



# Ag Innovation News

Jul-Sep 2020, Vol. 29, No.3

The newspaper of the Agricultural Utilization Research Institute

## AURI Develops Equine 'Super Feed' with Entrepreneur

PAGES 6-7



PHOTO BY ROLF HAGBERG.



More Food Recovery Opportunities  
Pages 4-5



Landscape View of Minnesota's Halal and Kosher Meat Market  
Pages 8-9



Barriers to Minnesota's Emerging Farmers  
Page 10



Energized to Reuse Organic Waste  
Page 11



PHOTO BY ROLF HAGBERG



## New Brand, New Purpose: Innovation Networks Program is now **AURI Connects**

BY SHANNON SCHLECHT  
AURI EXECUTIVE DIRECTOR

“

THE PURPOSE OF  
AURI CONNECTS IS  
TO ACTIVELY ENGAGE  
THE VALUE CHAIN  
ON TOPICS RELATED  
TO VALUE-ADDED  
AGRICULTURAL  
OPPORTUNITIES AND  
CHALLENGES.

”

A number of years ago, AURI established the Innovation Networks Program (INP) as a platform for convening events that brought together a range of individuals from across Minnesota’s value-added agriculture sector. From the very start, it proved to be a successful venture and an important element of AURI’s services for the public good. As time went by, however, the INP team realized the program needed to expand beyond events and move into additional opportunities for building networks and creating connections between innovators, experts, organizations and the public. With this evolution, it soon became clear that the title, Innovation Networks Program, was too constrictive for all the different, new ventures undertaken.

With that in mind, I am pleased to announce the launch of a new sub-brand, as part of the ongoing development and evolution of AURI’s program offerings. Named ‘AURI Connects’, this new sub-brand replaces AURI’s previous Innovation Network Program and uses a new brand identity that better reflects the goals and actions of our events, educational programs, thought leader convenings and networking opportunities.

The purpose of AURI Connects is to actively engage the value chain on topics related to value-added agricultural opportunities and challenges. The vision of the program is to improve the competitiveness of agricultural producers, businesses and entrepreneurs through the ongoing, purposeful connection of resources and partners along the value chain and increased knowledge of opportunities, technologies and trends.

This next step for AURI is part of our conscious plan to grow with intention as an organization. I believe this rebrand is empowering and know that AURI Connects will continue AURI’s reputation as a first-class developer of new networks and reliable expertise in far ranging fields of endeavor.

The new logo represents the relationship between these three elements and their overarching goal of bringing innovators together for the benefit of all.

As we move forward through the rest of 2020, and beyond, I am excited about all of the opportunities AURI Connects offers. Be it our new Webinar Wednesday series, the convening of industry thought leader groups, the Fields of Innovation series, or next year’s New Uses Forum, AURI Connects is certain to provide participants with a new experience and a broader set of offerings to meet the needs of Minnesota’s agricultural sector.

In the meantime, if you are interested in learning about current AURI Connects events and networking options, be sure to visit AURI’s website at [www.auri.org/auri-connects/](http://www.auri.org/auri-connects/).





BY AURI

This quarter, Ag Innovation News highlights board member Carolyn Olson's participation in the Minnesota Agriculture & Rural Leadership (MARL) program, a dynamic two-year educational experience dedicated to developing the skills of Minnesota's agricultural and rural leaders so they may maximize their impact and effectiveness in local, state, national and international arenas.

AIN

**Please explain to the readers what the MARL program is.**

CO

MARL is an 18-month leadership course for agricultural and rural leaders. There are nine sessions spread throughout Minnesota, as well as time in Washington DC, and an international experience. The sessions take place in the winter months and focus on leadership skills, learning about yourself, and rural issues in each location.

AIN

**What was the most impactful experience you had during the program?**

CO

I learned so much about myself through a number of personality and strengths assessments that are part of the program, like the Myers-Briggs Type Indicator, Emotional Intelligence, Conflict Assessment and Strengths Finder. Each assessment comes with sessions on how to understand who you are, and how you relate to others. I have already been able to use what I have learned when interacting with others, especially during the challenging times we are in.

AIN

**What was your impetus for taking part in the program?**

CO

As I approached a milestone birthday, I wanted to feel much better about entering that decade than I had the one before. I went through Life Purpose coaching, but I wanted to dive deeper. I knew I needed to understand myself better in order to be the best wife, mom and leader that I could be. The programming that MARL offers fit exactly what I was looking for.

AIN

**How did participating in MARL impact your professional life?**

CO

I am on the Minnesota Farm Bureau Board of Directors, as well as a member of the AURI Board of Directors. I have experienced moments where I have wondered if I am smart enough or qualified enough to serve those organizations. MARL has helped me to see my strengths and how to use my gifts to be the best leader I can be.

AIN

**What are the benefits of participating in the program?**

CO

MARL gives you the ability to see beyond yourself. I have talked a lot about the self-discovery that has had a big impact on me, but MARL is so much more than that. Each Cohort has the opportunity to learn about so many facets of leadership and what is important in every region of the state.

AIN

**What was the best takeaway from the MARL program?**

CO

Being a leader is not just about holding a leadership position. It is using your gifts in a way that benefits your family, your community and the organizations you choose to participate in.

AIN

**How is the program formatted (cohort meetings, trips, etc.)?**

CO

There are nine sessions, an international experience and graduation. Significant others are invited to three of those sessions, while the other sessions have topics relevant to the location, and the opportunity to tour companies in each of those locations. We are pushed out of our comfort zones at times, but that is where growth happens!

