



# Ag Innovation News

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## Thinking Globally, Exploring Regionally, Driving Local Impact

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AURI IS EXCITED ABOUT EXPLORING HOW GLOBAL COLLABORATIONS AROUND INNOVATION WILL USHER IN FUTURE BENEFITS TO OUR STATE, REGION AND THE AGRICULTURE INDUSTRY OVERALL.

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Collaboration and teamwork often yield success whether it's sports or business. At the Agricultural Utilization Research Institute (AURI), we engage with multiple collaborators to advance ideas and bring them to reality. Minnesota has a rich ecosystem in food and agriculture where diverse, multifaceted entities support entrepreneurs, businesses and innovation.

AURI partners with commodity organizations like Minnesota Corn, Minnesota Soybean and Minnesota Beef. It also partners with food and agriculture focused entities such as MBOLD, Naturally MN, AgriGrowth, GreenSeam and the Ag Innovation Campus, and research partners like the University of Minnesota, Southwest Minnesota State, Central Lakes College and Minnesota State Mankato. In addition, AURI works with organizations that advance economic opportunities such as initiative foundations, local economic development entities, as well as federal and state agencies including the Minnesota Department of Agriculture, the Minnesota Department of Commerce, the Minnesota Department of Employment and Economic Development and the United States Department of Agriculture.

International interest in collaborating with Minnesota's agriculture ecosystem has increased in recent years and months. Protein is a particular focus. AURI was and is involved with efforts to support the Protein Highway (Canada and Midwest States), the Protein Innovation Mission (the Netherlands), and the Protein Roundtable (the Netherlands, Finland, Israel, Canada and other U.S. states). AURI also helped coordinate a business delegation from Finland to discuss the decarbonization of industry and innovative food opportunities in Minnesota. The partnership between Minnesota and Finland began in 2021 after signing a Memorandum of Understanding (MoU) prior to the Governor's Trade Mission in November 2021.

In September, the Japan External Trade Organization in Tokyo invited Dr. Luca Zullo, AURI's senior director of science and technology, to highlight Minnesota's food and ag ecosystem and AURI's unique role. He shared a presentation on food and agriculture opportunities and visited two Japanese agriculture businesses with whom AURI hopes to launch new collaborations that can potentially benefit MN agriculture— Spiber (makers of bioderived, customizable materials) and Tsubame (a green nitrogen company). Zullo also met with Dr. Masaru Tomita, director of the Institute for Advanced Biosciences (IAB) at Tsuruoka Science Park, a hub for enterprise and research.

At AURI, we focus on local impact, but increasingly look around corners internationally to explore new innovations and opportunities to benefit Minnesota's agriculture industry. You'll read more about this in subsequent pages.



This quarter, *Ag Innovation News* (AIN) highlights AURI's first-year Board Director, Minnesota State Senator Aric Putnam. Sen. Putnam is Chair of the Senate Agriculture, Broadband & Rural Development Committee, Vice Chair of the Higher Education Committee, and member of the Jobs and Economic Development Committee and Taxes Committee. Senator Putnam is also a professor at St. John's University and the College of St. Benedict. In this edition of AIN's Board Q&A, he shares his vision for helping Minnesota become the "Silicon Valley of agriculture."



Please tell our readers a little about your background

I grew up in Silicon Valley before it became what it is. I watched orchards become apartment buildings that were too expensive for any of my neighbors to live in. But I also saw technology and innovation change lives and create new opportunities in real time. I moved to Minnesota in the nineties to work on a Ph.D. at the University of Minnesota. I've been a professor at Saint John's University and the College of Saint Benedict for 20 years, researching and lecturing on practices of citizenship and how differences matter in the history of the United States democracy.



Why did you want to join AURI's board of directors?

AURI occupies a unique place in Minnesota's agriculture economy. Minnesota can become the Silicon Valley of agriculture, and AURI is at the forefront of that work. Equally important, AURI makes a real difference in people's lives. In AURI we see how government, business and the technical sphere can work together to make a concrete difference.



What do you think is the biggest challenge facing farmers today?

Minnesota's farmers are resilient and brilliant, creative and dedicated, but they often struggle to make their work profitable to sustain their livelihoods and support their families. Consolidation has made it even harder for farmers to get their work to market. We need to increase access to farming and the ag economy, and to democratize processing and distribution so that everyone can do their best and achieve sustainable success.



How can Minnesota best support its agriculture industry?

The best thing we can do is listen to farmers. For too long, leaders in St. Paul have made decisions for farmers rather than with them. That doesn't help anyone or solve any real problems. So, from a legislative perspective, the best thing we can do is recognize that we don't know everything and take the time to listen to those whose work is shaped by our decisions.



