



Ag Innovation News

TODAY'S INSIGHTS • OPPORTUNITIES • IDEAS

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EXECUTIVE DIRECTOR'S COLUMN

“Successfully creating and bringing a new product to market is both challenging and rewarding.”

It's that time of year when farmers are busy harvesting, and we start turning the corner towards winter. I hope the harvest is good for growers this year, both in terms of yield and quality, as another crop enters their books. The post-harvest space is where AURI enters the picture to think about expanding market opportunities and developing new products. We especially look forward to helping drive new demand through accelerating market opportunities for crop supplies entering grain bins and the grain supply chain.

Successfully creating and bringing a new product to market is both challenging and rewarding. AURI's business development and scientific teams work hand in hand with farmers, cooperatives, agribusinesses, and other innovators each year to advance creative ideas. Together we aim to achieve new demand for primary crops, emerging varieties, and explore new uses for manufacturing coproducts that are vital to achieving an economical and profitable future.

A few forward-looking initiatives we are working on cover a range of crops and segments of Minnesota agriculture, whether it be hemp fiber opportunities in building and construction projects, benchmarking support for local and regional meat processors, nutrient recovery potential at ethanol facilities, functional food ingredients, protein extraction from plant leaves, anaerobic digestion, or new market areas for soybean hulls, oil, and meal.

In this edition of *Ag Innovation News*, you'll learn more about our protein work and the Protein Navigator point of entry for companies wishing to explore and navigate Minnesota's protein ecosystem. You will also find a new report on on-farm anaerobic digestion opportunities and a preview of our upcoming Minnesota Renewable Energy Roundtable, which will focus on the state's renewable natural gas potential and the industry's future.

I'd also like to take this opportunity to welcome a new board member and food staff member to the AURI family. Representative Rick Hansen joined the AURI Board of Directors in 2025, representing the Minnesota House of Representatives. He currently co-chairs the Minnesota House Agriculture Finance and Policy Committee, and you will learn more about his goals in our Board Spotlight. Additionally, Senior Food Scientist Charlie Lucas joined AURI in June 2025 and brings a wealth of experience through his time at General Mills and Target that ranges from food science to culinary training to supporting our growing scale-up food industry in Minnesota. Finally, if you are interested in learning more about AURI and the innovative initiatives underway throughout the year, please join us at our regular webinars, our bimonthly podcast episodes, and our monthly e-newsletter. You can sign up for any of those informational channels at auri.org/news.

A handwritten signature in black ink, appearing to read "Shannon M. Schlecht".

Shannon M. Schlecht
Executive Director



Board Spotlight

REP. RICK HANSEN

This issue of *Ag Innovation News* highlights AURI’s first-term Board Director, Rep. Rick Hansen. A member of the Minnesota Democratic-Farmer-Labor (DFL) Party, Rep. Hansen was elected to the Minnesota House of Representatives in 2004. He currently serves as the DFL Co-Chair of the Agriculture Committee and served as Chair of the Environment and Natural Resources Committee from 2019 to 2025. He also serves as Co-Chair of the NCSL Agriculture Task Force and was recently elected to the Executive Committee of the National Conference of State Legislators (NCSL). Rep. Hansen lives in South St. Paul with his family and has a family farm in southern Minnesota.

Please tell our readers a little about your background.

I graduated from Upper Iowa University with a degree in biology and received my Master of Science degree in soil management from Iowa State University. Prior to being elected to the House, I worked at the Minnesota Department of Agriculture and served on the Dakota County Soil and Water Conservation District Board of Supervisors. I’ve been a member of the Agriculture Committee for multiple terms in the legislature and now serve as Co-Chair in our currently tied House.

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

Having served in the legislature for 20 years, I’ve seen firsthand the value of AURI and the work it does. It’s good to have the opportunity to be involved in managing an organization focused on innovation and creativity in the ag industry.

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

Monopolization, consolidation, and high land prices are all major challenges facing today’s farmers. We have moved to a feudal system, where you have to be born or married into the farming industry—and I believe that needs to change.

How can Minnesota best support its agricultural industry?

We need to be applying the innovative research being done in our state in order to support our new and emerging farmers. I’m focused on promoting science-based solutions to meet ever-changing local consumer and business demands.

What action has been taken at the Legislature to support farmers and the agricultural industry?

This year, we passed a strong agricultural budget that focused on the changing culture in agriculture and the people who make our food system work. Our budget feeds kids and families, helps farmers get ahead, and promotes science-based solutions to threats like bird flu. I’m proud to say we passed our bill with broad bipartisan support, and we finished on time during the regular session. I’m looking forward to continuing that work in the second year of my term.

Which ag-related issues are most important to you?

Some of the most important issues that guide my work at the Legislature include diversification of both farmers and crops, enhancing and preserving water quality, protecting wildlife, and addressing agricultural impacts on the broader community.

What is something people would be surprised to learn about you?