AIN

**Why should people consider applying for to the MARL program?**

CO

Minnesota needs leaders who understand agriculture and the unique aspects of rural communities. This is the best program that I know of where you can develop your leadership skills, learn how to communicate through various forms of media, and become more aware of issues around Minnesota with a focus on agriculture and rural communities. For more information about MARL visit: [www.marlprogram.org](http://www.marlprogram.org)

MORE  
FOOD

RECOVERY  
OPPORTUNITIES

LESS

FOOD

WASTE

BY DAN LEMKE

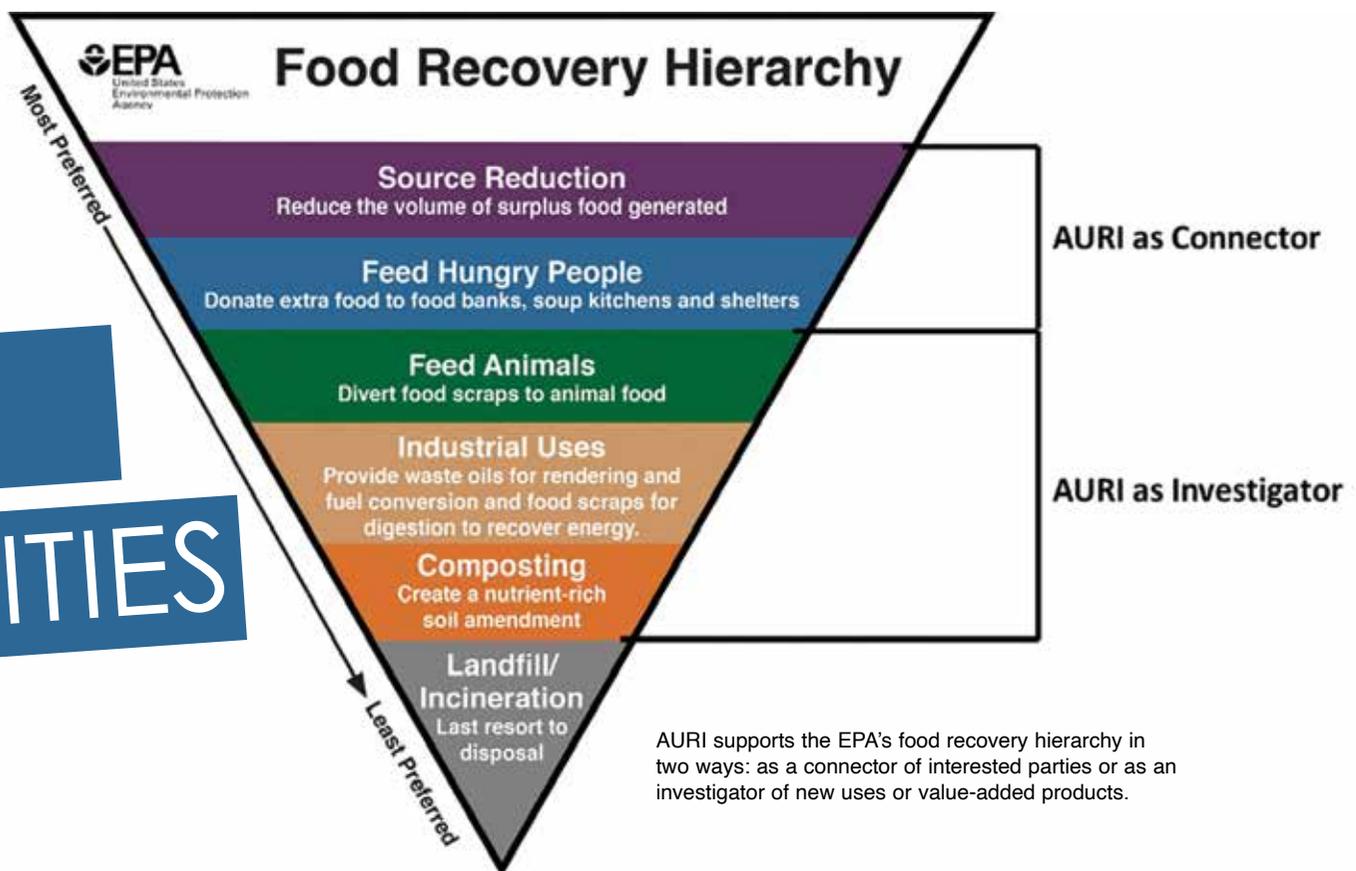
Americans have access to an abundant and safe food supply thanks to the agriculture industry's accomplishments in producing and distributing thousands of food items. But, as good as the United States is at producing food, Americans are equally guilty of wasting it.

The U.S. Department of Agriculture (USDA) estimates that 30 to 40 percent of food in the United States goes to waste. Much of that loss occurs at the consumer level. Food spoils in refrigerators, there are mishandling issues, or consumers mistakenly throw out food because they misinterpret expiration labels.

In 2015, the USDA joined with the United States Environmental Protection Agency (EPA) to set a goal for cutting the nation's food waste by 50 percent by the year 2030. National and state programs are in place to help educate consumers about food loss.

The EPA developed a Food Recovery Hierarchy, which prioritizes actions organizations can take to prevent and divert wasted food. Each tier of the hierarchy focuses on different management strategies for dealing with wasted food. The top levels of the hierarchy are the most impactful ways to prevent and divert wasted food because they create the most benefits for the environment, society, and the economy. The hierarchy places higher value on preventing food waste and loss or on repurposing those products for food use than on diverting the waste materials to animal feed or energy generation.

