

IOWA STATE UNIVERSITY®

Iowa Soybean Research Center

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Vol. 15

ISRC Funds New Soybean Research Projects



Above left, ISU Dean of Agriculture and Life Sciences Dan Robison (second from left) gives opening comments. At right, members of the Industry Advisory Council listen to a research presentation.



The ISRC's Industry Advisory Council (IAC) met in September for their annual meeting to consider a wide range of soybean research ideas and to provide guidance on how to best invest \$300,000 in research funding. The IAC continues to grow with the addition of six new industry partners over the past year, making for a total of 17 industry partners represented on the council. This year also marks a \$2 million milestone in research funding for the ISRC.

The IAC's annual meeting opened with comments from ISU Dean of Agriculture and Life Sciences Dan Robison followed by an update on the ISRC by Director Greg Tylka. Joffrey Mejias, plant pathology, entomology and microbiology, from Thomas Baum's Laboratory and Prashant Jha, agronomy, gave updates on the status of their projects funded by the ISRC. Several ISU scientists provided presentations on new research ideas followed by thoughtful discussion among the IAC's farmer representatives, industry representatives and members of the ISRC's management team.

Thanks to continued increases in financial support provided by the Iowa Soybean Association and an increase in the number of industry partners, the ISRC was able to fund the two projects described below.

Sotirios Archontoulis, professor of agronomy, will receive funding to develop field research locations and initiate study of a continuous soybean cropping system in Iowa. The project will collect and accumulate relevant knowledge to aid in decision-making in future years. Currently there are no soybean-after-soybean cropping system intensive research locations in Iowa. In Argentina, soybean

after soybean is very common. Collaborating researchers on the project include **Mark Licht** and **Mike Castellano**, agronomy, **Greg Tylka**, plant pathology, entomology and microbiology, and possibly others.

Gary Munkvold and **Larry Halverson**, professors of plant pathology, entomology and microbiology, will receive funding to study the effects of soybean seed treatments on the seed and soil microbiome. Seed treatments are known to improve crop performance, but there is little information about exactly how they affect microbial colonization in the zone in the soil surrounding a seed as it germinates and how long these effects last. Researchers will study the reaction of soil microflora, including pathogens, to the presence of different seed treatment products on soybean seeds. The results will be valuable toward making decisions about seed treatment usage in soybean.

ISRC Director Greg Tylka said, “The ISRC appreciates the continued support of the Iowa Soybean Association and our industry partners and we thank the Iowa State researchers who submitted ideas. I am continually amazed at the high quality of the research ideas that are presented to the center and have noticed many researchers are now collaborating more, combining their talents and knowledge in different areas of expertise. We are also fortunate to have the engagement and insight from our farmer representatives, which carries a lot of weight with this group.”

“As membership on the ISRC Industry Advisory Council continues to grow, so do the contributions and commitment from insightful council members. There were many good, collaborative research ideas presented and it was interesting to see which projects the industry partners and the farmer representatives came to a consensus on,” said Ed Anderson, senior director of research for the Iowa Soybean Association and chair of the ISRC advisory council.



Above, are the IAC members that were able to attend the meeting, which was held at the Iowa Soybean Association’s headquarters in Ankeny, IA. At left, ISU Department Chair of Plant Pathology, Entomology and Microbiology Steve Harris, weighs in on discussion of a research proposal.

ISRC Hosts ISU Research Tour for ISA Farmers



On September 8 and 9, the ISRC hosted a tour of Iowa State University's research facilities and research plots for about 45 Iowa Soybean Association farmer board members and staff. The first day began on campus with a tour of research laboratories in the Advanced Teaching and Research Building by



Above, ISA farmers and staff join ISU researchers for a photo at the Ag Engineering and Agronomy Research Farm near Boone, IA. At left, entomologist Matt O'Neal, right, gives ISA a tour of his lab at ATRB. From left are Brent Swart, Randy Miller, Kristen Dearden and Lee Brooke from the ISA.