I often spend weekends down on my family farm of over 600 acres in southern Minnesota. I have spent decades working with Amish neighbors and young farmers to provide them opportunities to sell their products. I also love walking the farmland in southern Minnesota, taking photographs of the beautiful landscapes, bees, and other wildlife that we share the land with.



UNIVERSITY OF MINNESOTA
Driven to Discover®

OPPORTUNITY BLOOMS FOR SOYBEAN-BASED FERTILIZER

Ella VanKempen's test plots at the West Central Research and Outreach Center (WCROC) in Morris, Minnesota, look a little different than most of the agricultural research locations around the state. As a horticulture researcher, the plants she focuses on are typically evaluated for aspects other than bushels per acre.

"We have ornamental plants, perennials, shrubs, and tropical plants here as well," VanKempen says.

A recent product demonstration VanKempen conducted as part of an innovative AURI project may impact one of the state's most important row crops: soybeans.

AURI recently conducted a value chain analysis and market assessment to evaluate the potential for increased utilization of liquid soybean meal fertilizers in the horticulture sector in Minnesota. AURI previously worked with the Minnesota Soybean Research and Promotion Council (MSR&PC), identifying opportunities for dry soybean-based fertilizers. The liquid soybean meal-based fertilizer project furthered that initial research.

The AURI study also examined possible distribution models for fertilizers within the cooperative farm retail model and the greenhouse industry value chain. Overall, the project is designed to increase market penetration and knowledge of liquid soybean meal fertilizer products.

FLOWERY COMPARISON

VanKempen led one of several evaluations conducted across the state. She demonstrated the effects of liquid soybean-based fertilizers on horticulture plants both outdoors and in controlled environment greenhouses. She compared two soybean-based liquid products with synthetic fertilizers.

"At the beginning of the season, the plants are getting prepared to go outside, so I'm trying to give them more nitrogen intake to promote their stem and foliage growth," VanKempen says. "Then later in the season, I provide phosphorus as a 'bloom blaster', I call it, to give the plants more flower power."

VanKempen says the Morris area received a lot of rain during the growing season, so some of the outdoor testing was affected because plants didn't need any additional liquid. However, results of the liquid soybean fertilizer applications in greenhouse evaluations were encouraging.

"I had a controlled environment in the greenhouse this spring and the plants responded well," VanKempen says. "One rule that I abide by is to listen to the plant's needs. This fertilizer experiment has pushed me to pay attention to their reaction as I'm experimenting with both synthetic and organic soy-based fertilizers. The reaction in the greenhouse in that controlled environment was very good overall, and I used the soy products on plants of all sizes."

VanKempen says there is a growing desire by some gardeners to use organic fertilizer products instead of synthetics derived from chemicals.

“There definitely is a trend towards using more organics, and I think there’s potential for the soybean-based products,” Vankempen explains. “But the question is if it’s going to be economically viable for people to use soybean-based products and if the result is going to be equal to or better than their synthetic fertilizer.”

AURI Business and Industry Development Director Harold Stanislawski says there is a potentially sizeable market for natural, liquid fertilizers, especially in controlled environments like greenhouses. Stanislawski says two companies that make soy-based fertilizers were identified for this project, and their products were used in the evaluations.

“We decided to demonstrate these novel products in the state of Minnesota and to do a market assessment of how big that market might be and how we can advance soy utilization in the liquid fertilizer market,” Stanislawski says.

Stanislawski indicates that among the benefits of a liquid fertilizer is faster absorption and nutrient availability for the crops. There’s also a labor savings because liquid fertilizer can be applied through automated irrigation systems, allowing for precision application rates and timing.

“I think we’ve found a very good lane for liquid soy fertilizer utilization in environmentally controlled agriculture,” Stanislawski adds.

A CRUSHING ISSUE

Soybean crushing capacity in the Midwest is growing, putting more soybean meal into the market at a time when soybean exports have dwindled. Soybean industry leaders are working to maximize demand for all soybean components.

“We definitely have some challenges with the export side of things, so domestic market opportunities are what people are looking at,” says Mike Youngerberg, senior director of product development and commercialization for the MSR&PC. “Anything that we can do to utilize the soy protein side of the marketplace is going to be very beneficial.”

Youngerberg says there is interest in providing options for people who want to use products that aren’t made from synthetic ingredients. The AURI project shows that there are opportunities to explore.

“We were able to really prove that the products work,” Youngerberg says. “It creates a potential market for people who are growing flowers, shrubs, or even turf grass.”

CREATING SEPARATION

Mike Reiber of Axiom Marketing conducted the market research assessment, connecting with people throughout the greenhouse and fertilizer industries to help determine the market potential for liquid, soybean-based fertilizers.

Reiber says there is some interest in the industry for liquid organic products, but a real challenge is educating people in the industry about those products and demonstrating that the soybean-based products offer enough advantages to get them to change.