What are your goals as a new board member?

I'd love to make it to a meeting. And contribute. Seriously. But with a citizen legislature, it's a bit of a challenge. Ultimately, my hope is that my service on the board can help sustain AURI and share its important work from a legislative standpoint, as well as from the standpoint of a citizen who cares about agriculture.



Which ag-related issues are most important to you?

Generational transfer is incredibly important. But I'm not just talking about families. We have to find a way to help Minnesota agriculture build on its traditional strengths and grow to its next iteration.



What would you like to achieve in your current term with the Minnesota legislature?

This session will focus on "growing opportunity." I intend to prioritize bills and hearings that are focused on the intentional development of capacity. Minnesota agriculture needs and deserves thoughtful, equitable innovation. And as Chair of the Senate Agriculture Committee, that's a big priority for my work in the legislature.



# AURI's Meat Team Provides Valuable Assistance to Region's Meat Processors

The Agricultural Utilization Research Institute (AURI) and the United States Department of Agriculture's Agricultural Marketing Service (USDA-AMS) have been collaborating for more than a year on a series of projects to support local, regional, small and medium scale meat and poultry processors in the Upper Midwest.

Spurred by several economic and demographic developments in the industry, the partnership aims to strengthen the competitiveness of small and medium meat and poultry processors in Iowa, Minnesota, North Dakota, South Dakota and Wisconsin. AURI is one of only six USDA-authorized technical assistance providers in the country. Special focus will be given to identifying the needs and challenges facing business owners, spotting gaps in resources and offering solutions.

AURI and USDA-AMS are working together on two cooperative agreements. The first agreement lays out four key objectives: (1) create a regional advisory taskforce, (2) form a finance working group, (3) conduct a needs assessment and literature review and (4) develop a resource map. The second agreement creates a framework to provide ongoing, individual technical assistance to processors. Work on the first agreement ends early next year and the second agreement runs through 2026.

In the first agreement with USDA-AMS, AURI established a regional advisory taskforce to review and advise on the activities of the cooperative agreement, produce specific deliverables custom designed to grow the Upper Midwest's processor industry, increase revenue and leverage existing networks to maximize the reach of the project.

A finance working group studied some of the most important factors for local protein processors to consider when starting or expanding a business. The group compiled a list of the essential variables vs. expenditures and permits businesses should consider before expanding or constructing new processing sites. Work was also completed to catalogue financial reporting structures to provide clarity, establish a benchmarking pilot on how processors are performing compared to their peers and identify strategies on how businesses can improve their operations.

As part of the project, AURI staff facilitated focus group sessions and interviewed industry stakeholders to prioritize and identify supply chain gaps. They also reviewed existing resources and literature to gain a more complete understanding of the opportunities that exist to enhance resiliency in the livestock processing industry.

AURI also developed a database of existing intellectual and physical resources available to processors. This information was categorized by the type of service provided – like education and training, legal and regulatory assistance, financial assistance, business development assistance, technical and product development assistance, policy/advocacy, engineering assistance and market assistance. The database is a free, searchable online resource available at: [auri.org/resource-database/](http://auri.org/resource-database/).

To provide direct support to the meat processing supply chain, AURI hosted a series of educational courses on common business topics for small and mid-sized processors like business development, labeling, packaging and product development.

The second collaborative agreement between USDA-AMS and AURI provides a full range of technical assistance to protein processors in support of project development. The USDA-AMS invested \$25 million across the U.S. on this project and AURI was chosen as one of the official technical assistance providers. There are four focus areas with this collaboration: (1) federal grant application management, (2) business development and financial planning, (3) technical and operating support for meat and poultry processing and (4) supply chain development. AURI's experts help clients with specific issues under this cooperative agreement. So far, AURI has assisted 50 businesses.

To help meet the goals outlined in these USDA-AMS cooperative agreements, AURI hired new staff to work closely with the region's small to medium sized processors.

Meat Innovation Specialist Clay Newton provides clients with product development and scale up assistance, education and training coordination. He also manages AURI's meat laboratory in Marshall, Minn. He is proficient in the slaughter, fabrication, processing and sales of beef, pork and lamb, including packaging and displaying products in the retail space.

He works with clients on a host of issues including assistance in clean labeling, product formulation, recipe design, workflow process, cold storage, business planning, food safety and evaluating capital investment for new equipment purchases.

"I was brought on to add some hands-on expertise and to help processors when they have specific questions. Sometimes it is as basic as 'We have this product that we make, now how do we start selling it?' I was given the opportunity to help smaller plants achieve their goals," Newton explains. "It is very exciting and rewarding work."