While consumer actions contribute heavily, food loss and waste also occur at each level of the value chain from production to commodity processing to distribution channels and retail settings.



AURI supports the EPA's food recovery hierarchy in two ways: as a connector of interested parties or as an investigator of new uses or value-added products.

## AURI Fit

AURI has long focused on utilizing coproducts from agricultural processing to generate value, often for animal feed, fertilizers or energy. The organization is placing increased emphasis on identifying and catalyzing opportunities presented by food waste.

Last fall, AURI convened a food loss and waste thought leader's roundtable. The group included some of the state's largest and most well-known food companies and retailers, as well as government and industry partners. AURI also developed an Ag Innovation Partnership project with food loss expert Claire Sand of Packaging Technology and Research to identify opportunities to sustainably reduce food loss and waste in food processing and explore new uses for it.

"We wanted to identify some of the lowest hanging fruit in processing where food waste is occurring," says Alan Doering, AURI senior scientist for coproducts. "Where can we step in to add value or to prevent food processing waste from occurring?"

With Minnesota being home to a vibrant food production and processing sector, AURI and Sand teamed up to review hundreds of food production and processing possibilities. The team narrowed the project to demonstrate opportunities in five areas that could reduce an estimated 1.1 billion pounds of waste. Those areas include canning products, apple processing, small cheese processing and unsalable milk and cheese.

"In terms of a company looking at food waste and wondering how they can build the business case to reduce it or repurpose it, that's what we really focused on," Sand says. "We looked at six Minnesota products where food waste was an issue and where there was sufficient volume."

Although a significant amount of food waste occurs on the consumer level, altering consumer behavior is not part of AURI's mission.

"We wanted to capture, identify and catalyze activity in food waste reduction and upcycling opportunities somewhere between the farmer and the retailer," adds AURI Project Development Director for Food Jason Robinson.

## Waste Opportunities

Minnesota has a sizable apple industry, growing apples both for consumption and cider production. Sand's research showed cideries have as much as 77 percent waste. One cause for loss is molding apples, which produces patulin and makes apples unsuitable for cider production. However, fermenting apples into an alcoholic hard cider destroys the patulin. Vision sorting could help divert the bad apples, improving the cider-making process, reducing apple waste and potentially adding an additional revenue stream or entrepreneurial opportunity.

Canning crops like kidney beans generate waste at the state's canneries because of broken pieces and solids from wastewater. Canneries pay substantial amounts of money for wastewater treatments. Screening the broken pieces and ultrafiltration of wastewater could generate opportunities to reuse bean pieces, save companies money and reduce environmental impacts.

Unsalable cheese and milk generate waste at the retail level. Approximately 22 percent of all cheese and 25 percent of milk at grocery stores goes out of date.

"Once it ages out at grocer, the producing company is responsible for some sort of usage or destruction of that product once the grocer returns it," Robinson says.



Waste and loss at small cheese processors can exceed 90 percent, primarily because of residual whey from the milk.

It's possible to reprocess those dairy products into feed, use them for energy generation or further processing to make cheese powder, lactose and monosaccharides for human consumption. However, removing the milk or cheese from its packaging does present a challenge for reuse.

Waste and loss at small cheese processors can exceed 90 percent, primarily because of residual whey from the milk. Whey is mostly water, but the remaining nutrients are capturable at small-scale cheese producers to make whey cream, cheese sauce, soluble cocoa powder products, demineralized whey for people with lactose intolerance and more.



The U.S. Department of Agriculture (USDA) estimates that 30 to 40 percent of food in the United States goes to waste.

"Big processors can do things with waste, like produce dairy protein isolates, but for the small processor, they're going to have to deal with disposal," Sand says. "Is there something small cheese businesses can do to still get some money out of this and decrease environmental cost?"

Sand says the study focused on six areas of production and processing, but she says this was to demonstrate that there are opportunities in many production areas.

"For each industry, the point of intervention is in different places," Doering says. "The point where impact can be made on food waste is at different levels. Some is at the consumer level, some is at the farm, some is at the manufacturer, some is at retail."

## Business Decision

The possibilities for reducing food loss and waste are vast. However, for any company to make a change or for someone to pursue an entrepreneurial opportunity, it must make financial sense.

"To create an opportunity for a processor or an entrepreneur to step in, you really needed to create that business case," Sand explains. "When you show a business that they're throwing out money or you can save them money, they're willing to listen."

"The reason we look at how you prevent waste from occurring or why you want to add value through new product creation is because you already have investments and input costs into this material," Doering says. "AURI is looking at a path to how we can continue to add value to waste before it ends up in the landfill."

Robinson, who spent nearly two decades in the packaged food industry, says food companies want to do what they can to reduce costs, but they also recognize that consumer demands are changing, and sustainability is becoming more of a factor in purchasing decisions.

"Millennials and subsequent generations have access to more information than any generation prior and they tend to be more influenced by socioeconomic and environmental factors. They tend to focus purchase decisions not only on the impact to their personal wellbeing, but on the impact that purchasing decision might have on the world," Robinson contends. "They want to hear more about global responsibility from companies."

## Path Forward

AURI and partners will share the results of the food loss and waste project widely with stakeholders and others across the state who have interest in pursuing an opportunity to turn waste into gain.

