



Ag Innovation News

Oct-Dec 2022, Vol. 32, No.4

The newspaper of the Agricultural Utilization Research Institute



AURI PARTNERS WITH HEMP GROUPS TO HELP BUILD THE FUTURE OF CONSTRUCTION

Pages 6-7



Shielding Concrete with Soy
Pages 4-5



AURI Studies Commercial Kitchens and Life Cycle Analysis
Pages 8-9



FAI Week
Page 10



Growing Connection Through Artisan Grains
Page 11



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I HOPE YOU WILL JOIN ME IN CELEBRATING THESE PARTNERS, AND THE MANY OTHERS WHO WERE NOT PART OF THIS ARTICLE, FOR THEIR CONTRIBUTIONS TO THE STATE'S AG SECTOR AND THEIR ENDEAVORS TO ENSURE CURRENT AND FUTURE GENERATIONS OF PRODUCERS AND PROCESSORS ARE SUCCESSFUL AND POSITIVELY IMPACT MINNESOTA.

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FOR AURI, COLLABORATION IS KEY

One of the things that contributes to AURI's success is this organization's proud history of partnering with Commodity Research and Promotion Councils throughout the state. I'm very proud of the fact that, at various points over the past 30 years, AURI has collaborated with nearly all of the commodity groups in Minnesota in an effort to increase the utilization of crops and livestock they represent via value-added ag opportunities.

I want to take a moment to highlight some of the more recent collaborations AURI has undertaken with commodity groups in this edition of the Ag Innovation News.

Minnesota Soybean Research and Promotion Council

A long and fruitful partnership exists between AURI and the Minnesota Soybean Research & Promotion Council (MSR&PC). For years now, we have worked together on a wide variety of projects dedicated to finding, proving and promoting new uses for Minnesota-grown soybeans. This collaboration increased the industry knowledge base about soybeans' potential use in a wide variety of applications, from food to bio-industrial areas, and served as a catalyst for further innovation.

Recently, the collaborative effort has been exploring the utilization of soybeans in road and concrete preservatives. In working with MSR&PC and products like RePlay and PoreShield, we have developed relationships with municipalities in different parts of the state to illustrate the products' efficacy. As this multifaceted partnership moves forward, I am confident many Minnesota cities will be able to use these products that utilize soybeans and other ag products to lengthen road lifespans, saving tax payer dollars and allowing those resources to be put to use in other ways that will benefit communities.

Minnesota Livestock Protein Industry

More recently, AURI administered a matching funds grant from the Minnesota legislature to acquire, host and operate a mobile slaughter unit. Awarded to the Minnesota Farmers Union, in partnership with Central Lakes College and Ridgewater College, this grant benefits the Minnesota livestock industry by supporting education, research, training and value-added product development. AURI also has two cooperative agreements with the United States Department of Agriculture currently to support local and regional meat processing through technical assistance and exploring solutions to industry constraints. Finally, AURI routinely explores new feed formulations and supplements as well as coproduct uses for the livestock sector.

Minnesota Cultivated Wild Rice Council

Of all the commodities raised in our great state, none is a more identifiable Minnesota-centric product as wild rice. It's an important crop for the state, which is why AURI developed a relationship with the Minnesota Cultivated Wild Rice Council (MCWRC) to identify unique attributes of this commodity as well as new potential uses.

To that end, AURI and the MCWRC worked together on a research study on the protein quality of wild rice grown in Minnesota, which has the potential to open up new markets and new uses for the iconic Midwestern crop.

Others

Look for future articles illustrating the collaborative efforts showcasing past and present research efforts underway with corn, dairy, wheat and others. These Minnesota organizations have a great innovative spirit and AURI appreciates the collaboration with these farmer-led organizations to explore and commercialize novel ideas.

In closing, I hope you will join me in celebrating these partners, and the many others who were not part of this article, for their contributions to the state's ag sector and their endeavors to ensure current and future generations of producers and processors are successful and positively impact Minnesota.



By AURI

This quarter, Ag Innovation News highlights Board Director, Kenneth Asp. Mr. Asp farms 2,400 acres in Pennington County, growing primarily wheat and soybeans. He joined the AURI Board as a representative of the Minnesota Wheat Research and Promotion Council and has a long history in Minnesota's agriculture sector. In this edition of AIN's Board Q&A, he shares his thoughts on the value-added agriculture industry and the challenges it faces.

AIN

Please tell our readers a little about your background.