Laura Bachmeier is AURI's Business Development Director of Meat. In this role, she assists in advancing the value-added meat industry for the purpose of rural economic development by providing meat science leadership through education, training, exploring new meat innovations and developing professional networks.

"When we were seeing the largest impacts of the COVID-19 pandemic on the meat and poultry supply chain, it was critical for AURI to understand how to navigate these obstacles and put together some recommendations on the best approach to tackle and address these problems," Bachmeier notes.

Kim Nesvig is a Project and Resource Manager and coordinates AURI's role as a technical assistance provider for the USDA-AMS cooperative agreement that supports the Meat and Poultry Processing Capacity Technical Assistance Program. He is the first point of contact with potential applicants to USDA-AMS's grant programs and coordinates and provides technical and reporting assistance.

Nesvig says a significant part of the work in the technical assistance cooperative agreement falls under the category of supply chain development. Small and medium sized processors faced several hurdles as a result of the COVID-19 pandemic and the USDA has made an intentional effort to address the issues that emerged.



**"There are so many considerations that are connected to the supply chain," Nesvig says. "Finding distributors, getting equipment, purchasing animals and then shipping them. Some producers were shipping cattle hundreds of miles to get them processed. That is not a feasible solution in the long term. Achieving competitiveness in the marketplace for small and medium processors is very challenging. Understanding those bottlenecks and helping alleviate some of those issues is where AURI can really provide value as an organization."**

AURI's work with a family meat business near Waseca, Minn. is an excellent example of how the meat team is serving the needs of processors through the collaborative agreements with the USDA-AMS. The family owns a company called The Meatery and makes bacon from pigs on their farm. They recently approached AURI for assistance in scaling up and taking the product to market. The AURI team advised on a host of issues including recipe and process workflow, product sampling, labeling and securing a cold storage locker. The Meatery is also working with a spice blending company to expand the product line further with sausages.

"Very small processors wear 10 different hats and work long hours," says Bachmeier. "So many of our clients are skilled at cutting meat and want to expand their businesses, but they need assistance on specific things to achieve that goal. Whether it's dealing with a bank to get financing or obtaining a market assessment, these are all critical pieces. We sit down with our clients and figure out how we can make their dreams a reality so they can grow their business and support their families and their communities."

According to Bachmeier, a significant portion of the work in the first cooperative agreement is complete.

"We plan to continue the conversations with our regional advisory task force in the Upper Midwest region. As the members are engaged and the dialogue is strong, we look forward to continuing to learn from each of the states and discovering what is working well and what further support we can provide to continue the collaborative efforts," she explains.



# Fueling Potential for Soy Fertilizers

By Dan Lemke



The soybean industry is realizing a profound period of investment and growth. As demand grows for low carbon fuels, including renewable diesel and sustainable aviation fuel made from feedstocks like soybean oil, new soybean crushing plants are opening or are under construction in North Dakota and South Dakota, while expansion is taking place at existing plants in Minnesota.

“At last count, I believe there are 11 new plants nationwide that should be operating by 2026,” says Mike Youngerberg, senior director of product development for Minnesota Soybean Research and Promotion Council (MSR&PC). Two of the new plants will be in North Dakota and one in South Dakota.

The thirst for soybean oil may be driving processing growth, but oil is just one component produced by soy crushing. The added crush capacity means there will also be a larger influx of soybean meal available to the market, a situation that has not gone unnoticed.

“We recognize that we’re going to have a huge amount of meal that we’re going to have to do something with,” Youngerberg says. “We can certainly export some, but here at home, all the pigs, chickens and soy-based foods aren’t going to take up that kind of volume. We need to look at avenues beyond our livestock markets and at other opportunities that didn’t present themselves previously.”

One promising opportunity is the area of lawn, turf and garden fertilizer. The Agricultural Utilization Research Institute (AURI) worked with leaders at MSR&PC to further explore the potential for developing blended fertilizers using high percentages of soybean meal.

## Greener Pastures (and Lawns) .....

According to the U.S. Department of Agriculture (USDA)-National Agricultural Statistics Service, Americans spend about \$604 million each year on lawn and garden fertilizer. An increasing number of consumers and businesses want products that are environmentally friendly, yet effective.

That combination of factors lends itself to soybean meal’s strengths.

AURI connected with AminOrganiX, a Bloomington-based company that produces and distributes organic fertilizer. Its products – made in Stewart, Minnesota and Wisconsin – are used on more than 90 golf courses in the Southeastern United States, including six of Florida’s top 10 courses.

