultry while providing study-weary students with some food and fun. Of course, the soybean connection to eggs is the fact that soymeal is used in poultry feed. More than 350 students enjoyed a tasty omelet, answered some trivia questions and collected free soy-related giveaway items.

Researcher Spotlight: Gary Munkvold

ISRC affiliate Gary Munkvold is a Professor of Plant Pathology, Entomology, and Microbiology at Iowa State University where he conducts research in seed-borne diseases of corn, soybean and vegetable crops. He also serves as Co-director of the USDA National Seed Health System and chairs ISU's Graduate Program in Seed Technology and Business, teaching two courses related to seed pathology. In 2020, he received the Regents Award for Faculty Excellence for his contributions to the program.

Munkvold has conducted research on corn disease extensively, especially foliar disease management and the epidemiology and control of mycotoxin-producing fungi. On soybeans, most of his work has been related to understanding Fusarium root rot and minimizing its impacts on productivity. In his seed pathology role, he also works on seed-borne pathogens in vegetable crops, seed transmission, seed treatments and detection methods.

In fall of 2022, the ISRC funded a three-year project led by Munkvold titled "Seed Treatment Effects on the Seed and Soil Microbiome." An update on this project can be found on the ISRC's website. He and Larry Halverson, also a professor of Plant Pathology, Entomology and Microbiology at Iowa State, are collaborating on the project and hope their findings will provide insight into the mechanisms by which seed treatments affect crop performance.

"ISRC funding has provided us with the opportunity to pursue research that is both valuable to soybean growers in the short term and has the potential to lead to downstream developments of interest to the scientific community," said Munkvold.

Munkvold holds a BS in forestry and MS in plant pathology from the University of Illinois at Urbana-Champaign. In 1992, he earned his PhD in Plant Pathology from the University of California, Davis, and joined the faculty of Iowa State. In 2002, Munkvold accepted a position as Research Coordinator for Pathology, Entomology, & Seed Science at Pioneer Hi-Bred, Int., in Johnston, IA. In 2006, he returned to ISU where he currently leads seed pathology research, education, and outreach efforts at Iowa State's world-renowned Seed Science Center.

While an undergrad at the University of Illinois, Munkvold became interested in plant diseases when he took an introductory plant pathology class. "I was fascinated by the multi-layered interactions between plants, pathogens, and the environment. The course was taught by Dr. Don White and much later, we teamed up to co-edit the 4th edition of the Compendium of Corn Diseases. I decided to pursue an academic career during my PhD when I became involved in extension work and field trials with grape growers in California. After 10 years with ISU Extension, I enjoyed working for several years in the seed industry. When the Seed Pathology faculty position became available at ISU, it seemed a perfect fit for me, combining my dedication to safe, healthy seeds with the rewards of mentoring students and doing independent research.



ISRC Holds Annual Staff Retreat



The ISRC held its annual staff retreat in June at Iowa State's Lynn Fuhrer Lodge where they discussed research ideas submitted by faculty affiliates and planned for the center's upcoming annual Industry Advisory Council meeting on September 6. Also discussed at the meeting was the "research day" being held on September 5. The research day will provide representatives of the center's industry partners and three farmer members of the advisory council with insight into different areas of research being conducted at ISU, updates on ISRC-funded research projects and a graduate student poster session.

In photo, clockwise from bottom are Greg Tylka, Jill Cornelis, Steve May, Christie Wiebbecke, and Danny Singh.

GDM Sponsors Travel Grants for ISU Graduate Students



Ann Murithi



Jamiu Ahmad

This spring, ISRC industry partner GDM initiated a travel grant program for ISU graduate students presenting research at scientific conferences in 2024. The grants will cover student travel expenses for attending the research conferences in recognition of the students' outstanding research contributions. This program will allow deserving graduate students to showcase their work on a national platform. The ISRC advertised the travel grant program among many departments at ISU, collected the applications submitted by graduate students, organized the evaluation of the applications and helped administer the funds.

GDM is awarding four \$1,000 travel grants to students who will attend and present their research at the National Association of Plant Breeders Meeting in St. Louis (July 2024) or at the American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America joint meeting in San Antonio (November 2024).

The first two award recipients were Ann Murithi, genetics and genomics PhD student of Professor Thomas Lubberstedt, and Jamiu Ahmad, biochemistry PhD student of Professor Reuben Peters. They presented their research in July 2024 at the National Association of Plant Breeders Meeting. Thank you GDM for supporting ISU graduate students!

ISRC Affiliate Faculty to Receive University Awards

Congratulations to the following ISRC faculty affiliates who will receive University Awards at a community celebration on Wednesday, September 25 at 3:30 p.m. in the Durham Great Hall, Memorial Union.

Kan Wang, agronomy – receiving the Distinguished Professor (Iowa State's highest academic honor.)

Susana Goggi, Marshall McDaniel and Ken Moore, agronomy, and **Amy Kaleita**, agricultural and biosystems engineering – all are part of the RegenPGC Team (Regenerating America's Working Landscapes)

to Enhance Natural Resources and Public Goods through Perennial Groundcover) - receiving the ISU Interdisciplinary Team Research Award

Eric Cochran, chemical and biological engineering, and **Christopher Williams**, civil, construction and environmental engineering – receiving the Award for Achievement in Economic Development in Iowa

Upcoming Events

August 1, ISRC Meals from the Heartland event at ISU Hansen Agriculture Student Learning Center

August 27-29, [2024 Farm Progress Show](#), Boone, IA

September 5, ISRC research day for industry partners/advisory council farmer members at Reiman Gardens

September 6, ISRC Industry Advisory Council meeting at the ISU Alumni Center

Each Wednesday at Noon - [Iowa Learning Farms Webinars](#)

Keep up with what's new at the ISRC on [LinkedIn](#) and [X](#) (formerly Twitter).

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