“There is opportunity as long as we’re educating the greenhouse growers and the controlled environment agriculture people about the reason that they should try these inputs instead of using what they’ve used for the last 50 years,” Reiber says. “That’s the opportunity and the barrier all in one, right there.”

Reiber says many growers in the greenhouse and controlled environment production trade have long histories with current products, and they know what those products will do. However, for growers who are looking for a non-chemical alternative, soy fertilizers show promise.

“If they are interested in sustainable production inputs, the future is good,” Reiber contends. However, in the greenhouse trade and in the controlled environment trade, growers have long histories with wettable powders that become liquid fertilizers, and they know exactly what the powders do. They are very reluctant to change.”

Reiber sees potential unique opportunities for soy-based liquid products to meet market gaps. Possible avenues include developing a starter fertilizer; using the liquids as a foliar fertilizer with micronutrients added; focusing on the bio-stimulant characteristics of the amino acids found in soybean fertilizers; and promoting the products as a carbon supplement.

“There’s potential to focus on these market gaps to formulate something unique and interesting around nutritional needs for crops that have the highest potential,” Reiber explains.

As with any market analysis, it will take work to develop potential into reality. In the case of the soy-based liquid fertilizers, there’s reason for optimism.

“I’m excited about both the dry and the liquid soy-based fertilizers,” Stanislawski says. “I think through proper distribution and additional education and outreach, these fertilizers can have a place in the market. Then we can truly say that we have sustainable fertilizers grown in our backyard by Minnesota farmers.”



WEST CENTRAL RESEARCH
AND OUTREACH CENTER
Morris, Minnesota



AURI REPORT HIGHLIGHTS OPPORTUNITY For Biogas Growth via On-farm Anaerobic Digesters

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To introduce more Minnesota farmers to the benefits of on-site anaerobic digesters, the Agricultural Utilization Research Institute (AURI) published a new report, *The Biogas Opportunity for Minnesota Farmers: A Business Guide for On-farm Anaerobic Digestion*.

Anaerobic digestion is the breakdown of organic waste—like manure and food waste—in the absence of oxygen. It can create biogas to produce renewable natural gas, electricity, vehicle fuel, and heat. The digested materials from anaerobic digestion can also be used as fertilizer, animal bedding, and more.

The Biogas Report is a valuable resource for any producer considering adding anaerobic digestion to their operations. The text outlines the fundamentals of adding on-site anaerobic digestion and explains the business models and considerations producers should examine before making the decision. It explores many of the benefits of adding anaerobic digestion capabilities, including additional revenue, nutrient recovery and reuse, energy production, water quality enhancement, and reduction in odor and greenhouse gas.

The study is divided into chapters on all phases of on-farm anaerobic digestion, including considerations for herd size, challenges for specific livestock, business ownership models, building and operating an on-farm system, capital and operating costs, revenue sources, regulatory considerations, risks, benefits, and project development.

There is a significant opportunity for on-farm anaerobic digestion. According to the American Biogas Council, the U.S. has the potential to install more than 17,000 new biogas systems. These potential systems would create significant economic, environmental, and energy benefits.

Further, the report states that Minnesota's agricultural producers have the potential to make more than 63 billion cubic feet of

biogas, or enough to meet more than 13% of the state's natural gas demand. There is much more work to do before the state can reach that potential. In 2022, Minnesota had 2,185 dairy farms and 2,928 swine farms, but there were fewer than 20 on-farm anaerobic digestion systems in 2025.

Among the general population, there is a widespread lack of understanding and knowledge on the topic of anaerobic digestion, says Brad Matuska, AURI's business development director of biomass feedstocks. Knowledge about renewable natural gas and biogas is also limited, often resulting in skepticism or negative opinions. Once the process of anaerobic digestion is explained, people are much more receptive and comfortable with the energy source, he notes.

"Farmers are busy enough doing what they do to grow crops and take care of their animals. So when a developer contacts them and says, 'We are interested in installing a biogas operation at your farm,' the farmer may not have a clear idea of what that means. This guide fills in some of those gaps and answers a lot of the key questions to explain the process and results," Matuska says.

The report's authors say there are a few important questions farmers should consider before installing an on-site anaerobic digestion operation. They are:

- Does anaerobic digestion fit your farm's mission, vision, and strategic plan?
- How does anaerobic digestion impact your farm's succession plan?
- Does your herd size provide enough manure for a meaningful project?
- Do you have plans to increase or decrease your herd size?
- Are you open to accepting off-farm feedstocks or hosting a facility that consolidates manure from other farms?

Creating additional income is one of the most attractive aspects of adding on-site anaerobic digestion. The digesters can create several new revenue streams. They include the sale of energy as either electricity or renewable natural gas, the sale of the digestate created during anaerobic digestion for products like fertilizer and bedding, the sale of environmental attributes, and tipping fees.