“Golf course managers are pretty exacting customers,” says Mike Reiber, AminOrganiX CEO. “They know what they like, and they know what they don’t like.”

AminOrganiX ships hundreds of tons of granular fertilizer to the Southeastern U.S. each year for golf course use. It also provides fertilizer for crops in the southeast U.S. region, including peanuts, strawberries, corn, squash and cucumbers.

AminOrganiX developed two higher soy content formulations, a 7-1-7 (7% nitrogen 1% phosphorous 7% potassium) blend and a 16-0-8 (16% nitrogen 0% phosphorous 8% potassium) formula. Both contain 50% soybean meal.

According to Reiber, there’s no other natural formulated fertilizer that has anywhere near that quantity of soybean meal.

To illustrate the products' performance, three Minnesota entities utilized the new fertilizer blends on their sites. "The fertilizer performed well in the area tested and was both easy to apply and spread," notes Shannon Boen, grounds and road maintenance coordinator at Northland Community & Technical College. "Rain occurred when needed to provide a good read on the fertilizer performance. I mowed the grass weekly and it looked very nice. The 16-0-8 blend went on heavier and produced a thick turf with a lush green appearance. There also seemed to be fewer weeds in that area—healthier turf means less weeds!"

"Homeowners across America and the people who are administering publicly owned grounds are looking for alternatives to chemical fertilizers," explains Reiber. "The alternative products they currently have are not fast acting. Our formulations produce much faster in the soil because they feed the soil microbes."

Reiber says there is a resurgence in research in the lawn and turf realm around the impact of amino acids on plants. Amino acids are growth stimulants which help plants grow deep roots, which support strong, overall plant health. Because soybean meal is a good source of amino acids and a non-chemical ingredient, there is even more potential for soy-based fertilizers.

"It's hot right now and we're right in the center of it," Reiber says. "That's a good thing for us and for soy. You've got these amino acids in soy meal, which is why it's used as animal feed. Instead of just feeding animals, we're feeding plants because they also benefit from those amino acids. Our fertilizers are all about nourishing the soil and using amino acid forms of nitrogen, phosphorus and potassium."

## Proving Grounds .....

AURI Business and Industry Development Director Harold Stanislawski and Project Manager Becky Philipp worked with the Minnesota maintenance departments at Ridgewater College in Willmar, Northland Community & Technical College in Thief River Falls and the Minnesota State Community and Technical College in Fergus Falls to illustrate the AminOrganiX fertilizer performance. Two applications of granular fertilizer were made during the spring and summer of 2023.

The Willmar and Fergus Falls locations received very little rain during the year, limiting the fertilizers' impact, while the Thief River Falls location experienced near normal precipitation.

"The soy fertilizer [used at Thief River Falls] made the grass look a lot healthier and greener as it progressed through the season," Philipp says.

## An Opening Door .....

Organic fertilizer sales are slated to grow at 5.8% in the U.S. due to increased Gen Z participation in gardening activities and increased public awareness of organic fertilizers. Currently, organic lawn and garden product sales in the United States are about \$3.3 billion annually.

"There is a place for soybean meal fertilizers in the marketplace," Stanislawski contends. "When you look at the cost per pound of nutrition to the plant, these formulations are right there with other natural fertilizers in the marketplace."

"Finding new applications for soybean meal as an ingredient for fertilizer helps expand product usage through a new market channel, but also addresses the increasing demand for organic forms of fertilizer compared to conventional fertilizers," says AURI Senior Scientist for Coproducts Alan Doering. "Soybean meal fertilizer blends provide a natural slow-release fertilizer and are a good alternative for lawns and landscape adjacent to lakes, streams or water tributaries."

The successful development of blends utilizing higher percentages of soybean meal is just the beginning of AURI's work in the fertilizer field. Work will continue on the development of fertilizers with higher blend percentages for a spring boost as well as blends that utilize other agricultural products or coproducts.

Stanislawski says another key step in increasing the use of soy meal as fertilizer is by understanding the value chain constraints of soy-based fertilizer products.

"The Soybean Council funded phase two of this project, which will explore the value chain of how we can get this into the marketplace in greater Minnesota through farm cooperative stores, distribution centers and related stores," Stanislawski explains. "We think there's going to be a lot of consumer interest in these kinds of products because they're natural."

Discussions have already taken place with a Minnesota-based enterprise interested in marketing and distributing the soy-based fertilizers.

## Shining Example .....

Stanislawski says the effort to help develop new markets for soybean meal as fertilizer has been particularly rewarding.

"We have a plant that manufactures soybean meal in Minnesota, we have companies that have ingredients for mixing fertilizer, and on top of that, those companies are interested in helping develop the value chain," Stanislawski notes. "I don't work on very many projects that have that three-legged stool right off the bat."