"The goal is to make sure that groups are aware of these opportunities and they can understand that some level of activity against food loss and waste might have a benefit to a consumer, industry partner or in improvements to their supply chain, so they don't see a loss," Robinson says.

"There's a lot of momentum around food waste," says Jen Wagner-Lahr, AURI senior director of innovation

and commercialization. "The agriculture and food industry in general does a great job of not wasting a lot of products, but there still is waste. The greatest amount of waste happens at the consumer level---that is a nut for someone else to crack---but there's certainly places where AURI can assist in terms of finding new uses or adding value to low value products."

## Coproduct Focus Area

Nearly every agricultural processor generates waste or coproducts. The AURI Coproducts Team works to create new uses for these byproducts, from developing the new equine feed mix featured in the cover story to helping AURI clients transform ag waste into products such as cooking oil, fertilizer and fuel. The result can create significant new revenue streams for Minnesotans.

Have an idea to repurpose food waste? Reach out to the Coproducts Team at [www.auri.org/coproducs-team/](http://www.auri.org/coproducs-team/).

Wagner-Lahr says AURI will maximize the channels through which the report is available. She says in addition to posting the report online, AURI will conduct a webinar to share the information. AURI will also reconvene the food loss and waste thought leader's roundtable to examine if other areas of food loss and waste need further examination.

In addition to generating information that could lead to value-added opportunities, Robinson says the effort reiterates that AURI has a valuable role in the food loss and waste space.

"I think of AURI as a connector at the highest level," Robinson says. "We can help connect the dots in terms of prevention or reuse of wasted food and help put it back into a value chain."

Information on the food loss and waste project is available at [www.auri.org](http://www.auri.org).

# Mining New Opportunities

AURI takes a proactive approach to uncovering value-added opportunities. In addition to supporting existing businesses and entrepreneurs with product development and process improvement assistance, AURI works with stakeholders and other partners find emerging opportunities through programs like the Agricultural Innovation Partnership (AIP) program.

The AIP catalyzes innovation, generates new ideas and supports collaborative partnerships while directing research and technology transfer opportunities that add value to Minnesota's agricultural products or improve efficiencies in their processing.

"The AIP program really creates an avenue to be more collaborative and to seek new partnerships with groups that we haven't necessarily worked with before or working on new things that really matter to our stakeholders," says Jen Wagner-Lahr, AURI senior director of innovation and commercialization.

Every two years, AURI conducts a stakeholder analysis, meeting with dozens of groups and organizations to get feedback on what they would like AURI to focus on in the months ahead. The effort also helps AURI staff learn more about barriers and challenges faced by industry partners. AURI funds public domain research to help identify and address those concerns.

Work and research done as part of the AIP program focuses on AURI's four priority areas, including biobased products, coproduct utilization, renewable energy and food. Deliverables include applied research studies and guides or tools to further the utilization and value of commodities and agricultural products. Previous project examples include a food shelf life guide and the recent food loss and waste evaluation.

Wagner-Lahr says a request for proposals (RFP) will be coming out later this summer.

"We will be looking for proposals that further value-added agriculture in Minnesota," Wagner-Lahr says.

AURI will disseminate information about the RFP process through its communication channels including social media, an E-newsletter and the AURI website.

Information generated through the AIP program is public domain and shared to help entrepreneurs, businesses and agricultural processors explore opportunities and technologies in the areas of biobased products, food, renewable energy and coproducts.

Complete program criteria, information on how to submit a proposal, and AIP program guidelines are all available at [www.auri.org](http://www.auri.org).

# AURI Develops Equine ‘Super Feed’ with Entrepreneur



Fundamental Feeds produces more than 3,000 chia biscuits a week and routinely has to decline orders around the world because the company simply does not have the inventory.

BY AURI

A research partnership between the Agricultural Utilization Research Institute (AURI) and a Rochester, Minn.-based horse feed manufacturer has produced a nutrient-dense equine “super feed.” The product is drawing rave reviews, and surging demand, from horse owners across the country— even before it is available for purchase.

Mary Hartman is the founder and owner of Fundamental Feeds, a company that sells chia-based horse supplements and other products. Hartman has loved horses since she was a young girl. In grade school she received special permission to check out books on horses from the high school library after she exhausted the inventory at her own school library. She bought her first dressage horse about 10 years ago and hoped to ride it for many years. Unfortunately, the animal developed health problems after working with a trainer.

Wary of starting the animal on medication, Hartman began to examine the horse’s diet. She started feeding the horse chia-based products to treat her stomach ulcers and other maladies. She immediately noticed an improvement in the horse’s health and appearance. The chia-based diet improved the animal’s immune function and the quality of the hooves, skin and hair. The chia product also benefited the animal’s gastric health in the stomach and hindgut.

“So, the more I read and the more I gave my products to other horses the more I realized that there is a significant connection between some of the health problems these animals have and what we are and are not feeding them.”

Hartman eventually turned those homemade supplements into a business. Fundamental Feeds produces more than 3,000 chia biscuits a week and routinely has to decline orders around the world because the company simply does not have the inventory.

After the success of the chia products, Hartman developed an idea for a new horse feed product. She wanted the product to closely mimic the kind of diet horses

would have if foraging for food in the wild. Wild horses eat as many as 25 different kinds of protein in a day, Hartman says. Traditional store-bought feeds offer much less variety.

“A large part of the problem is we feed horses based on what is cheap and easily available for us. As a result, we are not providing much diversity for the animals in their diet,” she says. “With this product I really wanted to create something that would be similar to what horses would see in the wild when they are out foraging. It would change seasonally, too, based on the growing season.”