Gwyn Beattie, Leonor Leandro, Matt O'Neal and Steve Whitham, plant pathology, entomology and microbiology. The researchers highlighted some of the topics they are studying such as soybean aphids, sudden death syndrome, microbiomes and genetics. Following the tour, Mike Castellano, agronomy, presented on the Iowa Nitrogen Initiative and Marshall McDaniel, agronomy, spoke about soil management and crop sustainability. A reception was held that evening at Reiman Gardens at which attendees were welcomed by Iowa State University President Wendy Wintersteen and Dean of the College of Agriculture and Life Sciences Dan Robison.

Day two started at the Ag Engineering and Agronomy Research Farm with a tour of the Enviratron led by Lie Tang, agricultural and biosystems engineering, and Steve Whitham, plant pathology, entomology and microbiology and featured a Phenobot demonstration. Outside, in a neighboring soybean field, Arti Singh and Danny Singh, agronomy, and their research teams provided demonstrations and updates on their research focusing on several different areas, including soybean breeding lines, a soybean insect identification phone app, heat and drought stress, advanced sensors, drones and more.

The second half of the morning was spent at the BioCentury Research Farm, which featured a soy asphalt presentation by Eric Cochran, chemical and biological engineering, and a tour of the thermo chemical facility led by Tannon Daugaard of the Bioeconomy Institute.

In the afternoon, the visiting group of farmers listened to presentations by Prashant Jha and Mark Licht, agronomy, and Greg Tylka, plant pathology, entomology and microbiology, at the ISU Field

Extension Education Lab, better known as FEEL. The presentations focused on soybean management, weeds such as herbicide-resistant waterhemp and soybean cyst nematode, respectively. The event was a great success in connecting Iowa soybean farmers, ISA staff and ISU researchers/ISRC affiliates, while allowing for an opportunity to provide updates on the soybean research being done at Iowa State and showcasing some of the university's agricultural research facilities. Check out the [ISA's State of Soy's video](#) that highlighted the event.



Clockwise from top left, ISRC Director Greg Tylka welcomes the ISA group to ATRB; Arti and Danny Singh, agronomy, and their research groups share information on ongoing projects; Mark Licht, agronomy, speaks to the group at FEEL; ISU President Wendy Wintersteen and Cy pose for a photo with Brian (ASA) and Cindy Kemp; Lie Tang, agricultural and biosystems engineering, provides a Phenobot demonstration at the Enviratron and Eric Cochran speaks to the group about soy asphalt at the BioCentury Research Farm.

ISRC Summer 2022 Field Tour



Each year, the ISRC hosts a field tour with the goal of engaging graduate students, faculty and staff in the departments of agronomy, agriculture and biosystems engineering, and plant pathology, entomology, and microbiology from Iowa State. On August 4, the ISRC coordinated a group of 30 to tour [Beck's Hybrids](#) near Colfax, IA, [Kemin Industries](#) in Des Moines, IA, and [Salin247](#) from Ames, IA.

The group started the day at Beck's with an overview of some of the research they are working on as well as a tour of their field test plots, followed by a demonstration by Salin247, an engineering company working on autonomous farming solutions.

The day ended with a tour of Kemin, which is known for creating and supplying over 500 specialty ingredients for human and animal health and nutrition, food technologies, crop technologies, biofuels and animal vaccine industries in more than 120 countries.

Volunteers, Cargill, and ISRC Come Together for Meals from the Heartland

The Iowa Soybean Research Center would like to extend a big, heartfelt thank you to the more than 40 volunteers who helped package 38,000 meals for the center's [Meals from the Heartland](#) event on August 5, at ISU's Hansen Agriculture Student Learning Center. Thanks also are extended to Cargill for their very generous monetary donation that covered the cost of the ingredients. We could not have done this without you!