Youngerberg adds that the process of transitioning from an idea to a developed product with market potential has moved very quickly.

"It certainly came together fast which gets us ahead of the game. That's a good thing," Youngerberg explains. "People have used soybean meal or corn gluten meal for various fertility purposes in years past, but I think this is the first effort at really targeting a market that's looking for a product that meets the goal of sustainability and is something consumers can feel good about using. It's also one of those rare projects where we already have a distributor very interested in this kind of product."

Reiber believes there is strong potential for natural fertilizers that contain higher percentages of soy.

"There is significant opportunity for soy-based fertilizer, particularly when we involve the agricultural community in this. It's not only the producer associations, but also the agrochemical distributors and their retail formats. It's the people who want to support alternative uses for soybeans," Reiber states. "It's a really good fit."



## A Sustainable Aviation Fuel Hub Set For Take Off in Minnesota

**Through the GREATER MSP Partnership, a group of leading businesses announced in August ambitious plans to make Minnesota a leader in the production of Sustainable Aviation Fuel (SAF) and contribute to decarbonizing the aviation industry while finding new uses for the state's agriculture products.**

The Minnesota SAF Hub Coalition is a broad group of partners that includes companies like Delta Airlines, Bank of America, Xcel Energy and EcoLab. The Coalition set a goal of bringing SAF to Minnesota as early as 2025 through a “phased approach to scaling production.”

Airlines around the world are currently utilizing SAF made from inputs such as used cooking oil, renewable feedstocks and municipal waste. Supporters say the use of SAF can reduce carbon emission from air travel by more than 80 percent. Delta uses roughly 250 million gallons of jet fuel annually at the Minneapolis-St. Paul International Airport alone, while overall airline industry use in the U.S. is roughly 30 billion gallons. This year, Delta announced a goal of increasing the use of SAF at the Minneapolis airport by more than 10 percent by 2027 and 50 percent by 2035.

Connecting the farm to the airport with a SAF hub is an ambitious plan with ample positive impacts for Minnesota's economy and environment. Achieving that goal, however,

will take a concerted effort from the state's agriculture industry, business community, renewable energy producers, researchers and government leaders. Exciting progress has already been made, and the partners of the Minnesota SAF Hub Coalition are confident that with this announcement they can kick start the commercial scaling of SAF and make Minnesota a global leader in sustainable aviation.

One hurdle to overcome is price. SAF can cost up to eight times more than traditional jet fuel according to industry analysts. However, recent federal and state tax credits are poised to make SAF a more attractive area for investment and development. The federal Inflation Reduction Act includes renewable energy legislation that provides significant tax credits for SAF. Earlier this year, Minnesota approved tax credits for SAF as part of the Omnibus Transportation Law.

According to the Minnesota Bio-Fuels Association, Minnesota is a top five producer of corn and ethanol, with the latter topping 15 billion gallons nationwide in 2022. Minnesota's biofuels producers are ready and able to ramp up production in support of the SAF movement but there are policy decisions that must be made to guide the industry forward.

The federal government must first clarify eligibility for the tax credits included in the Inflation Reduction Act. Additionally, the U.S. Treasury Department has yet to determine how companies will measure the carbon intensity scores to qualify.

There are two main models that calculate the carbon lifecycle reductions that are necessary to apply the tax credits. The Minnesota Bio-Fuels Association supports use of the Greenhouse



Gases, Regulated Emissions, and Energy Use in Transportation (GREET) model because it incorporates the most recent data from federal and academic institutions on crop and biofuel production into lifecycle analyses. “Leveraging the latest science ensures accuracy in carbon accounting and rewards farmers embracing lower-carbon production practices,” explains Brian Werner, executive director of the Minnesota Bio-Fuels Association. A second model called CORSIA, Werner says “uses antiquated European emissions estimates of corn and biofuel production. If the federal government uses the CORSIA model it would make it much more challenging for many biofuels to qualify for the credits.”

The second issue is the permit process here in Minnesota. Our existing ethanol plants would need to implement new technologies and make investments in new facilities to produce aviation fuel that would meet the carbon intensity score needed to qualify for the tax credits. The Minnesota Pollution Control Agency would also need to approve permitting before the plants can make those investments and begin work on any projects. “The permitting process needs to be expedited,” Werner notes, “because the tax credits expire in 2027.”