There are three primary ownership models for on-farm anaerobic digestion: contractual, joint venture, and self-ownership. In the contractual model, a developer owns the facility, takes care of the permitting and financing, and operates it in exchange for leasing fees. In this arrangement, the developer collects the revenue from the sale of natural gas and any tipping fees from co-digestion. The farmer provides the manure and, in return, retains the digestate. In a joint venture, the farmer and a developer form an LLC to build and run the operation. Digesters can cost anywhere from a few hundred thousand dollars to tens of millions, depending on the size. Operating and maintenance costs vary depending on the size, farm location, and cost of equipment.

The benefits of installing on-farm anaerobic digesters are also discussed. In addition to generating renewable natural gas and additional revenue streams for farms, the systems positively impact local economies through capital investment and increased tax revenue. The projects also create jobs and can lead to improvements to local roadways and pipelines.

Meanwhile, an installation can help farmers manage nutrients and improve soil health while decreasing the demand for synthetic fertilizers. The process reduces the volume of manure stored on farms and can help minimize odors. Anaerobic digestion facilities can also improve water quality through better nutrient management practices and reduce greenhouse gas emissions by capturing methane from being released into the air.

With the installation of any system, there are risks that should be considered as well. On-farm anaerobic digestion systems require training to run and operate. There are also safety and health risks from the handling of manure and biogas. The most common environmental risks are gas leaks, spills, and the release of odors. The proper permits are essential for any project, and operators must remain in strict compliance or risk enforcement actions ranging from fines to shutting down the operation. During the permitting process, neighbors may have concerns about an on-farm anaerobic digestion system creating safety issues, increased traffic, or harming the environment. Farmers and operators are encouraged to maintain strong relations with the community and articulate the benefits of the project and the safety precautions in place to address these concerns.

AURI's Biogas Report involved input from numerous key industry stakeholders from across the landscape, who brought diverse backgrounds and perspectives. Producers, researchers, scientists, and environmental advocates provided valuable insights and knowledge.

Mindi DePaola leads the Environmental Defense Fund's (EDF) agriculture methane team's community and equity work. EDF conducts active listening and stakeholder engagement. Her current work focuses on building and maintaining constructive partnerships with rural community groups and farmers to better inform agricultural methane mitigation solutions and policies.

She says the EDF was drawn to collaborate on this project because

AURI was deliberate about addressing the topic from several different vantage points. In addition to the economic benefits to farmers and climate benefits of reducing methane, on-site anaerobic digestion can also create environmental concerns if not managed properly. She notes that when farmers and neighbors understand the risks, concerns, and benefits of digesters throughout the process, it makes it easier for everyone involved to move forward together on a common footing.

"Part of our work is to encourage farmers and neighbors to work together on solutions to reducing greenhouse gas emissions so they can be more robust and longstanding," she explains. "Anaerobic digesters can be part of an overall strategy of reducing greenhouse gas emissions. But installing a system is a complicated decision with many different issues that need to be addressed and sometimes there are competing priorities from the farmers, the biogas company, and the neighbors. We have found these projects are the most effective when all parties take the time to build trust and understand each other better through open and honest conversations."

Minnesota has a rich tradition of environmentalism and conservationism, which will serve the state well as anaerobic digestion advances and farmers add more facilities across the state, DePaola continues.

"At the end of the day, farmers and neighbors in Minnesota all care about clean lakes and clean water, and they have a connection to the outdoors and the environment. There is a desire among people to be open-minded with their neighbors and to come to the table to find the way forward to protect and preserve what they value," she says.