Armed with an idea, Hartman needed technical assistance and lab equipment to begin development. Then, a business associate referred her to AURI. She successfully applied for a grant, and in 2018 started work on developing her equine feed at AURI’s Waseca Pilot Lab. There, she partnered with a team led by Alan Doering, AURI’s coproducts senior scientist. Associate Scientist Abel Tekeste, Engineer Riley Gordon and Senior Project Strategist Michael Sparby rounded out AURI’s team.

“The equine feed was exciting to work on because it showcased one of AURI’s developing capabilities and helped a small business owner take the next step in the growth of her business,” Doering says. AURI has done a lot of work assisting in the formulation and development of animal feed, but not much specifically for high performance horses.

“This project is a great example of how we can help entrepreneurs that are on the cusp of a significant innovation. Mary came in with an idea of how to grow her business, and AURI helped move the idea to reality through technical expertise and equipment,” Doering says of the collaboration. “There is always satisfaction working on projects that wind up in the marketplace and that will benefit not only our client’s business, but other Minnesota businesses as well.”

The AURI team assisted on complete feed formulation, densification trials and process requirement along with assistance identifying potential ingredient suppliers and toll-manufacturers. The team is also working with Hartman to get the feed tag certified by the Minnesota Department of Agriculture.

It was a challenging and rewarding project to work on, Doering says. Hartman had a specific list of ingredients she wanted included in the recipe for the feed not commonly found in animal diet balancing software. She also had target nutritional and vitamin levels she wanted to achieve. The challenge was to combine all the ingredients into a product that hit the desired levels that was also palatable to horses.

“Mary had very high standards,” Doering says. “There are products that she wanted to use that are just not that common in diet formulation and pelleting projects. The fun part was going through the different variations to meet the levels of protein, minerals and antioxidants that she was looking for. It was kind of like bartering. We would adjust the amount of one ingredient and then had to adjust another ingredient to correspond. Watching the ingredients mix and match with each other to reach the final goal was rewarding to our team.”

Hartman says she created the recipe being mindful of the kinds of plants that would be available to a wild horse. Those plants are changing due to climate change and other environmental factors.

“I think it is important to pay attention to how what we are doing is affecting the planet and the diet of these animals,” she says. “I wanted to have something that utilized our planet’s resources and also changed the way people think about feeding our horses. What we have been using up until now is cheap, and not well made.”

A key ingredient in the feed is Sainfoin. While this perennial legume is grown in the western United States, Mary hopes to eventually source the majority of the feed ingredients from Minnesota producers. She is actively seeking producers willing to grow a wide range of specialty crops. She is already sourcing the dehydrated carrots in the recipe from a MN company.

“I wanted to use actual feed, not a lot of fillers or artificial products. And then I had other things like bee pollen and chia that I included for specific reasons,” Hartman says. “It was important to me that the horses metabolize this feed to get the nutrients they need. That is where Alan’s team was so amazing. They worked very hard to find the right balance between all of these ingredients.”

The end result, called StableFeed, is a nutrient dense feed pellet served to an animal with mixed forage. The final testing numbers are impressive. While most products result in 45 to 60 percent digestible energy, Hartman’s product hit 75 percent digestible energy. There are 14 different plant proteins in the product with a four-pound daily feeding meeting most of a horse’s nutritional needs.

“By having it in a minimal four-pound package that is the ‘super food’ aspect of it,” Doering says. “You are getting a lot of nutritional punch out of a limited quantity.”

After developing the feed, Hartman sent it out for palatability testing. She selected 100 of the “pickiest” horse owners she could find for an informal trial. Without exception the feedback was positive.

StableFeed will be available for sale later this year, but there is already interest and demand from riders and trainers of high level performance horses.

“The reaction has been phenomenal,” Doering says. “There are championship level stables that want to use the product.”

This product line was designed with the goal of feeding a variety of ingredients to the horse based on natural selective behaviors a horse has and the ingredients’ ability to add health benefits to a horse’s diet, rather than feeding them a ‘monoculture’ type diet with limited ingredients. The product focuses on utilizing specialty ingredients for improved health and performance.

Hartman says she could not have developed the feed product without the assistance of the AURI team.

Building on the success of that collaboration, Hartman says she has plans for new equine feed products.

“We can do better and we need to. We must be mindful and purposeful in what we feed these animals because our demands on horses are incredibly high,” Hartman says. “They are poorly built for what we use them for. I would love for my tiny company to be able to grow into something that changes the way people think about feeding their horses, so the industry does an about face and ultimately provides a higher quality feed for these animals that leads to better long-term health.”

**“I really wanted to create something that would be similar to what horses would see in the wild when they are out foraging. It would change seasonally too based on the growing season.”**

- Mary Hartman, Founder and Owner



PHOTOS BY ROLF HAGBERG.

StableFeed is a nutrient dense feed pellet served to an animal with a bag of leafy greens. There are 14 different plant proteins in the product and a four-pound daily feeding can provide most of a horse’s nutritional needs.



## Landscape View of Minnesota's

# Halal + Kosher Meat Market

BY AURI

The processing of halal and kosher foods is a faith-based practice. Both traditionally define what foods certain religious communities consider permissible to eat. Those of the Muslim faith traditionally practice halal while those of the Jewish faith practice kosher. These practices involve a range of standards that include the restriction of certain foods such as pork and shellfish as well as following specific slaughtering practices. While there are similarities across both practices, halal and kosher standards also maintain unique guidelines and regulations that need to be met by aspiring producers.