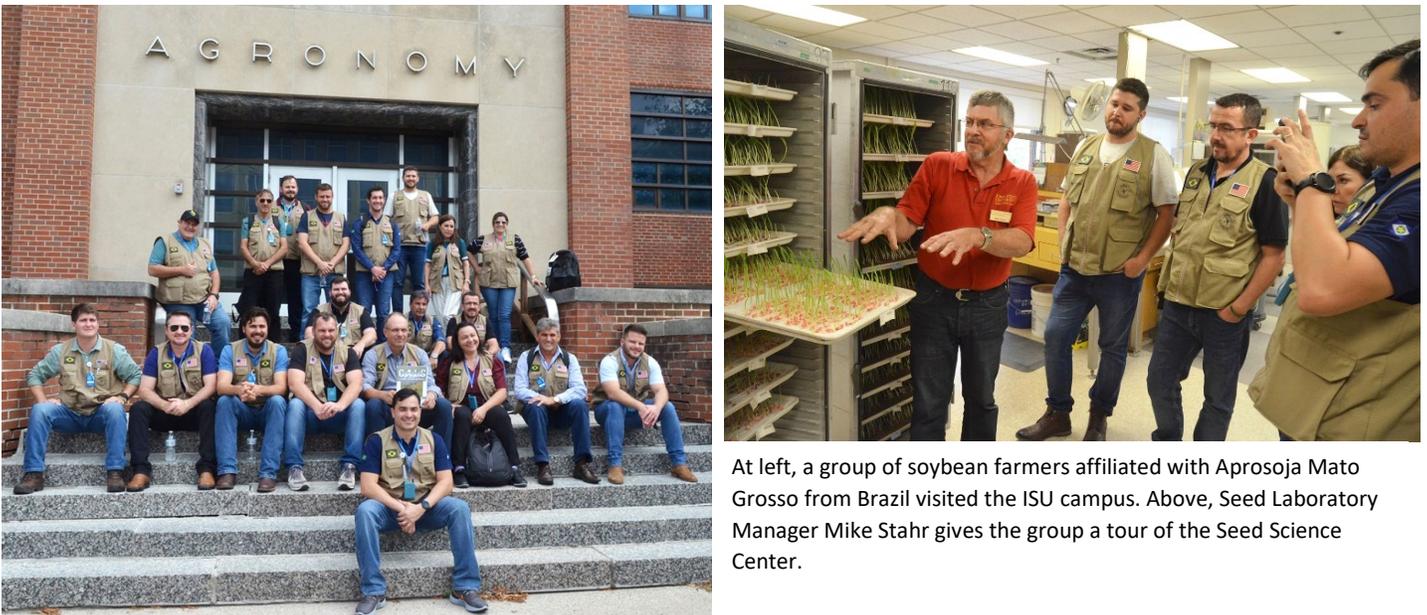
Some of the meals were delivered locally to ISU's [SHOP](#) and [Food at First](#) in Ames and in the Des Moines area. The rest of the meals were shipped to Iowa's Ukraine Sister State of Cherkasy Oblast.

The ISRC hosts the event in August to celebrate soybean month in Iowa as the meals contain soy protein.



At left, volunteers, most from ISU, help package 38,000 meals. At right, ISRC staff deliver meals to Food at First in Ames, IA. From left are ISRC Director Greg Tylka, Food at First Executive Director Patty Yoder and ISRC staff Jill Cornelis and Kara Berg.

ISRC Hosts Soybean Farmers from Brazil



At left, a group of soybean farmers affiliated with Aprosoja Mato Grosso from Brazil visited the ISU campus. Above, Seed Laboratory Manager Mike Stahr gives the group a tour of the Seed Science Center.

On August 29, the Iowa Soybean Research Center hosted a campus tour for a group of 20 soybean farmers affiliated with Aprosoja Mato Grosso from Brazil. The group was in Iowa to visit the Iowa Soybean Association, Iowa State University and the Farm Progress Show near Boone.