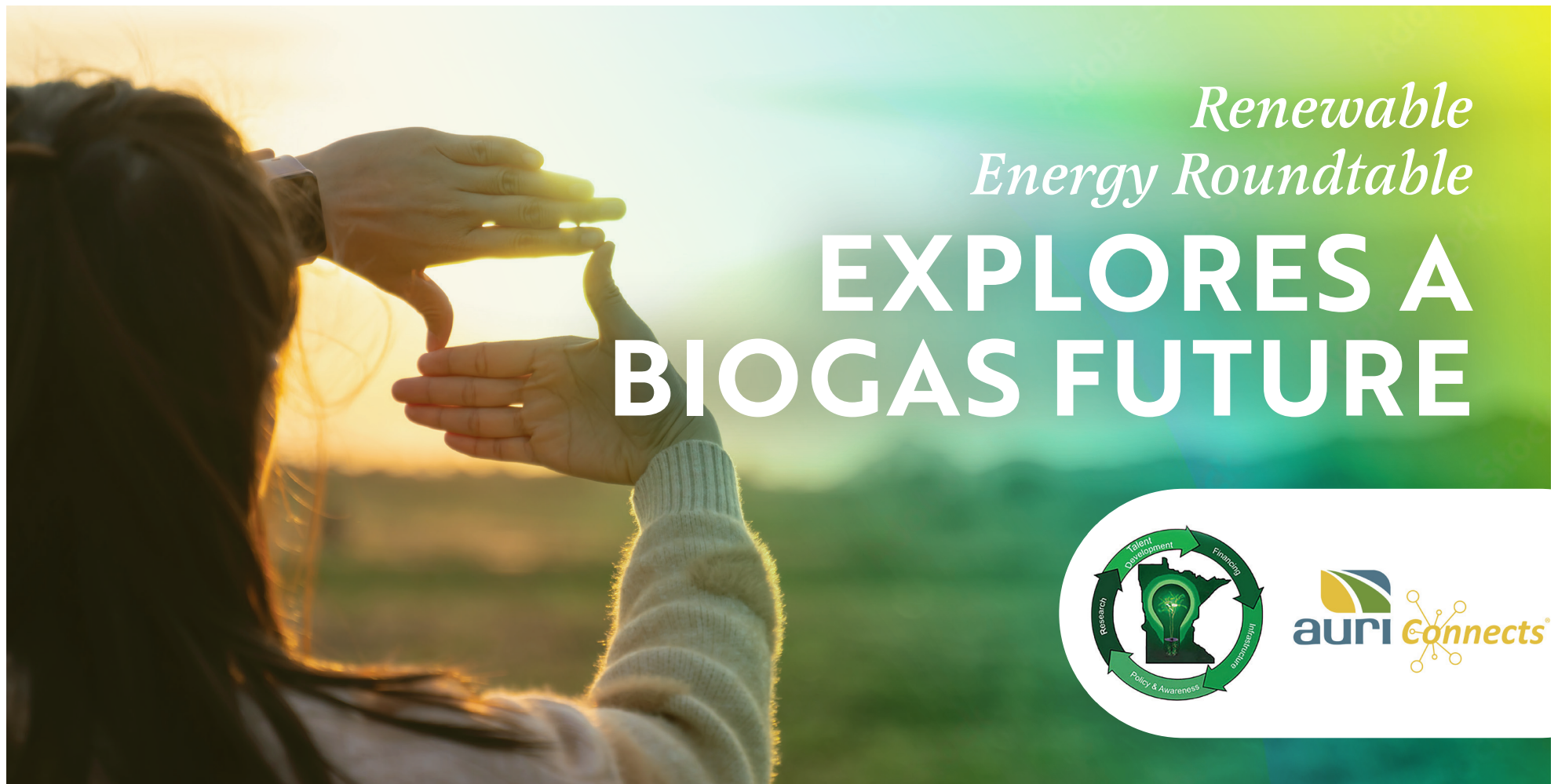
AURI is uniquely qualified to help producers weigh their options and make informed decisions on adding on-site anaerobic digestion. Business development consultants can provide technical and economic analyses, supply chain market development, validation on third-party technologies and developers' claims, and assistance with permitting and regulatory issues. AURI can also make referrals to legal and financial resources, technical experts, and provide guidance on securing financial assistance and governmental programs.

AURI's scientists and technical experts can conduct feedstock and digestate characterizations, assessments for biomethane potential, pilot digestion for complex and multiple feedstocks, and assessments of digestate fertilizer value.

"We can help initiate the conversation and continue with the next steps to help grow a robust industry," Matuska says. "The advancement of anaerobic digestion is part of Minnesota's vision to reduce our dependence on fossil fuels, and it provides an opportunity to build our biogas future."



To access the Biogas Report, visit <https://auri.org/the-biogas-opportunity-for-minnesota-farmers-a-business-guide-for-on-farm-anaerobic-digestion/> or scan the QR Code.



Leading the way in renewable energy is nothing new for Minnesota, which for decades has been a pioneer in biofuels like ethanol, biodiesel, and, most recently, sustainable aviation fuel. The state is now poised to help lead the way in biogas.

Biogas is a renewable fuel composed primarily of methane and carbon dioxide, which is typically produced through the anaerobic digestion of organic waste, such as sewage and animal manure. As a large agricultural production and food processing state, Minnesota also has the potential to utilize food waste, processing coproducts, livestock manure, and even crop residue to produce biogas.

The Agricultural Utilization Research Institute will focus on the future of biogas production and utilization in the state at the 2025 Minnesota Renewable Energy Roundtable event, which will be held on December 17, 2025, at The Machine Shop in Minneapolis.

“An alignment of factors has brought us to an inflection point. We’re seeing much faster growth and also an increasing number of people who are interested in biogas, especially from the business side,” says Luca Zullo, Ph.D., AURI senior director of science and technology. “Minnesota is uniquely positioned, like it was for the ethanol and biodiesel industries, because of its large agricultural and food processing sectors.”

That combination of factors spurred interest in a Renewable Energy Roundtable event to further develop the biogas industry by connecting key stakeholders, including policy makers, public administrators, lenders, municipal leaders, and industrial practitioners. Information gathered from the Renewable Energy Roundtable will be incorporated into a biogas industry roadmap that AURI will release in 2026.

