ISRC Holds Meeting of Research Affiliates

The ISRC held a meeting of its research affiliates on April 8. The main activity was to identify gaps in soybean research. Nearly 30 ISU scientists participated in the meeting. ISRC Co-director Greg Tylka started the meeting by introducing the staff of the ISRC and the newest member of the center, Co-director Danny Singh. Tylka also gave an overview of the center’s funding and discussed the benefits of researchers collaborating on similar research ideas. The ISRC celebrates its 10th anniversary this year and has funded more than $2.5 million in soybean research so far.

The meeting then proceeded with attendees dividing into smaller groups and working to identify unaddressed areas of research and the associated challenges of conducting such work. Topics discussed included technology, biologicals, more efficient use of resources, educating the next generation of researchers, implementing engineering resources for better seed storage, phenotyping below ground as well as above, and a variety of other topics related to a changing climate. Also, good discussion occurred about the loss of certain herbicides, insecticides and fungicides due to regulations and how soybean researchers can work to find alternatives. Identified challenges included the need to garner funding for longer-term projects and obtaining funding support via industry and government sources. Researchers also voiced the need to gather more input from farmers and industry, especially as it pertains to improving and adopting sustainability practices, in addition to the above-mentioned list of topics.

The researchers then were asked for ideas on how the ISRC can assist them. Ideas included continued facilitation of collaborations to connect and strengthen the scientific community, finding connections to industry, assessing the needs of Iowa’s soybean farmers and finding ways to seek out more grant funding.
The ISRC enjoyed the brainstorming session and we are grateful our affiliates also found value in meeting. The productive exchange of thoughts and information that occurred is invaluable to the center's research efforts going forward, and we hope to host similar functions in the future.

Happy National Soy Foods Month!

April is Soy Foods Month and the ISRC is celebrating by trying some of the recipes from the [Soyfoods Council website](https://www.soyfoods.org).

Linda Funk, executive director of the Soyfoods Council says, “Soy is a great source of plant-based protein and contains essential nutrients like iron, calcium, and omega-3 fatty acids. Cholesterol-free and low in saturated fat, incorporating soy foods into your diet can have numerous health benefits, from improving heart health to reducing the risk of certain cancers. A good source of calcium and vitamin K, soy is also good for bone health.”

As an ingredient, soy can be incorporated into a diet in many different forms: tofu, soymilk, soy flour, tempeh, edamame, soy nuts, and miso.

"Soy foods are so versatile and so easy to incorporate into everyday foods. Try adding Textured Soy Protein to oatmeal or some silken tofu to puddings or salad dressings,” says Funk.

So, in honor of Soy Foods Month, try adding soy to your diet. Follow some of these [easy tips](https://www.soyfoods.org/recipes) from the Soyfoods Council.
The ISRC hosted a visit of the Iowa Soybean Association’s (ISA) communications team on February 12. The team held their staff retreat at ISU, spending the better part of the day at the Advanced Teaching and Research Building, which houses several plant pathology, entomology and microbiology researchers affiliated with the ISRC and who have received project funding from the ISRC and ISA. The group participated in research lab tours with Thomas Baum, Matt O’Neal and Steve Whitham. Baum gave an overview of his soybean cyst nematode (SCN) research and had live specimens of SCN under microscopes for participants to view, O’Neal talked about beneficial insects as well as insect pests, offering up information from his 20 years of studying soybean aphid, and Whitham discussed the use of CRISPR in his research and a study he’s involved in regarding the effects of climate change.

The group also met with Chelsea Harbach and Zach Schumm from ISU’s Plant and Insect Diagnostic Clinic. The clinic diagnoses the cause of issues in samples sent in by the public and also identifies insects for clients. Testing ranges from processing farmer soil samples for SCN to helping a homeowner determine if an insect is a bed bug or a bat bug (the two look very similar but bat bugs are harmless). The clinic also helps identify a variety of insects and leaf diseases and receives a broad range of samples. Harbach and Schumm set up an activity in which the group identified several soybean diseases and finished with a tour of the clinic’s labs.
ISRC Marking 10th Anniversary

The ISRC will celebrate its 10-year anniversary on July 1. To mark the occasion, the center is planning a number of events throughout the year.