He adds: “Our members are looking at SAF as a phenomenal opportunity for agriculture and biofuels, especially as the energy transition continues. But they also have concerns about whether the permitting will be in place for us to take advantage of this opportunity in Minnesota. It is difficult to expect these businesses to make a significant capital investment to build a new plant or implement climate smart solutions when there is uncertainty about whether they can get a permit approved in a timely manner and qualify for the tax credits to help offset costs.”

Megan Lennon is the energy and environment section supervisor for the Minnesota Department of Agriculture. Her department is working on the policy guidelines for how sustainable jet fuel producers and blenders can qualify for the state tax credit. “The department is very excited about the announcement because it would use Minnesota grown feedstocks to help meet the state’s climate and greenhouse gas emission reduction goals,” she says. “The Minnesota tax credit has a few distinct provisions that make it more attractive for businesses than SAF tax credit programs in other states.”

For example, the tax credit is refundable. Smaller companies that don’t produce high volumes of SAF, or pay a large amount of tax, can still claim the credit as a refund. Additionally, there is a sales tax exemption for the construction or purchase of materials and equipment to build or retrofit a facility that produces SAF.

**“The purpose of this hub is to solve a big challenge: How do you create and develop an industrial scale supply chain? There are so many layers and not one partner can do it alone from end to end. That is why this partnership is so important,” Lennon says. “It brings the knowledge of all these different entities together to solve this problem. This isn’t**

**just one technology provider, or one large energy producer. It is really a collaborative effort across the whole spectrum because eventually we will need the participation of many sectors to move the technology forward to meet this goal.”**

The Minnesota SAF Hub Coalition is straightforward about the challenges and obstacles. The organization says it is balancing pragmatism and ambition by using existing technologies to make progress as quickly as possible, while accelerating the technologies with the greatest carbon reduction potential.

“Despite the challenges and uncertainty, markets can be influenced through a combination of policy decisions and industry solutions,” says Steve Csonka, executive director of the Commercial Aviation Alternative Fuels Initiative (CAAFI.) CAAFI hopes to get the price of SAF on a negative trajectory while the price of petroleum-based jet fuel will likely get more expensive as the world adapts to Paris Accord commitments. Meanwhile, the airline industry is aggressively working to meet greenhouse gas emission standards, as well as their own commitments to limit and reduce such emissions. Csonka believes government policy, as well as SAF production technology improvements can further close the price gap, and the alternative fuel industry can also invest in solutions to make production cheaper and more efficient.

“Every time we bring a new SAF project online it is a one-off success that takes years and years of work and sacrifice and hundreds of millions of dollars. It is difficult to make one of these projects a reality,” Csonka explains. “That needs to change. Instead of having five or 10 of these projects in the pipeline, as we currently do, we need to have 60. Instead of them taking years and years to complete, it needs to become routine. We are not there yet, but we are getting closer to that point every day.”

CAAFI’s goal is to promote the development of alternative jet fuel options that provide equivalent safety and favorable costs compared with petroleum-based jet fuel, while offering environmental improvement and energy supply security for aviation. Csonka’s group is in contact with the Minnesota SAF coalition to offer assistance and support. Working with BBI International at the inaugural National SAF conference, CAAFI created the opportunity for the Greater MSP group to disclose their project to assist with development of a SAF Supply Chain to feed the Minneapolis-St. Paul airport. “Minnesota has solid infrastructure in place, feedstock availability, policy support and a strong group of champions to make a lot of progress on a SAF hub in a short amount of time,” Csonka notes.

“The Agricultural Utilization Research Institute (AURI) is very supportive of the Minnesota SAF Hub Coalition announcement and advancing new biofuels opportunities,” says AURI’s Executive Director Shannon Schlecht.

“We are looking at what our role as an organization should be with this coalition and industry effort. We are exploring where we can be most impactful to fill value-chain gaps. It is certainly very exciting and an important value-added opportunity for our state’s agriculture industry.”

# International Visits – A Highlight of AURI’s Outreach in 2023

**The Agricultural Utilization Research Institute (AURI) prides itself on generating impact for the Minnesota agricultural economy and does so by collaborating globally and acting regionally and locally. This year, AURI’s staff met with delegations from multiple countries in an effort to expand the scope of possibilities and identify value-added opportunities for and in Minnesota.**

## Netherlands Visit

Officials in the Netherlands have set a goal to reach a 60/40 ratio of plant/animal protein composition in diets by 2030. To accomplish this goal, partnerships with like-minded businesses, corporations, food companies and startups are required.

With protein being a key strategic area of interest in the Netherlands, a Dutch innovation-focused business delegation visited Minnesota and Canada to build partnerships in the alternative proteins sector. They targeted Canada and Minnesota as each has a strong reputation of being leading producers of high-quality agricultural products.