KA

I am a graduate of the University of Minnesota with degrees in agronomy and aviation and began farming in 1982. I'm also a U.S. Navy Veteran and former chair of the Pennington County Farm Service Agency County Committee. I chaired the Minnesota Wheat Research and Promotion Council and served on the U.S. Wheat Associates Board of Directors.

AIN

What motivated you to join the AURI board of directors?

KA

After my final term on the State Research and Promotion Council, Dave Torgerson, former director of the Minnesota Wheat Research and Promotion Council, asked me to serve, representing it as a Commodity Group representative on the AURI Board of Directors. I'm currently in my second term.

AIN

As the representative for the wheat industry on AURI's board, what do you think are the greatest opportunities for collaboration with AURI?

KA

Wheat representation on AURI's board is an important opportunity to merge ideas with innovation, linking processors and food developers with commodities in creative ways, opening new markets and new uses for wheat.

AIN

How has participating on AURI's board helped you grow, either as a professional or in a personal way?

KA

Personally, AURI has been an opportunity to network with multiple experts, industries and interests, looking through a new lens for new opportunities. It is a way to stay focused on my mission and not get distracted.

AIN

What do you feel will be the biggest challenge facing the value-added agriculture sector?

KA

Communication is the greatest challenge facing the value-added ag sector. With so much information (and misinformation) shared from so many sources, we need to use every tool in the online information network to address the importance and positive impact of agriculture.

Also, technology adaptation and cost are great challenges. Like all fields, ag technology is changing so rapidly that what seems cutting edge today is obsolete tomorrow. AURI can help small innovators with big ideas sift through the clutter to market their dreams, but also helps those same entrepreneurs envision what ideas may already be obsolete.

AIN

What are your goals as a board member?

KA

I want to continue to prioritize wheat on the AURI Board, bridging the gap between production agriculture, consumer perceptions and the quality product being produced on a commercial scale. We truly are here to support ag innovation.

AIN

How can AURI best support Minnesota ag producers?

KA

AURI can best support Minnesota ag producers by continuing to seek long-term economic benefits through value-added innovation, thinking "outside the box" and developing advanced uses that offer producers new, long-term markets for their product(s).



SHIELDING CONCRETE WITH SOY

By Dan Lemke

Concrete is everywhere. From roads and sidewalks to home foundations and walls, concrete is ubiquitous to transportation and construction. Unfortunately, it also has its limitations.

“There are two kinds of concrete,” said AURI Business and Industry Development Director Harold Stanislawski, “concrete that’s cracked and concrete that’s likely to crack.”

AURI, along with the Minnesota Soybean Research & Promotion Council (MSR&PC) and the Soy Transportation Coalition, have set out to explore the utilization of soybean-oil based concrete enhancing products to preserve concrete’s qualities. Funded by the Soy Transportation Coalition, this work intends to increase utilization of Minnesota-grown soybean for applications in the transportation and construction sectors.

Applications of products, like soy-based concrete durability enhancer PoreShield®, show the ability to extend the life of concrete and help protect the often massive investments made in concrete.

HIGHWAY HELPER

Developed by Purdue University as a solution to extend the life of joints in cement roadways, PoreShield is a soy-based liquid that aims to enhance the durability of concrete.

“One interesting thing about this technology is that it came out of a need,” said PoreShield Technical Lead Paul Imbrock. “It wasn’t trying to find a replacement for something that exists, it was actually the Indiana Department of Transportation that came to Purdue University civil engineering and to some of the professors there and said, ‘hey, we have this problem.’”

The primary problem was deterioration seen in saw cut joints made in concrete roadways. These saw cuts are made to limit cement cracking and highway crews typically fill the cuts with hot asphalt or insert a rod into the cut and cover it with silicone caulk to keep water, ice and salt from getting into the crack. Even with these preventative measures, freezing, thawing and salt infiltration eventually break down the joints.

Imbrock says several Purdue professors collaborated to develop a soy-methyl-ester-based solution. The result was PoreShield, which is sprayed into the saw cut joint as a liquid. Then, because concrete is porous and takes in moisture like a sponge, the PoreShield is absorbed into the concrete to protect the joint. Unlike a concrete sealer that simply forms a protective layer, PoreShield is absorbed deep into the pores of the concrete to increase its durability.

“Water and salt that seeps into the joint can’t absorb into the concrete, so it simply runs through and drains out,” Imbrock explains. “It’s a little bit of a different school of thought, and a more innovative way of trying to provide that next level of protection.”