- Throughout 2024, the center will sponsor department seminars, providing funds to bring in experts from outside Iowa State to speak on soybean-related topics.
- On May 2, the ISRC, the Iowa Food and Family Project, the Iowa Egg Council and the North Central Poultry Association will host an omelet breakfast for ISU students in recognition of National Egg Month at the Memorial Union. The event will help educate students on the connection of soy to the egg industry (aka poultry feed contains soybean meal), as well as providing a hearty breakfast the week before finals.
- On June 18, the ISRC and the Artificial Intelligence Institute for Resilient Agriculture will host the Iowa Soybean Association Board for a research day at ISU.
- On July 1, at 2pm, the ISRC will hold a brief reception in the Agronomy Hall Commons area to celebrate the 10th anniversary of when the center was officially established by the Iowa Board of Regents.
- On August 1, the ISRC will host their annual Meals from the Heartland meal packaging event again during Soybean Month in Iowa thanks to Cargill’s financial sponsorship and efforts of nearly 50 ISU volunteers. The event will be held at the Hansen Agriculture Student Learning Center.
- In August, the center will host an industry/farm tour for ISU graduate students, faculty and staff.
- On September 5, the ISRC will host a research day for its industry partners, highlighting research funded by the center followed by the center’s annual Industry Advisory Council meeting September 6.

ISA & NCSRP Funding Proposal Submission Deadlines

The Iowa Soybean Association (ISA) and the North Central Soybean Research Program (NCSRP) recently released requests for proposals. Below are links to each organization’s website and the required application forms.

The due date for submitting proposals to the ISA is 5pm central time on May 6, 2024.

ISA: [https://www.iasoybeans.com/research/request-for-proposal](https://www.iasoybeans.com/research/request-for-proposal)

The due date for NCSRP proposal submissions is 5pm central time on May 24, 2024.

NCSRP: [https://ncsrp.com](https://ncsrp.com)
In recognition of the ISRC’s yearlong, 10th anniversary celebration, the center is sponsoring seminar speakers to give presentations at Iowa State University on a variety of soybean-related topics. On April 2, the ISRC sponsored Justin McMechan, University of Nebraska-Lincoln, as part of ISU’s Department of Plant Pathology, Entomology and Microbiology spring seminar series.

McMechan provided an overview of soybean gall midge and described how scientists associated with the Soybean Gall Midge Alert Network continue to study the pest and investigate different management strategies. Discovered as a new species in 2018, soybean gall midge was found in soybean fields in Nebraska and Iowa along the Missouri River. Since then, it has continued to spread and has been found in 164 counties across seven states. The number of infested counties is likely to grow again this year. Feeding by the larvae has the potential to result in a near complete loss of yield for the first 100 feet along the field edge, with an average yield loss of 18-31% on an entire field.

Scientists are scrambling to come up with answers, but McMechan says it may likely take another 5-6 years before they have a better understanding of how to manage the pest effectively. Researchers have had inconsistent results with foliar insecticides and are looking into biologicals, genetics and alternative management practices such as hilling (the movement of the soil to cover the base of soybean plants) and planting date. While hilling has proven to have a significant impact, it is not the most realistic option for many farmers as it is time consuming and requires special equipment. Later planting has also shown effectiveness, but may not be readily adopted because later planting also affects yields.

McMechan’s soybean gall midge research has been funded by the North Central Soybean Research Program, USDA-NIFA, United Soybean Board, Nebraska Soybean Board, North Central IPM Center, AMVAC, Bayer CropScience, Corteva, FMC, Syngenta and Valent.

The ISRC is currently working with the Department of Agronomy Seminar Committee to sponsor a soybean panel discussion on September 19. Tentative plans are to invite a farmer, an industry agronomist and other Iowa professionals associated with soy production. Look for more details in the July newsletter.
ISRC affiliate Gwyn Beattie is the Robert Earle Buchanan Distinguished Professor of Bacteriology for Research and Nomenclature in the Department of Plant Pathology, Entomology and Microbiology at Iowa State. Beattie is interested in understanding the many benefits microbes provide to plants, including enhancing their resilience to stress. Toward this end, her research team is exploring how microbiomes on soybean roots are influenced by stress. Beattie and her group discovered there are shifts in the composition of the microbiomes on roots exposed to drought, salinity, and metal stresses, and has identified the role of systemic plant signals in causing these shifts, providing insights into how plants shape their resident microflora. This knowledge is important to designing approaches to foster beneficial root microbiomes on plants.

Beattie’s team also looks at how microbes colonize leaves, and particularly what makes the foliar pathogen *Pseudomonas syringae* a super successful colonist. Her team discovered that the unusual adaptability of this pathogen to the fluctuating environmental conditions on leaves is due to the ability to anticipate, and prepare for, water evaporation on leaves following exposure to light, such as the morning sun’s rays. This research was recently highlighted by Iowa State’s College of Agriculture and Life Sciences in the article: “Researchers Discover Bacteria Use Light Cues to Anticipate, Prepare for Coming Stress.”