The group began their afternoon visit to Iowa State in Agronomy Hall with a welcome and introduction by Agronomy Department Chair Kendall Lamkey followed by presentations on soybean management by Mark Licht and herbicide-resistant weed management by Ramawatar Yadav. The group then went on a tour of the Seed Science Center led by Mike Stahr and Alan Gaul. The group's visit ended at the Advanced Teaching and Research Building with a presentation on soybean sudden death syndrome, which Leonor Leandro, plant pathology, entomology and microbiology, delivered in Portuguese, a pleasant surprise to the group.

Soybean Centers Meet for Second time in 2022

In July, the Coordinated Soybean Centers group met for a second time in 2022, following a Soybean Research Forum and Think Tank in Indianapolis. The centers discussed formalizing the name of the group as well as developing a mission statement, which is as follows:

“The Coordinated Soybean Centers are a multi-state team of land-grant universities and farmers across soybean-producing states endeavoring to deliver high-level projects for farmer investment and federal and private-sector leverage and cooperation.” The group will focus on identifying emerging research priorities, delivering multi-state and multi-disciplinary soybean research and leveraging farmer dollars.



Members of the newly renamed Coordinated Soybean Centers group at their April meeting.

The group also discussed several possible research ideas with the potential for multi-state involvement including:

- on-farm cover crops research
- soybean roots-carbon sequestration
- substantiating soybean oil content/quality importance through sustainability management practices
- quality soybeans importance in biofuels

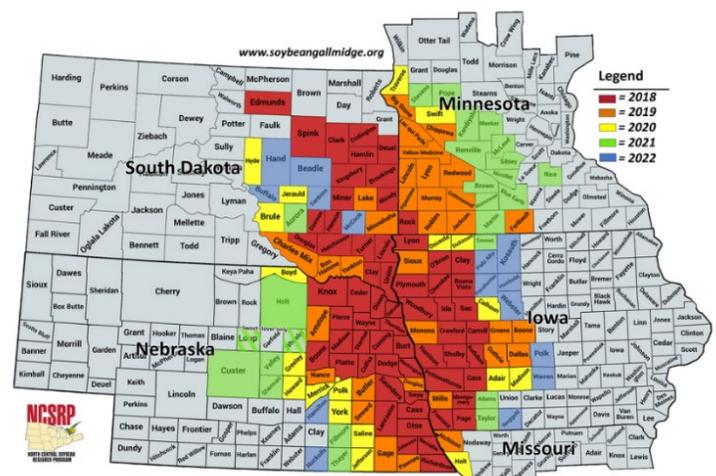
The next meeting of the Coordinated Soybean Centers will be held in conjunction with the 2023 Soybean Research Forum and Think Tank. [Click here for more information on the 2022 Think Tank.](#)

Soybean Gall Midge Continues to Spread

According to a report released by the Soybean Gall Midge (SGM) Alert Network in August, this new pest is continuing its gradual spread from the western border of Iowa to central counties. Erin Hodgson, plant pathology, entomology and microbiology, Iowa State University, and her research team carefully scouted for midges in July and August to document the distribution and rate of spread in the state. New counties reporting the presence of SGM include Humboldt, Kossuth, Palo Alto, Pocahontas, Polk, Ringgold, Warren and Webster. There are 42 counties in Iowa now affected. In all, 15 new counties were identified in Iowa, South Dakota and Nebraska in 2022.

Soybean Gall Midge Alert Network
EMERGENCY, SCOUTING, AND MANAGEMENT

Soybean Gall Midge Infested Counties



Erin Hodgson notes, “The new county detections this year had very low levels of soybean gall midge larvae. Farmers probably wouldn’t even know they had them in the field. We were looking at a lot of plants just to find a few infested ones. Our goal is to track the progression of this soybean pest to new areas. We expect new county detections will continue slowly each growing season.”

There are several collaborative research projects going on at Iowa State University to better understand how to manage the gall midge, which is a fly. The topics of biggest interest include cultural management tactics, like date of planting and vegetation management, mechanical suppression with tillage, insecticide efficacy evaluations, and host plant resistance. With other midges in field crops, host plant resistance has been the most effective tool. This is partly due to larvae being hard to access with insecticides and the long duration period of adult activity.