Joint deterioration is a critical factor in the surface life of concrete pavement. Imbrock says that nine times out of ten, saw cut joints are where concrete deterioration is going to start. Joints begin to open, exposing the concrete to water and salt, as well as to the pounding of vehicles. Imbrock says PoreShield works to keep that from happening, extending the road’s useful life, and delaying the need for repairs.

“Soy-methyl-ester can penetrate deep into concrete. If we spray it onto concrete and topically apply it, it’s going to spread into every nook and cranny that water can get into in the future,” Imbrock explains. “We’re trying to get into the pores of the concrete ahead of water and salt. We fill it with a viscous, hydrophobic fluid like soy-methyl-ester, so that we’ve essentially created a barrier inside the pore network of the concrete that creates that separation. Water and salt on the surface must find a drainage path or wash away rather than absorb into the pores where it’ll start to cause damage.”

WELL TESTED

Imbrock was a graduate research assistant at Purdue in 2008 when research began on the development of a concrete protectant. The Indiana Department of Transportation and Indiana Soybean Alliance supported the research and initial results were published in 2011. The first field tests were conducted on roadways in 2012.

“We’ve had it on real world pavements in Indiana for 10 years and the pavement still looks like it did on the day PoreShield was applied,” Imbrock said.

Because PoreShield is a soy-based product, the Indiana Soybean Alliance was interested in supporting its research and development.

“One of our challenges is creating new opportunities for soybeans to be used,” said Ben Forsythe, Sustainability and Value Creation Director for the Indiana Soybean Alliance. “That value creation vertical is looking into new and innovative ways to utilize the crops we’re growing today, and PoreShield is another great opportunity for that, plus it enters a bit of a different market.”

ADDING VALUE

Stanislawski said the PoreShield product was introduced to the Agricultural Utilization Research Institute (AURI) by the Soy Transportation Coalition and the MSR&PC. The MSR&PC supports new markets and new uses for soybeans and the Soy Transportation Coalition has an initiative to help state, county and local units of government find innovative ways to economically build or maintain important rural infrastructure like roads and bridges that keep ag products moving.

Stanislawski worked with PoreShield and the city of Hutchinson, Minn. to apply the product on an airport fueling pad, on a walking path and a bridge deck.

“I really like this product,” Stanislawski said. “There’s minimal training required, and no specialized equipment needed to apply it. You simply follow label instructions and apply it with a hand pump. It’s another biobased product that comes courtesy of the soybean plant.”

Hutchinson Public Works Manager John Olson said the city previously used a soy-based asphalt protectant with good success, so he didn’t hesitate to try PoreShield.

“When the opportunity came up, I thought it made a lot of sense,” Olson said. “We’ve seen the value of biobased preservation, so we wanted to give it a try to see how it behaves. This is one more opportunity to try something different to keep what we already have in good shape for as long as possible.”

AURI is working with PoreShield to help raise awareness of the product and to demonstrate how it can be used to protect municipal investments while generating a new, value-added use for soybeans.

Because soy is the primary ingredient in PoreShield, increasing its use increases demand for soybeans. Stanislawski said that a PoreShield application on a bridge deck 20 feet wide by 40 feet long would utilize the equivalent of 640 bushels of soybeans or 960 gallons of soy oil.

“That is good soy utilization that’s meaningful,” Stanislawski said, “and there are a lot of concrete bridge decks around Minnesota, the country and the world.”

“We’re able to provide another biobased answer to the problem of road preservation,” said Mike Youngerberg, Senior Director of Product Development and Commercialization for Minnesota Soybean. “This product has a lot of versatility from roads and streets to numerous other applications.”

Imbrock said one bushel of soybeans makes one- and one-half gallons of PoreShield. Treating only the pavement joints on 10 miles of state highway used 3,600 bushels of soybeans.

New innovations with soybean oil are occurring regularly in this space. While this trial focused on PoreShield, other concrete preservation products are commercially available to meet the goal of preserving and extending concrete life as well.

LONG-LASTING PROTECTION

Imbrock said one application of PoreShield protects for 10 years. It could last longer, but real-world trial data only dates to 2012. Beyond increasing the life of concrete, Imbrock said PoreShield also protects infrastructure investments.

“Something that we were told at the beginning of our research was that if you have pavement joint deterioration and you have to go gouge it out and replace it, you’re talking about \$1 million per mile,” Imbrock said. “Obviously those are taxpayer funds that could be put to better use, either making some new roads or making things more accessible rather than replacing concrete that is in service but deteriorating.”