CONSIDER THE SOURCE

Animal manure is typically one of the first feedstocks people consider for anaerobic digestion. While manure is plentiful and easy to source and therefore a first target for anaerobic projects, many other feedstocks, often with higher energy potential, exist. Minnesota has an abundance of these feedstocks available throughout the state.

“We have all the conventional feedstocks that come from agriculture, beyond manure,” Zullo says. “Minnesota also has a very large food and agricultural commodity processing industry that generates a variety of other co-products and residuals that are suitable for this application.”

“Manure represents less than 10% of the available potential feedstock,” says Brad Matuska, AURI business development director for biomass feedstocks. “Organic waste streams from the food sector and even the organic fraction of municipal solid waste represent large and underdeveloped resources. Furthermore, if we want the industry to reach its full potential, we can further expand our reach and consider crop residues such as corn stover.”

Zullo emphasizes that urban areas in particular offer a tremendous amount of waste that is not currently being exploited. Municipal solid waste plus food waste from catering and retail food operations in cities can be efficiently combined and used to produce biogas.

“Those sources could substantially alter the trajectory of Minnesota’s biogas sector,” Zullo adds.

“There’s a lot of momentum,” says Matuska. “Minnesota is uniquely positioned because we’re a feedstock haven. We have all kinds of feedstocks that could potentially be sources for anaerobic

digestion. We see strong growth opportunities in the offtake market, both for the renewable gas directly produced and for the digestate coproduct.”

Digestate is the solid material left after anaerobic digestion has been completed. The digestate is typically applied to the soil as fertilizer or soil amendment. Minnesota farmers have a large demand for fertilizer, which the digestate could help fill. In fact, widespread use of digestate could reduce the consumption of synthetic fertilizers with considerable potential economic and environmental benefits.

BUILDING THE INDUSTRY

Matuska says Minnesota already has a relatively small but well-established anaerobic digestion sector, including municipal systems integrated with public wastewater treatment facilities. Biogas production is also a part of the renewable energy mix for the city of St. Cloud, a renewable energy leader for the state. The city’s wastewater treatment plant uses anaerobic digestion to reduce its external energy needs.

Some dairy operations also utilize the technology to produce biogas while taking advantage of more efficient manure management approaches. The application allows operations to capture and produce both biogas and digestate as a fertilizer versus applying only manure as part of their nutrient management plan.

“You can start making a real dent in energy production by utilizing food waste and creating better waste management practices,” Matuska says. “The last time I checked, nobody’s against sending less waste to landfills.”

Matuska says there are some federal incentives to help support biogas development, as well as state incentives, including the Natural Gas Innovation Act.

The utilization of coproducts for energy production could become an additional revenue source or cost reduction.

“All of a sudden, food processors have something that traditionally was an environmental burden and economic cost becoming a potential asset,” Matuska explains. “If you’re making giant volumes of products from processing peas or sweet corn or chickens, all of a sudden your concerns associated with that coproduct decrease because now biogas facilities want it.”

The 2025 Renewable Energy Roundtable will feature panel discussions from industry leaders and presentations from leading industry experts, including Michael Schuppenhauer, Ph.D., of mcr Energy LLC, Heather Dziedzic of the American Biogas Council, and Lorenzo Rosa, Ph.D., of Carnegie Science.

“AURI is working to connect some of the dots to figure out a way to grow a robust industry,” Matuska says. “Determining the best path forward for Minnesota will require a mix of economic and policy drivers. With energy demand rising, the key question is: where will our future energy come from? Biogas is an important asset in our varied decarbonized energy future.”

Matuska says the event will also feature an initial reveal of key recommendations that AURI is putting forward as a biogas roadmap to facilitate the industry’s growth.

“We need to develop biogas in a smart way and in a way in which we understand what the true risks and rewards are,” Matuska says. “I don’t think it works for every single application, but for some it makes a ton of sense.”

BUILDING MINNESOTA’S BIOGAS FUTURE

December 17, 2025
The Machine Shop
300 2nd St. SE
Minneapolis, MN 55414
9 a.m. – 3:30 p.m.

This year’s Minnesota Renewable Energy Roundtable will explore ways to secure Minnesota’s biogas future and preview a biogas roadmap that AURI will publish in 2026.

The event will dive into the interconnected systems that drive biogas and renewable natural gas, from manure to landfills, crop residues, food waste, wastewater, natural gas pipelines, and more.

Biogas offers solutions to issues concerning waste disposal, clean energy, and fertilizer needs.

Minnesota’s geographic, environmental, and economic dynamics make it uniquely positioned to benefit from a robust biogas industry and be a key driver of biogas production in the U.S.

The Minnesota Renewable Energy Roundtable will feature national leaders in America’s energy progress, including Dr. Michael Schuppenhauer of mcr Energy LLC, Heather Dziedzic of the American Biogas Council, and Dr. Lorenzo Rosa of Carnegie Science.