The innovation mission set out to: (1) gain insight into the ecosystems in the alternative proteins sector in Canada and the United States and (2) explore trends and opportunities for public-private collaboration between institutions and companies in research and development.

The Dutch delegation included business owners, as well as representatives from the Netherlands Embassy in Washington D.C. and the Netherlands Consulate General in Chicago and Vancouver. AURI worked with MBOLD and the Canadian Consulate on a Minnesota program. Shannon Schlecht, executive director of AURI, was part of the planning cohort that hosted the Dutch delegation and moderated a panel discussion with ecosystem members (Puris, SunOpta, Schwan’s, University of Minnesota) to showcase the plant protein ecosystem and plant-based protein innovation efforts.

The Netherlands plays beyond its size in the agriculture innovation space and this delegation had a clear strategy to build collaborative opportunities in the alternative protein area,” Schlecht says. “We look forward to exploring synergistic innovation areas that can create new market opportunities for Minnesota’s agricultural assets and industry.”

In addition to the individual visits, representatives from both countries participated in a virtual Global Protein Roundtable of roughly 30 individuals hosted in April by AURI, MBOLD and the Canadian Consulate. The Roundtable provided perspectives from several international organizations and businesses on the opportunity to scale and expand protein-related business opportunities here.



## Finland Visit

Team Finland, led by Ambassador Mikko Hautala, visited the Minneapolis-St. Paul metro area in May 2023 to convene with state leadership, representatives of Fortune 500 companies and top research institutions to discuss the decarbonization of industry and innovative food opportunities in Minnesota. The partnership between Minnesota and Finland began in 2021 after signing a Memorandum of Understanding (MoU) prior to the Governor’s Trade Mission in November 2021.

On the decarbonization side, Team Finland met with companies and institutions, including Ever-Green Energy, Xcel Energy, Clean Energy Economy and 3M, to address its carbonization goals. In addition, representatives from Finnish companies met with manufacturers at Hormel Foods and Cargill to discuss challenges facing energy and manufacturing efficiency.

With Minnesota home to several major food companies, such as General Mills, Land O’ Lakes and Hormel Foods, Team Finland and the Minnesota cohort explored opportunities for developing new, natural and plant-based products. The team met and had discussions with MBOLD, Naturally MN, Step One Foods, General Mills, Buhler, the University of Minnesota’s Plant Protein Innovation Center, the Minnesota Department of Agriculture, the Minnesota Trade Office and several other Minnesota entities to explore new opportunities.

Jason Robinson, AURI’s business development director-food, was part of the cohort that hosted the delegation from Team Finland. “We worked closely with the Minnesota Trade Office to help the Finnish team understand the breadth and depth of our food business support ecosystem, while showcasing Minnesota as a hub of sustainability and protein innovation – all in an effort to identify future business collaborations,” says Robinson.

Elina Fahlgren, senior advisor of the Food from Finland program at Business Finland, summed up the purpose and impact of the delegation’s visit. “The economic landscape of Minnesota is very appealing. It is advanced on many sectors and open for exploring new technologies and tackling pressing issues.” In reference to the value of AURI’s deep engagement with the delegation, Ms. Fahlgren went on to say, “AURI’s continuous support in building bridges between Finland and Minnesota has been instrumental for our successful visits in 2022 and 2023. Our companies have given excellent feedback for both the content and contacts made through the delegation.”

## JETRO Conference

The Japan External Trade Organization (JETRO) was established in 1958 by Japan’s Ministry of Economy and is a government-related organization working to promote mutual trade and investment between Japan and the rest of the world. It has 76 offices in 56 countries, including

*Continued on back panel >*

# Sara's Topsy Pies®

## Where Are They Now?

The Agricultural Utilization Research Institute (AURI)'s Food Team works with food and beverage entrepreneurs, providing technical assistance to introduce innovative products to the market. And the stories of these entrepreneurs are as varied as the products. A few years ago, AURI assisted a stay-at-home mom in bringing her dream to reality.

Sara Hayden's journey began in 2012 while seeking a return to the general workforce after dedicating 11 years to raising her children. After her mother passed away in 2011, Sara decided to carry on her mother's passion and tradition of baking pies for those she loved. With the help of a friend who owned a local bakery, Sara was able to keep her mother's memory alive and fulfill a dream she had since she was in her early twenties.

Sara initially baked pies for Thanksgiving, selling 250 pies the first year. After attending a local business seminar, Sara began to explore starting her own pie company and making her pies stand out. After stumbling upon beer pie, she created her own recipe and reached out to Lift Bridge Brewery in Stillwater, Minn. about featuring its beer in her pies. The rest is history. Rustic Pies of Stillwater LLC was founded, showcasing her mother's pie crust recipes with a boozy twist. Rustic Pies originally offered large pies only, in a variety of flavors including apple, triple berry, pecan and pumpkin.