The new Halal + Kosher Minnesota Meat Market Assessment report offers a landscape view of the current halal and kosher meat markets in Minnesota. Published in January 2020, this report was a joint effort by the Minnesota Department of Agriculture (MDA), the University of Minnesota Extension (Extension) and the Agricultural Utilization Research Institute (AURI).

The report explores the opportunities currently available in Minnesota's halal and kosher meat markets with the intention of better serving both Minnesota's producers and consumers. According to the report, halal and kosher consumers are currently underserved, leaving "thousands of people with an unmet preference for fresh, high quality, and affordable meats processed using halal and kosher methods."

"It really puts a spotlight on some of the bottlenecks on access to healthy, local meat for all Minnesotans as well as specific cultural communities," says Dr. Kathryn Draeger, lead researcher for the project and Statewide Director of U of M Regional Sustainable Development Partnerships. "A lot of the recommendations in that report can serve us well just in terms of building resilience into the meat market and supply chain for healthy, local meat."

To better serve this community, there needs to be an understanding across the entire supply chain of the requirements for halal and kosher production. While there is no single barrier to producers entering either market, there is a general lack of information on each practice's requirements as well as a lack of relationships across the entire supply chain—from the farmers to the retailers.

The Halal + Kosher report project team worked hard to dive deep into the subject matter. With over 25 members, the team brought a diverse range of experience and expertise. The team included researchers, farmers, Extension educators and staff, as well as community leaders and educators from various religious and non-religious affiliations, including Islam and Judaism.

It was especially important to the project team that attention was given to subject matter accuracy and sensitivity, with numerous community groups reviewing the report prior to publication.

Understanding the need for halal and kosher meats in Minnesota is a complex subject according to Minnesota Department of Agriculture's Strategy and Innovation Specialist Ariel Kagan.

"I think if you read the report and come away feeling like you totally get it you didn't read it very well," says Kagan. "And even in our research team we have differences of opinions about what the takeaways are and how people should view this market. But I think if it were easy it would be done already."

The report works to create a starting point for producers interested in breaking into the halal and kosher markets. Due to the complexity of the subject matter, it aims to foster understanding about specific consumer needs and not serve as a business plan for entrepreneurs. The report breaks the market assessment down into five topics: the overview, kosher practices and markets, halal practices and markets, goats in Minnesota and recommendations.

## The Crossover Between Halal and Kosher

The report covers topics that are relevant to both the halal and kosher markets before breaking down the differences between the two markets. While halal and kosher standards are not interchangeable, there are certain areas where there is a crossover between the two practices. These areas include seasonality, meat processing availability, regulatory oversights and animal welfare rules.

As with all communities, halal and kosher consumers have patterns in demand based around seasonal events and holidays. Both faiths follow a lunar calendar. This results in a shift in dates each year for both Muslim and Jewish holidays. Understanding and tracking these holidays can help meat producers, processors, brokers and retailers to better prepare for demand.

The Halal + Kosher report notes that there is a slowdown in processing speeds by roughly 30 percent when it comes to religious slaughter practices. This slowdown can result in additional costs and decreased productivity, making preparation and understanding of seasonality essential to meeting demand.

Because both halal and kosher practices are faith based, the government does not regulate them. In fact, courts deemed laws pertaining to the definition of halal and kosher foods unconstitutional and incompatible with the guarantees of the freedom of religion outlined in the First Amendment of the United States Constitution. Therefore, third-party certification bodies are responsible for defining and auditing halal and kosher standards.

While federal laws do not currently define halal and kosher standards, there are regulations and policies in place that impact the marketplace and protect

consumers. For example, the regulatory authority over the kosher labeling of products is the United States Food and Drug Administration (FDA). This means that the FDA can prevent the use of terms like “Kosher” and “Kosher Style” as well as adjacent iconography such as the Star of David or menorah on products not certified as kosher by religious authorities.

Minnesota law currently protects halal and kosher labeling under two separate statutes: MN Statute 31.651 covers kosher labels and MN Statute 31.658 covers halal labels. These laws protect consumers by validating the standards of each label. Each law prohibits the mislabeling of halal and kosher products that do not meet practice standards as defined by religious authorities. The key difference between the two statutes is that the kosher label must be in writing while the halal label can be an oral or written statement.

A key aspect of both halal and kosher meat processing is the consideration of animal welfare and the respectful treatment of animals. According to the Halal + Kosher report, these religious perspectives are understood through the Quran and Torah that “the practice of ritual slaughter is intended to enhance, not degrade, animal welfare.” For example, animals must be alive and healthy at the point of slaughter to meet halal standards.

---

**“To better serve this community, there needs to be an understanding across the entire supply chain of the requirements for halal and kosher production.”**

---

The main difference between conventional and religious slaughter comes the moment of killing. Because halal practices require a healthy animal for slaughter there is debate among certification authorities regarding the conventional use of stunning at the point of slaughter. The question is whether stunning an animal changes their condition from healthy to “unhealthy.”

While the respectful treatment of animals guides halal and kosher practices, they are still required to meet all animal welfare standards as enforced by the United States Department of Agriculture (USDA) and the MDA. additional work by animal welfare experts Temple Grandin and Dr. Joe Regenstein of Cornell University developed restraint designs that meet halal and kosher slaughter standards.