A third thrust of Beattie’s research team is on the mechanisms and control of insect-transmitted vascular pathogens, particularly in melons, squash and other cucurbit plants. Current interests are focused on biological approaches to controlling wilts caused by these pathogens, and understanding if increased disease outbreaks reflect changes in the insect hosts for these pathogens. Such changes have been predicted due to climate-driven shifts in the geographic range of potential insect hosts.

From 2016-2020, the ISRC funded Beattie and Danny Singh (current ISRC co-director) for a project titled “Root and Microbiome Traits to Tailor the Next-Gen Soybean Cultivars.” A number of tools were created and traits identified for future research, including the development of an in-house, mobile, low-cost, high-resolution root phenotyping system and a collection of 450 bacterial isolates from soybean roots that are being used to probe how plants shape their root microbiomes. “Working with the ISRC was a highly rewarding experience for me. I liked how the center brought many voices to the table – growers, industry and researchers – and found a strong appreciation for research across the spectrum from fundamental to applied. The center is very forward-thinking. And of course I loved sharing stories of the power of microbes!” said Beattie.

Beattie’s work with the ISRC led to her receiving federal funding through a USDA-National Institute of Food and Agriculture: Agricultural Microbiomes in Plant Systems Program grant for a project titled, “Mechanistic Drivers Shaping Root Microbiomes and Microbiome Drivers of Fitness Benefits in Drought-stressed Plants.” Beattie served as a principal investigator along with ISU Professors Dan Nettleton (statistics) and Basil Nikolau (biochemistry, biophysics and molecular biology).

Beattie is a Fellow of the American Phytopathological Society, Co-Editor-in-Chief of the *Annual Review of Phytopathology*, a member of the Board of Directors of the International Alliance for Phytobiomes Research and prior Chair of the American Phytopathological Society Public Policy Board. She teaches Bacterial-Plant Interactions, Microbial Ecology, and the Biology of Microorganisms courses as part of Iowa State’s microbiology and plant pathology programs, and works with a team of scientists, post-docs, graduate students and undergraduates in her research laboratory.
Beattie earned a BA in Chemistry from Carleton College and a PhD in Cellular and Molecular Biology from the University of Wisconsin-Madison. Following post-doctoral research at the University of California-Berkeley in microbial ecology, she joined the faculty at Iowa State University.

**Get to Know IAC Rep: Chris Souder, Bayer Crop Science**

Chris Souder is the global R&D crop efficiency portfolio manager for **Bayer Crop Science**. He serves as Bayer’s representative on the ISRC’s Industry Advisory Council. As the ISRC celebrates its 10-year anniversary this year, it is important to note that Bayer is one of the center’s original industry partners.

Souder has served as Bayer’s representative on the ISRC’s Industry Advisory Council for the past two years and speaks highly of his relationship with the center. “The ISRC provides one of the most unique forums for addressing challenges in the industry. Good things happen when we are working together across industry, academics and growers. Often we just need an opportunity to be in the same room and a common goal to start the discussion and get the ball rolling. The ISRC provides that opportunity for interaction and a path to action,” he said.

In his role at Bayer, Souder is responsible for setting the vision and R&D plan for sustainable corn and soy yield improvements by understanding the intersection of technology innovation, grower needs and business strategy. “At Bayer we manage our R&D pipeline based on the category of solution that we are developing for growers. Not surprisingly, these categories are weed management, insect control, disease management and crop efficiency. This encompasses our investments to improve performance, agronomics and quality traits through breeding, biotechnology and biologics,” said Souder.

He also works with Bayer’s commercial organizations to identify opportunities to secure or expand business opportunities through developing new technologies. This shows up as defining research targets and advancement criteria for internal product development, as well as scouting targets for partnership across the industry. Prioritization and alignment of resources and capabilities both within R&D and across the company is also a significant portion of his role.

Prior to his current role, Souder led Bayer’s Midwest agronomy team that supports the company’s seed brands DEKALB/Asgrow and Channel. He also held roles in breeding leadership after starting his career as a commercial corn breeder for Monsanto in Spencer, Iowa.

Souder’s interest in agriculture came from growing up on his family’s farm near Lytton, IA, where his parents continue to farm. “I have always had a strong attraction toward scientific fields and believe we can deliver technology, tools, and opportunities that help farm communities thrive and people to prosper,” he said.