### A HELPING HAND FROM AURI TO MEET GROWING DEMAND

A few years later, with growing demand for the boozy pies, the company rebranded as Sara's Topsy Pies to better reflect its marketplace differentiation, offering a variety of sweet and savory

hand pies, tarts, and traditional pies—many infused with beer, wine and spirits. Sara soon decided to offer pies beyond her café and bakery, by packaging them for sale in grocery stores and markets.

Navigating the process of bringing a product to wholesale is a tricky transition for many food entrepreneurs. Sara contacted AURI and worked with Lolly Occhino, senior food scientist, and Jason Robinson, business development director-food. Occhino and Robinson assisted in professionalizing recipes into standardized formulas, provided guidance on ingredient sourcing and selection to meet clean label criteria and developed nutrition labels. In 2015, Sara's Topsy Pies launched at supermarkets across Minnesota, North Dakota, Wisconsin and South Dakota.



### PIES WITH A PURPOSE

In February 2003, Sara and her husband Chris welcomed their second child, Madi, who was born with Down Syndrome. While navigating the challenges of raising a child with special needs, Sara became increasingly thankful for the many organizations assisting parents of special needs children, including The Down Syndrome Association of Minnesota, Special Olympics Minnesota and Valley Friendship Club of Stillwater.

Because of the wonderful support she and Chris received, Sara decided to honor that kindness by paying it forward. In March 2014, Sara's Topsy Pies launched its "Pies with a Purpose" campaign, donating a portion of the proceeds from pies made with Finnegans beer to The Down Syndrome Association of Minnesota, among others. Finnegans Brewing Company is the

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Address correspondence or subscription requests to:

12298 350th Ave,  
Waseca, MN 56093

218-281-7600  
[news@auri.org](mailto:news@auri.org)

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#### CONTACT US

**Crookston**  
510 County Road 71 Suite 120  
Crookston, MN 56716

**St. Paul**  
Andrew Boss Laboratory of Meat Science  
1354 Eckles Ave, Room 136G  
St. Paul, MN 55108

**Marshall**  
1501 State Street  
Marshall, MN 56258

**Waseca**  
12298 350th Ave,  
Waseca, MN 56093

six in the United States. Each year, JETRO hosts the Midwest U.S.-Japan Association Conference, with the event rotating between Japan and locations in the Upper Midwest.

This year, it was hosted in Tokyo September 8-15, and representatives from multiple states attended to showcase innovation in the Upper Midwest. The delegation from Minnesota included Governor Walz, Lt. Governor Peggy Flanagan, Minnesota Department of Agriculture Deputy Commissioner Andrea Vaubel and more.

Dr. Luca Zullo, senior director of science and technology at AURI, was invited by JETRO to be part of the conference to showcase innovation opportunities in Minnesota and the food/agriculture space. Luca gave a presentation to Japanese agriculture businesses and participated in several breakout sessions. In addition, he visited two companies with whom AURI sees potential for new collaborations— Spiber (makers of bioderived, customizable materials) and Tsubame (a green nitrogen company). He also met with Dr. Masaru Tomita, director of the Institute for Advanced Biosciences (IAB) at Tsuruoka Science Park, a hub for enterprise and research.

“This was a unique opportunity to highlight the vibrancy of the Minnesota ag sector to several highly innovative Japanese companies,” says Zullo. “We look forward to multiple mutually beneficial collaboration opportunities to develop new sustainable markets and products. We are deeply grateful to JETRO for their indispensable support in catalyzing these activities and new relationships.”

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world’s first beer company to donate its profits to charity. Proceeds of wedding pies made with Finnegans beer also support the cause.

### **WHERE ARE THEY NOW?**

While Sara’s Topsy Pies was able to generate substantial revenue in the wholesale market, Sara made the difficult decision to pull her product from store shelves due to the high cost of production and low profit margin. Despite the setback, the business is thriving, and Sara and her staff can focus more on its café and wedding and catering ventures.

**“Having the time to be more purposeful makes my staff’s and my life more manageable,” Hayden says. “I now own a business and it doesn’t own me.”**

Today, Sara’s Topsy Pies Bakery and Café in Stillwater, Minn. offers pies, tarts, cookies, high-end pastries and fresh brewed coffee. The company also sells pies and pastries to other local businesses, including Howard’s Bar, Green Bridge Café, Tossed LLC, Apple Crest Farm, and at the Minnesota State Fair.