To be able to perform ritual slaughter, Minnesota meat processors can apply for a religious slaughter exemption through the USDA or MDA. Applications generally require the name of the slaughterer and an explanation of the request. Depending on the scale of the facility as well as the labeling requirements, letters from a religious authority may be required at certain stages of the process.



Some consider the process to be overly complex and a barrier to their entry into the halal and kosher meat markets.

A major concern for processors handling halal and kosher meats is the slaughter of hogs. While consumer interviews confirm that the preference is for no hogs to be slaughtered at a facility handling halal or kosher meat, this is not always the reality. Certain procedures may prevent contact, such as processing all halal animals first thing Monday mornings before processing non-halal animals.

## Goats in Minnesota

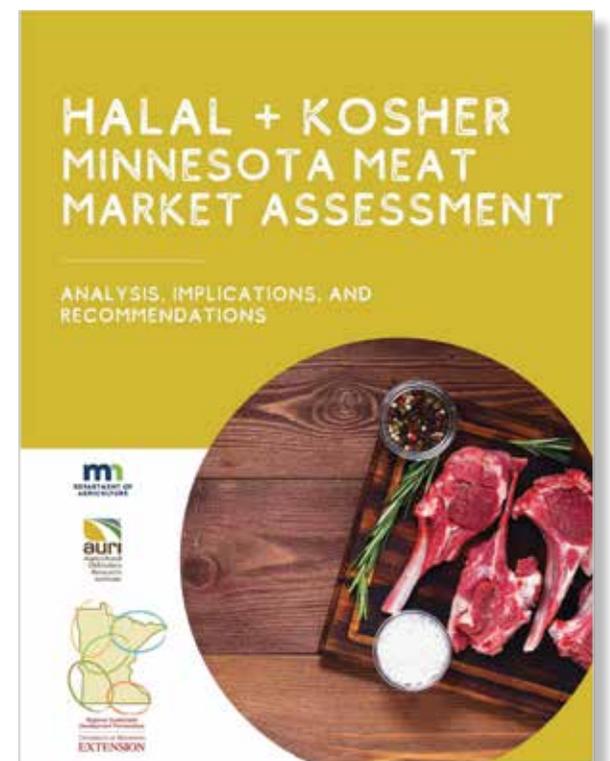
One specific regional need highlighted in the Halal + Kosher report is for halal goat meat. During the period of the research project it became clear that Minnesota’s Somali community was experiencing a near universal lack of fresh halal goat meat.

Interest in raising goats has been on the rise in Minnesota for the last two decades. This is attributable to both the increase in goat hobbyists as well as new immigrant communities with a preference for goat meat. Goats serve as a versatile option for producers as they can supply meat, milk, cheese and mohair fibers.

The main challenges to raising goats in Minnesota include the lack of available veterinary services and accessible markets as well as the cost of production and processing. Despite the recent census of agriculture reporting 25,000 meat goats in Minnesota, a number of these goats are show goats or are used to help control the spread invasive species.

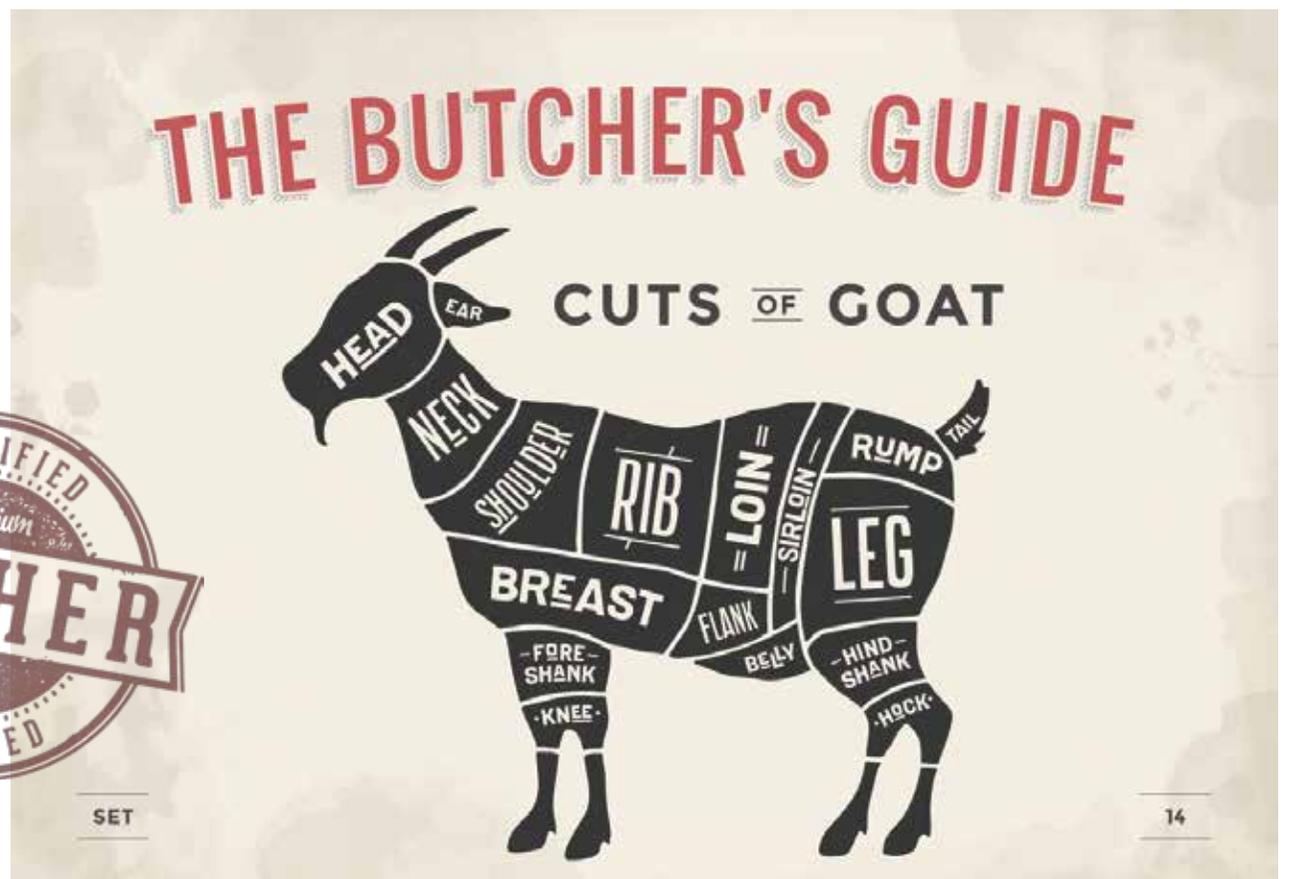
A large barrier to increasing the access to goat meat in Minnesota is the market. Currently, producers are only able to sell goats through auctions or direct-to-consumer sales. This situation combined with the inconsistency in market demand results in pricing to be highly volatile year-round. Producers can take their goats to one of the three main goat auctions located in Jackson, Zumbrota, or Pipestone, Minnesota.