While PoreShield can add durability to any concrete surface, Imbrock stated the company is focusing on the transportation and construction markets first.

A lot of infrastructure, especially in rural areas, needs repair or replacement. Imbrock said he’s had a county engineer tell him that five bridges in his county needed replacement. However, replacing just one bridge would eat up five years of the engineer’s budget. Protecting infrastructure investments with a low-cost product like PoreShield that can dramatically extend the life of roads and bridges is becoming an increasingly attractive option. PoreShield can be applied anytime after 7 days of a concrete pour and application requires no personal protective equipment.

“Switching to something that’s a proactive measure to make these roads and bridges last longer rather than triaging things as they fall apart, is going to be very important,” Imbrock said. “We have some forward-thinking county engineers we’ve worked with who are sharing that message with other county engineers after they’ve completed the application. Especially with PoreShield being so high performing and so easy to put down, it’s a perfect solution for them.”

“Protecting common assets and making them longer lasting and with better benefits to the tax base is not something that we skim over,” Forsythe added, “I think that’s important.”

Many county engineers and public works managers face a long list of projects to build or repair, but with limited budgets. Preserving existing infrastructure for as long as possible allows finite resources to be maximized.

“To allow for new projects, you have to take care of what you already have for less,” Olson said.

If anyone is interested in these types of products, they should begin discussions with a service provider to see if their goals can be met with the product and application timing to ensure best outcomes, and AURI is also available to offer technical assistance.

Becker County Initiates RePlay Demonstration Site

In late July 2022, a soybean-based road sealant, RePlay™, was applied near Callaway, Minn. in Becker County on Highway 14. AURI Business and Industry Development Director Harold Stanislawski and United Soybean Board Director Bill Zurn met with Becker County Commissioners and highway department representatives to answer questions. Barga Inc. of Mountain Lake, Minn. applied the material. Signage was placed marking the treated roadway.

RePlay has been used as an asphalt preservation product for over a decade in the city of Hutchinson, MN, and has been applied on **roughly 130 locations across Minnesota.**

RePlay Agricultural Oil and Preservation Agent® (RePlay), is a patented product created and manufactured by BioSpan Technologies, Inc. A life-cycle cost analysis conducted by SRF Consulting Group in 2021 revealed that road segments treated with RePlay have a statistically significant lower rate of pavement degradation compared to untreated segments. SRF combined rates of degradation from the statistical analysis with a model for untreated asphalt pavement degradation to estimate RePlay service life (worst to best-case scenarios). The service life analysis demonstrated that RePlay could increase the longevity of road surfaces by 2-7 years. RePlay uses approximately 90 bushels of soybeans per lane mile. Learn more about RePlay and related projects on AURI’s website.

<https://auri.org/access-auri-services/partnerships/minnesota-soybean-research-and-promotion-council/>





AURI PARTNERS WITH HEMP GROUPS TO HELP BUILD THE FUTURE OF CONSTRUCTION

Can hemp be a game changer in the home construction industry and become a more valuable crop in the Upper Midwest? That is what a new study in the city of Fargo, N.D. is trying to determine.

The Agricultural Utilization Research Institute (AURI) partnered with a construction company and a hempcrete manufacturer on a side-by-side comparison demonstration project to determine how hempcrete, a bio-composite material used for insulation, performs against traditional fiberglass insulation.

A number of environmentalists, farmers and builders have anecdotally touted the benefits of hempcrete such as it is - energy efficient and reduces mold in homes and buildings, while improving indoor air quality, based on the belief of the hemp plants' absorption of carbon in the air.

However, there is scant data or research available to support these benefits, so researchers on this project will work to fill in some of those details to create a bigger market for hempcrete in the green building sector.

To obtain this important data, Fargo, N.D.-based Grassroots Development built two identical homes with dimensions of 13 feet by 23 feet with 12-foot ceilings. Both have a traditional wood frame, however the walls of one home are filled with fiberglass insulation, while the walls of the second home are filled with hempcrete, which contains the hurd of the hemp plant mixed with a lime binder and water. Homeland Hempcrete in Bismarck, N.D. supplied the hempcrete.



Riley Gordon, Principal Engineer with AURI, installed sensors in both homes to monitor moisture, air temperature and energy usage. The readings will be collected and analyzed by the Center for Energy and Environment (CEE) over a 12-month period to provide a complete picture of how hempcrete compares to traditional fiberglass over the course of a cold winter and hot summer in North Dakota. Researchers at CEE will also perform a blower test to provide additional numbers on air leakage performance, ambient temperature and humidity levels in the two homes.