Unfortunately, many of the strategies that have been tried so far have not been effective in suppressing SGM. There is hope for breeding soybean varieties that are tolerant of larval feeding, but it will take a few years to identify the genes responsible for resistance. Experts recommend monitoring for larvae during July and August, especially in soybean fields that have a border with a field where soybean was planted the previous year.

More information can be found at <https://soybeangallmidge.org>. If you are interested in real-time updates on SGM activity and distribution in 2023, join the [Soybean Gall Midge Alert Network](#) or the [Iowa Pest Alert Network](#).

ISU Research Featured at Farm Progress Show

Following a hiatus due to the pandemic, the Farm Progress Show returned to Boone, Iowa, in full force in September. Iowa State had a 6,000 square foot exhibit that showcased the latest agricultural research and technology with more than 135 faculty, staff, graduate and undergraduate students and Extension specialists presenting on a wide variety of topics.

Highlights from the show included the ISRC affiliates and their advancements in research listed below. ISU Agronomy Department Chair and ISRC Management Team member Kendall Lamkey has helped chair the Farm Progress Show’s Planning Committee since 2010.



A strip of soy asphalt was paved over the summer in time for the Farm Progress Show’s exhibitor area.

Soy asphalt on display

Due to connections made during the ISRC’s 2021 SoyFest, Eric Cochran, chemical and biological engineering, joined up with Matt Jungmann, Farm Progress Show Manager, in July 2022, to pave a strip of soy asphalt for the Farm Progress Show’s exhibitor area. A booth representing the ISU/ISA/Soylei/Colorbiotics collaboration was also present at the event. Iowa State researchers

developed the soy-based asphalt that uses a bio-polymer from high oleic soybean oil, research that received funding from the ISA.

Smartphone app helps ID insects

A digital ag display included an insect identification mobile app designed by Arti Singh, agronomy, and her team, that helps detect more than 1,000 insects through photos. The app tells users if the insect is beneficial or a pest, and helps producers come up with treatment plans for those insects that are pests.

Weed Seed Destructor and other methods showcased

Prashant Jha, agronomy, Extension weed specialist demonstrated the weed seed destructor. Fitted to a combine, the weed seed destructor pulverizes and destroys seeds so that they cannot germinate.

Other methods of weed control also were featured including videos of chaff lining, a method that guides the harvested chaff into narrow bands as it flows out the back of the combine at harvest, which reduces the spread of weed seeds by more than 95% across fields and contains weed seeds in smaller spaces. In addition, cereal rye was recommended as a cover crop, as it has the best potential to suppress weeds since it has more biomass than other cover crop species.

Joe McClure Named Co-Director of ISA's RCFI

In June, Joe McClure joined the Iowa Soybean Association as a co-director for the Research Center for Farming Innovation (RCFI), where he will lead RCFI's on-farm research. He joins Roger Wolf who will remain the lead on conservation and cropping systems implementation. McClure also will be involved in ISRC activities.

Prior to joining ISA, McClure was a Regional Site Lead at Bayer-Monsanto, where he enjoyed a 20-year career in field research, inventory, logistics and seed production.

McClure's foundation in agriculture came from growing up on a small pig and grain farm near Center Point, IA.

From an early age, he says he's always liked problem solving, which led him to pursue a degree in computer science from Mount Mercy College, but ultimately he felt drawn to biology and the outdoors and found that those same problem-solving skills worked well in agronomy. So, he returned to school for an MS in crop production and physiology at Iowa State University. While at Iowa State, he worked on iron deficiency chlorosis in soybeans.

At Bayer-Monsanto, his experience with soybeans was with small plot research during the first four years of his career, focusing on herbicide and quality traits. His last four years at Bayer focused on soy manufacturing and he led a team to improve the reliability of seed production by teaching and



Joe McClure

relying on agronomic principles. McClure looks forward to continuing the relationships he has already made at ISA, ISU and with farmers and is focused on delivering the necessary research results for the industry.