Souder is a graduate of Iowa State University and Texas A&M. He currently lives in the St. Louis area with his wife Kristen and daughters Ashley and Katie.
Ed Anderson has dedicated his efforts to promoting soybean research, specifically in yield protection and yield preservation through disease resistance and disease management. For the past decade, he has served on the ISA, NCSRP and as a research consultant for the Kansas Soybean Commission, providing leadership to several state farmer boards in prioritizing soybean checkoff-funded research projects at more than 13 major land-grant universities. He leads multi-disciplinary programs to enhance farmers’ efforts through soybean genetic and agronomic production and yield improvement, yield protection, improved quality and sustainability. He earned his bachelor’s degree from Iowa State University and his PhD from the University of Missouri-Columbia and completed postdoctoral research at the University of Florida.

"Ed is a highly respected leader whose dedication toward the progress of soybean research earned him widespread respect among plant scientists,” said Steve Reinhard, USB chair and Ohio farmer who worked directly with Ed on the NCSRP. “He represents the ideals of Tom's legacy, and we appreciate his unrelenting efforts to create a better soybean that ultimately drives value back to the farm."

Some of Anderson’s colleagues shared sentiments about why they nominated him:

Iowa State University President Wendy Wintersteen said, “Ed excels at bringing soybean farmers and researchers together – listening to their ideas while bringing his knowledge and expertise to the discussion. These conversations result in research projects on the cutting edge, providing farmers with a greater return on investment.”

NCSRP President Suzanne Shirbroun said, “Ed is a humble leader. He is masterful in bringing people together to advance the soybean industry. It's an honor to serve on a board where I have witnessed his passion to drive soybean research forward and dream about how the advancements would be deployed on my farm.”

Iowa Soybean Research Center Co-director Greg Tylka said, “He is universally respected by university plant scientists and administrators, by industry and governmental plant scientists and by scores of elected farmer directors and staff in soybean checkoff organizations. It is hard to imagine anyone having a more thorough background, more pertinent experiences and perspective and higher credibility to be a leader in soybean research than Ed Anderson.”
Anderson was instrumental in the establishment of the Iowa Soybean Research Center. Until his retirement from the Iowa Soybean Association in 2023, Anderson had served as chair of the center’s Industry Advisory Council and as a member of the ISRC’s management team since the center’s inception in 2014.

The USB established the annual Tom Oswald Legacy Award in memory of the late Tom Oswald, a Cleghorn, Iowa, farmer who served as ISA president and as a USB director for several years. The award is given to an individual, organization or group that has made a significant contribution to the soybean industry and soy checkoff. Oswald was a farmer-leader for eight years and a member of USB’s Executive Committee for three years, and he always asked, “How do we make it better-er?” He wanted to know what additional efforts could be taken to exceed expectations and achieve best outcomes.

ISRC Affiliates and Collaborators Receive Awards

The following ISRC research affiliates and collaborators were honored and recognized at the College of Agriculture and Life Sciences (CALS) Spring Awards Program on March 27. Congratulations!

**Research Affiliates**
- **Thomas Brumm**, ag and biosystems engineering – CALS Faculty Distance Education Teaching Award
- **Andy VanLoocke**, agronomy – CALS Faculty Mid-Career Achievement in Research Award
- **Marshall McDaniel**, agronomy – Department of Agronomy 2023 Raymond and Mary Baker Agronomic Excellence Award

**Collaborators**
- **Anne Oldham**, food science and human nutrition – CALS Staff Outstanding Achievement in Advising Award
- **Adam Sisson**, plant pathology, entomology and microbiology – CALS Staff Creative Impact Award

**Upcoming Events**

- **May 2**, 7:30-9:30am, Student Omelet Breakfast at the ISU Memorial Union. Sponsored by the Iowa Soybean Research Center, Iowa Food & Family Project, Iowa Egg Council and the North Central Poultry Association.

- **June 18**, ISRC & Artificial Intelligence Institute for Resilient Agriculture will host the ISA Board for a research day at ISU.

- **July 1**, 2:00 pm, Agronomy Hall, ISRC 10th anniversary celebration.

- **August 1**, ISRC Meals from the Heartland meal packaging event at Hansen Agriculture Student Learning Center Atrium, ISU for Soybean Month in Iowa.

- **September 5**, research day for ISRC industry partners highlighting research funded by the center.
September 6, ISRC's annual 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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Have a newsletter idea or wish to subscribe? Email us at ISRC@iastate.edu