“There is a lot being said right now about what hempcrete can do, but there just isn’t a lot of good research to back up any of the claims with numbers,” Gordon said. “This study will finally be able to answer some of those questions. If we get some good data, it will help inform not only the construction industry, but growers and processors too. There are a lot of groups who have been holding out on making decisions about investing so hopefully these results can help de-risk the opportunity and drive decisions.”

Working with hempcrete is a labor-intensive process. The material’s ingredients are blended in a large concrete mixer, after which workers pack the material into the frame of a building by hand while it is still wet. However, this allows for a more precise installation process than traditional fiberglass as workers are able to fill the hempcrete into the nooks and crannies of a structure.

AURI’s Business and Industry Development Director Harold Stanislawski made the connection with Homeland Hempcrete and Grassroots Development. The companies wanted to conduct a research study, but ran into cost feasibility issues. Gordon stepped in with a solution to kickstart the partnership.

The collaborators received a quote of roughly \$25,000 for hempcrete installation, monitoring equipment and analysis of data. That initial figure was too expensive, but to keep the momentum going, Gordon agreed to install the air, energy and moisture monitors in the two homes.

“The travel time for a third party entity and installation were a big cost for the project,” said Gordon. “I was able to install the devices with some technical direction over the phone. That is one of the benefits AURI can bring to projects like this. We know a lot of people involved in the hempcrete industry and we can serve as a connector to bring different groups together. We also have the technical expertise to guide the monitoring and data collection.”

Sydney Glup, Sustainability and Design Coordinator at Grassroots Development, said the company has been wanting to put together a study like this for some time. “The partnership that developed among several different stakeholders is

ultimately what provided the boost to get the idea off the ground. The goal is to bring awareness of the many benefits of using hemp in construction materials to a larger market,” Glup said.

Hempcrete has the potential to be transformative for the region’s agriculture and construction sectors while also bringing potential benefits around energy and indoor air quality, which underscores the importance of these studies to spur investment in processing advancements and encourage more farmers to grow the crop.

In the field, hemp is a high performing rotational crop that is effective at soil remediation and carbon sequestration. Hemp farmers stand to benefit from increased demand for the crop due to the growth in the popularity of hempcrete. Market growth for hemp would also encourage more farmers to plant hemp.

“We hope that with this data we can break through some of the limitations that are keeping hempcrete in that niche market category,” Glup said. “I really believe there is a shift right now from building homes as fast and as cheap as possible to focusing on building homes that address health and wellness and the environment. Plus, with all the supply chain challenges right now we can keep the materials closer to home and hopefully continue to reduce the price of construction using novel products.”

Today, building with hempcrete is about 20 percent more expensive than traditional building materials. But Glup is quick to point out that the cost is recouped by cost-savings over the lifespan of a building. Some estimates say hempcrete can save 40 percent on energy costs annually. Plus, with more acres planted and additional investment in processing technology, the price of hemp-based construction products could become more competitive.

“We are very grateful for AURI’s support on this project. It has been a dream of ours for some time to be able to gather this kind of data, Glup said. “[Hempcrete] is a grow-your-own type of building material with a lot of social and environmental aspects to it. We feel strongly about the benefits of hemp, and we are so happy to be able to have the support of partners to be able to see this product grow.”

AURI Studies Commercial Kitchens and Life Cycle Analysis in Latest Round of Ag Innovation Partnership Program



Is there a dearth of shared commercial kitchens to meet the needs of Minnesota's growing cottage food industry in the state's rural areas?

Why are commercial kitchens closing in the Twin Cities metro area?

How should an early-stage business owner approach a life-cycle analysis?

These are a few of the questions the Agricultural Utilization Research Institute (AURI) set out to answer in its annual Agricultural Innovation Partnership (AIP) program.

Each year, AURI solicits submissions from businesses, researchers, entrepreneurs and producers, encouraging them to submit a proposal across several hand-picked topic areas. AURI reviews and selects projects based on the submissions most closely aligned with identified knowledge gaps and its mission of supporting innovation and creating long-term economic impact for the state of Minnesota.

This year, there were six categories that AURI prioritized for exploration. Two projects were selected: (1) a research project on the economics of shared use commercial kitchens and (2) a guide to the basics of life-cycle analysis.

Both projects were selected after conferring with stakeholders, including clients, collaborators and partners, to understand information gaps in the food and agriculture sector. The aim of these initiatives is to identify areas where AURI can create impact, explained AURI's Senior Director of Business Development and Commercialization, Jen Wagner-Lahr.