“The collaboration between the Iowa Soybean Association and the Iowa Soybean Research Center has been critical to me as I navigate my new role. It is these types of organizations that see the value in private-public partnerships and that help to foster researchers and projects that are important to Iowa farmers. These relationships have enabled me to jump right in, develop a network quickly and get to work on necessary research,” said McClure.

According to McClure, ISA is focusing on understanding how conservation efforts and sustainable practices can be profitable on the farm. “We have a lot of research focused on enhancing soy and corn yields and improving resiliency during stress. We are also in the process of expanding the network of farmers we are working with to ensure that we have the best representation of Iowa that we can,” said McClure. One project he plans to help initiate this fall is a soybean cyst nematode survey, which will help in educating farmers on management techniques, while providing valuable information on 2022 SCN populations to Greg Tylka, Iowa State nematologist, SCN Coalition co-founder and ISRC director. “Ultimately, we want to increase yields and profitability in a sustainable manner and research will help us to achieve that goal,” said McClure.

Get to Know IAC Rep: Ben Pieper, Merschman Seeds



Ben Pieper

Ben Pieper is a product manager, agronomist and certified crop adviser for Merschman Seeds in Westpoint, IA. He serves as Merschman Seeds’ representative on the ISRC’s Industry Advisory Council.

Pieper is responsible for selecting soybean, wheat, corn and alfalfa varieties that excel in different regions of Merschman’s sales territories in the Midwest and Mid-South. He works closely with genetic suppliers to ensure high-level yields across all product platforms. He also spends time with the Merschman Seeds area sales managers doing various training and coaching concerning correct product placement that provides maximum return for customers, locating agronomic limiting areas with customers, and providing solutions to increase yield and overall performance of products.

Before becoming product manager, Pieper was an area sales manager for Merschman in southeast Iowa and northeast Missouri covering 10 counties in which he helped support other sales territories with agronomic advice. He says the best part about his job is helping farmers and dealers solve problems alongside his fellow co-workers. Pieper says he joined Merschman Seeds because he wanted to work for a family-owned, honest, hard-working company involved in leading the industry in soybean traits and germplasm.

Of his time serving on the Industry Advisory Council, Pieper says, “The opportunity to weigh in on the ISRC’s projects is both a privilege and a joy. The council has a unique ability to take Iowa farmers’, industry representatives’, and university professionals’ opinions and use that combined experience to

best help the Iowa farmer. It is very encouraging to see the technological advancements and research projects that have been funded by the ISRC coming out of Iowa State University.”

Originally from Wever, Iowa, Pieper is a graduate of Iowa State University with a BS in agronomy. He spends his free time farming on his family farm and water skiing and boating on the Mississippi River.

Be sure to catch Pieper’s videos “Cup of Joe” (so named for his discussions with Merschman Seeds President and CEO, Joe Merschman) and other videos on [Merschman Seeds’ YouTube Channel](#).

Researcher Spotlight: Matt O’Neal



Matt O’Neal

ISRC affiliate Matt O’Neal is a professor of plant pathology, entomology and microbiology at Iowa State University, where he oversees research related to the management of insect pests of annual crops, with a focus on soybeans. His goal is to develop economically and environmentally sustainable pest management programs by exploring the ecology of pests with their host plant and natural enemies.

O’Neal’s research has contributed to the management of soybean aphids in Iowa and the Midwest. He is also exploring how conservation methods may improve the

abundance and diversity of beneficial insects that contribute to aphid mortality and crop pollination. He has published more than 90 scientific papers, reviews and book chapters on insect pest management and ecology. He teaches two entomology classes and a graduate level course in Sustainable Agriculture.