The event will include discussions on policies that broadly support revenue-generating infrastructure, reduce the cost of municipal waste handling, lower environmental impacts, and improve community resiliency. It also offers an opportunity to meet other professionals interested in shaping the future of biogas in Minnesota.



For more information and to register, scan the QR Code or visit <https://auri.swoogo.com/MNRER25>



AURI AND MBOLD LAUNCH

Initiative to Accelerate Markets for Protein in Minnesota

The Agricultural Utilization Research Institute (AURI) recently began working on a project to help protein businesses expand or relocate to Minnesota. Earlier this summer MBOLD and AURI launched the **Protein Navigator**, an innovative interface that supports companies looking to Minnesota to create or expand their protein-focused businesses. Startups and established companies can contact the Protein Navigator team for information and resources via MBOLD's website: www.mbold.org/protein-navigator.

As a member of MBOLD, a coalition of some of the world's foremost food and agriculture companies, research institutions, and nonprofit organizations working on solutions to the biggest challenges facing our food system, AURI will act as the point of entry for inquiries to the Protein Navigator. Jason Robinson, AURI's business development director for food, says the tool provides insight into Minnesota's unique protein and agricultural sectors, including research and technology capabilities. AURI staff may facilitate strategic connections to potential partners when synergies exist to help scale a protein innovation.

Another goal is to provide valuable market insights to help companies learn more about the state's business environment as it relates to the protein sector. Guidance is also available from MBOLD's home organization, GREATER MSP, for exploring potential sites for headquarters and manufacturing facilities, permitting and zoning, and business development resources.

An example of a business leveraging Minnesota's resources is a United Kingdom-based company focused on Rubisco protein. Rubisco—short for ribulose-1,5-bisphosphate carboxylase/oxygenase—is the most abundant protein on Earth and the key enzyme plants use to capture carbon dioxide during photosynthesis. Found in the leaves of crops like sugar beets, alfalfa, and other green biomass, it's rich in high-quality, digestible, and functional protein. Extracting Rubisco protein from leafy green biomass that is typically incorporated back into the field as a source of organic matter holds untapped potential as a new protein source.

AURI is supporting the company in developing a technology that can add value to sugar beet leaves. According to Robinson, the startup is interested in Minnesota due to the high acreage of sugar beets produced here, but needs support navigating opportunities for doing business in the state. AURI is helping the organization make connections and also helping them navigate Minnesota's agricultural feedstocks, protein sector, and business climate.

The Protein Navigator is a component of MBOLD's broader initiative to drive innovation in protein sustainability, including both traditional proteins and plant-based options.

Globally, protein demand is expected to rise by 50% by 2050. Worldwide, the UN's Food and Agriculture Organization projects that rising incomes will continue to boost demand for protein-rich foods and feeds—especially in low- and middle-income countries, where the share of total calorie intake from traditional animal protein is expected to increase by 25% over the next decade. According to 2024 research by Cargill, 61 percent of Americans reported eating more protein last year.

To meet this growing demand within planetary boundaries, producers and the whole food and feed value chain will need to ramp up production of a wide range of protein options in efficient and environmentally sustainable ways. The Protein Navigator can bring multiple benefits via relationships with Minnesota's protein sector to help understand and grow the next innovations for the future, Robinson says.

"One of the challenges shared by entities based outside of the United States is that it can be hard to navigate our rich and robust protein ecosystem. The Protein Navigator creates a single point of entry to help businesses from anywhere in the world navigate the ecosystem here and get connected to the right people," Robinson notes.

MBOLD is particularly focused on climate change and the growing demand for food. Developing and advancing innovations around protein sustainability is a key pillar for the coalition.

As JoAnne Berkenkamp, MBOLD's managing director, explains: "Minnesota's strong animal-based and plant-based protein sectors, coupled with its transportation, processing, and research capabilities, offer significant opportunities for companies in the protein industry. We are excited to welcome a global array of companies, institutions into our ecosystem and to partner with innovators from around the world." You can learn more about MBOLD's protein initiative, which is co-led by AURI, at www.mbold.org/protein-sustainability.

Interested businesses can fill out the Protein Navigator intake form at the following website to get started: auri.org/mboldproteininnovationform/ or scan the QR code.



WHERE ARE THEY NOW?

Actus Nutrition's Bypass Products Find Success

A Minnesota company is finding market success using recaptured dairy ingredients for animal and human nutrition.

After operating as Milk Specialties Global, the company, based in Eden Prairie, rebranded in 2024 and is now known as Actus Nutrition. Actus Nutrition was an early pioneer in capturing “waste” whey from cheesemaking and drying it for nutrition products.

The company's roots are in milk replacers for young livestock, but over time, it expanded into other feed products. Today, Actus Nutrition offers a wide-ranging portfolio of ingredients and private label services for customers in the human nutrition and animal feed sectors.