"Our staff capacity was a big determining factor on the projects we selected this year. We are very intentional to make sure we are using our resources and the expertise we have in the most effective way," she said.

Shared-use commercial kitchens are critical for home-based food

businesses to ramp up production to meet growing demand. In recent years, several commercial kitchens have gone out of business or changed hands. Further, AURI has heard that there are not enough shared-use commercial kitchens to meet growing demand in some rural Minnesota areas. A thorough study of the economics of shared-use commercial kitchens, with a focus on rural areas, is a time sensitive project of significant benefit to entrepreneurs and emerging businesses as the state's economy continues to emerge from the COVID-19 pandemic, said AURI's Business Development Director for Food, Jason Robinson. Finding and being able to afford commercial kitchen space is a much larger challenge for businesses outside of the Twin Cities metro area, he stated.

"What we've seen is that it's not overly difficult to get commercial kitchen space in the Twin Cities or in some of the other urban areas. But once you get outside of those urban areas, it becomes much more difficult," Robinson said.

The study is looking to answer a few important questions. First, why have some established commercial kitchen businesses closed in the state in the past few years? What are the challenges to making commercial kitchens financially viable, especially with the perception that there is not enough commercial kitchen space to meet demand from emerging businesses?

"The goal of this project is to understand the economics of the business model and why the marketplace may not have enough [commercial kitchen] space."

He revealed the audience for the report is scaling food and beverage businesses looking to move from a home-based operation into a shared space to prepare food products or meals. Robinson estimates there are nearly 6,000 cottage food businesses in Minnesota. Cottage food business owners do not need a license from the state to operate out of their homes. And while they do need to be registered with the state of Minnesota, they are not inspected by regulators.

“There are many early-stage entrepreneurs that are looking to launch into a wholesale food business. Some of them are content working in their home kitchen, but there is also a segment that is looking to operate in shared-use commercial space,” Robinson said. “We have done a lot of work to understand the landscape for food and beverage manufacturing in Minnesota with a focus on scaling businesses. We are continuing to explore the questions, issues and ongoing needs for food entrepreneurs to better understand how AURI can support them.”

AURI is partnering with Clutch Performance, a Minneapolis-based food marketing firm, and the Food Works Group, an advisory firm serving food businesses, on the report. The partners will conduct a series of interviews with commercial kitchen business owners, regional entrepreneurial support organizations, legislators, real estate experts, financial lending sources and others across the state. These interviews will be conducted to gain a better understanding of the legal, regulatory, financial and geographical issues at play for both commercial kitchens and aspiring food businesses.

The issues that emerge will likely be both universal to the state and specific to a region, said Troy Schroeder, President of Clutch.

“We are hoping to be able to validate and test the hypothesis and assumptions we have heard on both sides of this equation. The first question is ‘is there a gap between demand and supply of commercial kitchen space?’ and then ‘What are some potential next steps to address some of these issues that come to light during the research and conversations?’” Schroeder said.

Robinson stated that AURI was deliberate in working with a broad spectrum of partners to ensure the research and subsequent report is as robust as possible. The project underscores the strength of AURI’s connections in the ecosystem.

“We don’t just work in a silo with one organization. We are taking a systemic approach with several subject matter experts to help us solve these challenges for our scaling food and beverage businesses,” he said. “With this project we hope to uncover information gaps and critical business factors as well as develop recommendations to better support this industry segment.”

Life-Cycle Analysis

The second AIP project is a primer for entrepreneurs and businesses who are considering hiring a consultant to conduct a life-cycle analysis of a product. In a life-cycle analysis, researchers quantify the environmental impacts that result from the production and use of a product to create a ‘cradle to grave’ assessment of the product. Using this data, life-cycle analyses can formulate an estimate of a product’s carbon footprint, as well as its impact on water and air quality.

These analyses are becoming more common, and in some cases even required for business owners seeking funding. They also often entail a significant investment in time and money.

The goal of the project is to help businesses develop a productive relationship with a life-cycle analysis consultant and gain a solid understanding of the questions they should consider before the process starts and as it continues.

“There is a gap in knowledge in the marketplace, especially at the early-stage with respect to life-cycle analysis,” said Luca Zullo, AURI’s Senior Director of Science and Technology. “It is not a complex process to go through for an entrepreneur, but it is a confusing topic, and it can be easy to lose track of some of the most important information. We felt it was important for our clients and others to have a basic understanding of what these analyses can deliver and also better understand the common pitfalls.”