Originally from Quincy, IL, O’Neal graduated from the University of Illinois with a BS in biology, after which he joined the Peace Corps, which is what would lead him to entomology. To ensure his acceptance, he wanted to develop a life skill to share and he connected with an entomologist at the University of Illinois who studied honeybees and taught O’Neal some beekeeping skills. While in the Peace Corps, O’Neal saw the impact of insect pests on the corn and sorghum crops grown in rural Ghana. Upon returning to the US, he pursued an MS in entomology at the University of Illinois, with a focus on the insect pests that attack corn and soybeans, and he would go on to earn a PhD in entomology at Michigan State University.

“Joining ISU and working with the ISRC has placed me and my students at the center of the soybean world. There are a remarkable number of resources here that allow us to explore innovative ways to produce soybeans. I’m constantly surprised by the work that the other faculty and students at ISU are conducting, and their willingness to collaborate,” said O’Neal.

O’Neal said the research being conducted in his lab goes beyond just managing pests. “By collaborating with other scientists at ISU, we are exploring how to conserve beneficial insects that can contribute to crop production, which has led to some remarkable discoveries. We have found that adding a little bit of conservation into farmland can improve honeybee productivity. Based on nearly a decade of data, our current hypothesis is that honeybees in the Midwest use soybeans for the

summer honey crop. This honey production is increased if even a small amount of prairie is present. We are now looking at whether this practice works for more commercial scale beekeeping. It's exciting to consider how agriculture and conservation can complement each other, said O'Neal."

Currently, O'Neal's lab is working on a variety of projects that directly and indirectly affect soybean production. During the summer of 2022, he tested some novel traps and pheromones for tracking stinkbugs in soybean fields. His team is also working with USDA geneticists to develop molecular-based tools to detect and manage insecticide-resistant aphids.

Also worth noting is a summer podcast that he and fellow entomologist Erin Hodgson co-host called the [Soybean Pest Podcast](#). They created the podcast to promote pest management concepts and to provide updates on invasive pests, regulatory news and new research relative to insects in agriculture.

ISRC Affiliate Highlights

Helmert Named ASABE Fellow



Matt Helmers, agricultural and biosystems engineering and director of the Iowa Nutrient Research Center, was named a 2022 Fellow of the American Society of Agricultural and Biological Engineers (ASABE) at its annual international meeting on July 18, in Houston, Texas. ASABE Fellows represent members of unusual professional distinction, with outstanding and extraordinary qualifications and experience in, or related to, the field of agricultural, food or biological systems engineering. [Read More](#)

In front row, second from right, is Matt Helmers. In back row, second from right, is Raj Raman, also of ISU ABE, pictured with the 2022 group of ASABE Fellows.

Kaleita Receives Massey-Ferguson Educational Gold Medal



Amy Kaleita, agricultural and biosystems engineering department chair and ISRC management team member, was honored at the ASABE international annual meeting in July with the Massey-Ferguson Educational Gold Medal. The award honors those whose dedication to the spirit of learning and teaching in the field of agricultural engineering has advanced with distinction agricultural knowledge and practice and whose efforts serve as an inspiration to others.

[Read More](#)

Licht Receives Arden R. Campbell Award



Mark Licht, agronomy, was presented with the Arden R. Campbell award in July. The award recognizes a faculty member who has made notable contributions and provided distinguished service to the MS in Agronomy Distance Education Program.

[Read More](#)

Agronomy Department Chair Kendall Lamkey, right, presents Mark Licht with the Arden R. Campbell

Singh Works with Engineers to Create Innovative In-Field Research Chamber



Danny Singh, agronomy, worked with mechanical engineering students to invent a practical, portable, field-deployable research chamber for field-testing of plants under future climate scenarios, specifically for breeding heat tolerant varieties.

[Read More](#)

Upcoming Events

November 30 - December 1, Ames, IA - [33rd ISU Integrated Crop Management Conference](#)

December 5-8, Chicago, IL - [ASTA's CSS & Seed Expo 2022](#)

December 14-16, Savannah, GA - [National Soybean Nematode Conference](#)

January - March 2023 - [CropsTV Season 3](#) (registration opens in November)

Wednesdays at noon - [Iowa Learning Farms Weekly Webinars](#)

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