Actus Nutrition's core focus for animals is nutritional products for dairy cattle. In addition to manufacturing milk replacers for a variety of animal species, Actus is a leading manufacturer of rumen-bypass fats, precision amino acid products, and other health and wellness products. The rumen is one of four stomach compartments unique to ruminant animals, like cows.

Bypass products exit through the rumen and are digested in the small intestine, so more metabolizable nutrients are available to meet the animal's nutritional needs. This increase in nutrient absorption leads to better animal performance and can reduce the need for high levels of crude protein in the diet.

Work from AURI's coproducts team in Waseca aided early product development for one of Actus Nutrition's successful dairy bypass ingredients.

AURI initially helped Actus Nutrition develop a bypass lysine supplement. The company also saw interest in a bypass methionine supplement, which led to further product development.

“That's where we focused our efforts,” says AURI senior scientist, coproducts Alan Doering. “We helped Actus Nutrition develop a very similar product to what had been done with lysine, but centered on developing a methionine-based micro pellet.”

RPMet™ Methionine Supplement is designed to increase protein yields and fat content in milk from dairy cows. RPMet is intended to deliver methionine directly into the cow's small intestine.



“This results in increased milk components and larger milk checks for dairy farmers,” says Ben Kroeplin, Actus Nutrition marketing director. “In addition to improving milk component output, amino acid supplements also significantly improve reproductive rates in cattle.”

Kroeplin says RPMet has been rapidly growing its North American market share since the product was launched two years ago. He says it is among the highest-performing rumen-bypass amino acid supplements on the market, and its efficacy is backed by university research. RPMet is also produced in America, which Kroeplin says is an attractive feature to many customers.

“AURI lent its expertise and resources to help get our first-generation amino acid supplement off the ground,” Kroeplin explains. “We took the learnings from that product to develop our second-generation product, which is becoming a smashing success.”

“Our goal is to see the companies and the clients that we work with progress their product and make it to commercialization, which Actus Nutrition has done,” Doering says. “And they continue to grow. They utilize and add value to dairy products, so they're going full circle using dairy products to support the dairy industry.”

While RPMet is already achieving success in the market, Kroeplin says there is still room for growth.

“Amino acid balancing is rapidly growing in popularity with dairy nutritionists as a way to maximize milk component output and subsequent profits for dairy operations,” Kroeplin explains. “Many farms don't currently balance for amino acids, so the market for supplements continues to expand.”

ABOUT AG INNOVATION NEWS

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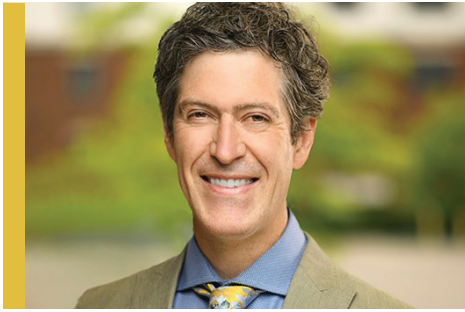
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Charlie Lucas Joins AURI as Senior Food Scientist



In June 2025, Charlie Lucas joined the Agricultural Utilization Research Institute (AURI) as a senior food scientist. He co-leads AURI's food innovation efforts across Minnesota's value-added agricultural ecosystem. He supports product development, commercialization, and regulatory compliance while promoting collaboration among entrepreneurs, co-manufacturers, and researchers to accelerate the path from concept to market.

Lucas comes to AURI after working for General Mills and Target for the past 19 years. Lucas says he was drawn to the position because it perfectly aligns with his values and professional strengths. He has long-admired AURI's vast network and reach and its ability to create awareness around important topics and help business owners grow and realize new markets.

"I was looking for a position that provided an opportunity to give back to the larger community. Philanthropy is important to me, and I value living here in Minnesota. This role at AURI enables me to reach and support the state's small to medium-sized businesses on a personal level. I strive to understand what these owners and founders are doing and what they are going through. Pouring passion and investment in time and money into something that you care

about deeply is very rewarding. I want to help these businesses succeed and grow," Lucas says. There are several ways Lucas is working to help the food team at AURI make significant contributions to Minnesota's economy. He is excited to continue working on expanding education around food safety by creating larger initiatives and programs that can help a diverse cross-section of businesses understand their gaps in food safety and create stronger processes and safer products.

Another goal is to ensure AURI is intentional about reaching clients where they are on their journey. "That could be someone with a stand at a farmer's market looking to expand production, or someone with a concept that does not know how to get started with packaging or labels. We have a strong foundation of knowledge and answers to these important questions. I want to make sure

that people are aware of all the quality, free information we have available," he says. The best part of the job for Lucas is talking with clients to help them identify what sets their product apart from competitors and the message and brand story that will best capture people's attention.

"I very much enjoy those 'light bulb moments' with clients. It is fun to see something click and for them to say, 'Ah, that makes sense.' The personal interactions I get to have to understand what motivates people and how AURI can collaborate with them are the true highlights of this work," he says.

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