The guide will provide information on how the life-cycle analysis can be applied once completed and how a business can use it to differentiate its products in the marketplace. The report will also include questions a business owner should ask of a life-cycle consultant before starting a project as well as during the process.

“A life-cycle analysis can be a powerful marketing tool in the food space. Entrepreneurs want to show they have a climate-friendly and planet-friendly product,” Zullo said. To be able to do so they need to understand what the data is telling them as well as the language and the boundaries of these reports. What AURI has set out to do with this project is to advance conversations and provide the framework for a business to make some early decisions.”

AURI partnered with technical consultant Evalueserve on the project.

Ag Innovation Partnership

This is the fifth installment of the AIP. The program was designed to catalyze innovation, generate new ideas and support collaborative partnerships across Minnesota’s value-added agricultural industry.

The projects selected to the AIP program receive funding and time from AURI. Successful applicants contribute in-kind match for at least 25 percent of the value of the project. The information generated through the AIP is publicly available to help producers, entrepreneurs, businesses and agricultural processors explore opportunities and technologies across several value-added areas. A variety of channels are used for public dissemination, including AURI Connects.

Past research through the program produced applied research studies, as well as guides and tools to help businesses utilizing the state’s agricultural products.





Minnesota has been an innovator in food and agriculture for more than 150 years. It ranks fifth in the nation for agricultural production, with total crop and livestock market values exceeding \$21 billion in 2021. It serves as one of the largest producers of corn, soybeans, hogs, cattle and dairy, and is a top producer of sugar beets, oats, turkeys and wild rice.

In addition, the state is home to several Fortune 500 companies, multiple leading agribusiness cooperatives, a leading land-grant research university, including extension and research outreach centers, a network of 54 campuses through the Minnesota State Colleges and University system, 13 commodity research and promotion councils, several active farm organizations, innovative nonprofit organizations, as well as specialty crops and commodities producers.

With so many people working across the industry, it came as no surprise when Grow North and its partners founded Food, Ag, Ideas Week (FAI), an initiative to bring the community together, elevate and connect Minnesota's ecosystem and offer an invitation for the world to engage.

"We're doing something different. We believe the opportunities and challenges of our food system require all types of problem solvers and that's why we bring together diverse perspectives, including Fortune 500 companies, entrepreneurs, growers, innovators, nonprofits and investors from Minnesota and across the country." said Allison Hohn, Executive Director of Grow North.

Founded in 2018, FAI Week is an annual, multi-day program featuring a series of speakers, events, tours and demonstrations showcasing innovative ideas, building connections across sectors and encouraging leaders to join Minnesota's entrepreneur and innovation ecosystem to help move the industry forward. This year's FAI Week is October 3-6 in Minneapolis-St. Paul, Minn. More information is available at foodagideas.com.

AURI is collaborating with Grow North on two FAI sessions this year. The Fields of Innovation (FOI) team is participating in FAI Week 2022 to showcase Minnesota's diverse agricultural ingredient supply chain. The FOI session highlights emerging crops and the companies driving their growth, and includes a brief historical context of Minnesota's rich agricultural landscape, followed by engaging discussions to explore emerging crops and ingredients.

A New Frontier of Fertilizers session will feature innovative companies and researchers exploring new processes and products related to fertilizer, a key input to increasing yields and feeding the world. Speakers will share insight and advancements related to nitrogen, phosphorous, biologics and precision agriculture. A Minnesota farmer will share insights on how these innovations need to fit into their farm operations and why innovations around fertilizer are important.

Grow North

Grow North is a subsidiary of the University of Minnesota's Carlson School of Management and works to create an interconnected, sophisticated, invested and accessible ecosystem for Minnesota's entrepreneurs and innovators across food and agriculture.

The organization hosts a monthly entrepreneur series, as well as a 'Train the Trainer' series for ecosystem providers and leaders. It also offers resource databases and public speaking and promotion to share the story of Minnesota's growing ag and food entrepreneurial community.

To learn more about Grow North and its programs, visit carlsonschool.umn.edu/grownorth

Fields of Innovation

AURI Connects: Fields of Innovation is a platform focused on bringing together Minnesota's regional ag and food value chains from the producer to the retailer to build capacity and successfully commercialize new and emerging crops. Events focus on highlighting promising new crops, examining market opportunities for emerging crops and highlighting new technologies in existing crops.

Fields of Innovation has a multi-crop focus, providing opportunities for stakeholders to expand their networks, identify synergies and build new collaborations. With its focus on connecting innovation and market development, Fields of Innovation aims to build a strong ecosystem for new and emerging crops in Minnesota and its border states that will provide ag producers and value chain partners with new, sustainable options to diversify and thrive.

Webinars, field days, reports and forums have focused on Kernza®, a perennial wheat grass, industrial hemp, pennycress, winter camelina and controlled environment agriculture. Most recently, Fields of Innovation launched Innovator Profiles, a Q&A series with Minnesota entrepreneurs who partnered with AURI to build capacity and successfully commercialize new and emerging crops.

To learn more about Fields of Innovation, join the Facebook group by searching "Fields of Innovation" or visit AURI.org.

Growing Connection Through Artisan Grains



Moving grains from farms to tables is a group effort. To that end, the Agricultural Utilization Research Institute (AURI) supported the Artisan Grain Collaborative (AGC) in its effort to build a network of farmers, millers, maltsters, bakers, chefs, food manufacturers, brewers, distillers and researchers to create a diverse, Midwest grainshed built on regenerative agriculture practices. Together, their goal is to improve the health of communities, local economies and natural resources.

AGC was founded in 2016 when bakers in Chicago realized local production of small grains could improve Midwestern landscapes and expand the flavor and variety of fresh whole grains available in the region. It works to strengthen the Midwest grain economy through five member-led working groups that facilitate information sharing, organize gatherings and offer support for regional farms, businesses and allied organizations across the value chain.

Education & Outreach

The working groups focus on creating outreach opportunities and materials highlighting what small grains and other staple crops are, their environmental benefits and how to use them.

Research & Variety Testing

At the same time, AGC and its members ensure research questions and information gathered are relevant, timely and necessary.

Farmer Collaboration

This working group provides a relationship-building community for farmers producing small grains and other food-grade staple crops, and connects grain farmers with resources to increase economic, agronomic and social resilience.

Brewing & Distilling

AGC's work also connects entities across the upper Midwest beverage supply chain to promote collaboration and provide support, communication opportunities and resources to farmers, maltsters, brewers, distillers and upcyclers.

AURI's Role

As part of AURI's annual stakeholder survey, members of its staff engaged in a conversation with AGC. During the meeting, AGC requested support from AURI on behalf of one of its members for the development of a nutrition facts panel. AURI immediately recognized a challenge experienced by all AGC member farmers selling single grain or blended grain products (flours in particular). Simply put, farmers found it difficult to provide accurate nutrition information to consumers due to the high costs associated with obtaining the information.

While providing this kind of information to consumers is not required by law, it was clear to the farmers that consumers expected it.

AURI's Business Development Director-Food, Jason Robinson, its Senior Scientist-Food, Lolly Occhino and the organization's Scientist of Food & Nutrition, Ben Swanson developed a solution in the form of a nutritional database and access to nutrition label building resources that could be used by AGC's members. The savings of up to \$1,000 per new product created by this resource is a meaningful contribution to all the farmers who use it on their value-added efforts.

To learn more, visit graincollaborative.com.

ABOUT AG INNOVATION NEWS

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AURI staff, photography
Design by russellherder.com

Electronic pdf copies of current and previous *Ag Innovation News* issues are available on the website: auri.org.

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AURI LAUNCHES AG INNOVATION NEWS PODCAST

Last month, the Agricultural Utilization Research Institute (AURI) launched its Ag Innovation News podcast, an extension of this publication. The Ag Innovation News podcast is a brand-new offering from AURI, in which our very own Dan Skogen has in-depth conversations with some of the brightest minds and innovative individuals across Minnesota's value-added ag ecosystem.

Each episode explores the topics, ideas and individuals that influence Minnesota agriculture. If you are curious about value-added agriculture, upcoming events and opportunities along the value chain, or the people who work behind the scenes to strengthen the state's ag ecosystem, this is definitely the show for you!

Every other Wednesday AURI will launch a new episode you won't want to miss. Make sure you're subscribed so you can be part of all the great conversations happening on the Ag Innovation News Podcast.

To learn more, visit AURI.org.


Minnesota Ag Commissioner Thom Petersen
 SEPTEMBER 21, 2022

00:00 00:00

Minnesota Ag Commissioner Thom Petersen — SEPTEMBER 21, 2022 25:43
 AURI Executive Director Shannon Schlecht — SEPTEMBER 15, 2022 19:38

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 The newspaper of the Agricultural Utilization Research Institute

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