Ultimately, goats are not the only opportunity for Minnesota’s farmers and meat processors looking to enter the halal and kosher markets. The general overview of these two meat markets in the Halal + Kosher report provides interested parties a place



The report is available online at [www.auri.org/research-reports/halalkosher-minnesota-meat-market-assessment/](http://www.auri.org/research-reports/halalkosher-minnesota-meat-market-assessment/)

to start. In order to succeed in these markets, attention needs to be paid to the nuance of each religious practice when related to the sourcing and handling of meats. Even more important is the need for relationship-building across the entire supply chain and with Minnesota’s Muslim and Jewish communities. The project team recommends that future efforts in supporting Minnesota’s halal and kosher markets include the clarification of standards, supporting small- and mid-sized meat markets and building understanding around halal-friendly financial tools.



# Barriers to

# Emerging Farmers

BY AURI

In February 2020, the Minnesota Department of Agriculture (MDA) released a report about the barriers new and potential farmers face in Minnesota.

The 37-page legislative report, *Emerging Farmers in Minnesota*, focuses on addressing the concerns for the next generation of farmers in the state. It explores the following questions: who are emerging farmers, what are the barriers to entry, and what actions are Minnesota taking to support the future of agriculture in the state?

“As we talk about agriculture in Minnesota there are certain groups that are not part of that conversation,” says MDA’s Assistant Commissioner Patrice Bailey. “Those are the folks that really need to be part of that conversation as we continue to recognize agriculture as a staple of our country.”

According to the United States Department of Agriculture, Minnesota currently ranks fifth nationally in terms of agricultural production and has 68,000 farms covering 25.5 million acres. The *Emerging Farmers* report calls out agriculture as a defining feature of the state claiming, “many Minnesotans feel connected to agriculture even if they themselves have no formal role in the industry.”

Along with this pride comes concern for the next generation of farmers. Three years ago the average age of a Minnesota farmer was 56.5 years old according to the Census of Agriculture. This statistic highlights the importance of farm transition and succession planning as well as the need to support the next generation of agricultural producers in the state.

“We are not seeing enough people joining the agriculture sector to sustain the foundational part of our economy,” says Ariel Kagan, strategy and innovation specialist for MDA and researcher for the *Emerging Farmers* report. “If we want Minnesota to be a place where anyone who wants to farm can farm then we need to be thinking about how we are going to support those folks and uplift them and bring them into this robust agricultural economy.”

The report, created by the MDA’s participation in six listening sessions around the state and via the Internet in 2019, engaged with more than 200 participants. The participant pool included service providers and educators as well as emerging, established and retired farmers.

The report defines “emerging farmers” as individuals entirely new to farming as well as generational farmers who have been outside the scope of traditional state and Federal agricultural support programs. It focuses on historically underserved communities including women, veterans, persons with disabilities, Native American/Alaska Native, communities of color, young and beginning farmers, and LGBTQ+ farmers.



Acknowledging these communities is essential to understanding agricultural opportunities available in Minnesota. Historically, laws, programs and institutions giving preference to white, male farmers impacted land ownership in the state. The current demographic of Minnesota’s principle farm operators is 99.16 percent white, while Minnesota’s general population is 84.1 percent white.

“This is just the beginning of a long process,” says Bailey. “I think what needs to happen in terms of emerging farmers is to recognize that emerging farmers don’t all look the same, they don’t always come from rural areas. There are a lot of emerging urban farmers as well.

The new report also provides insights and recommendations that aim to benefit all of Minnesota’s farmers. The state’s agricultural system relies heavily on established farmers to mentor and advocate for emerging farmers. Supporting emerging farmers can improve the overall ag sectors of Minnesota’s economy as well as providing pathways to building generational wealth and revitalizing rural communities.

During the creation of this report, MDA staff were able to identify 11 themes expressed by participants of the listening sessions. Areas of discussion covered financial barriers, discrimination, rural health care, availability of resources, climate change, and market access and infrastructure. Participants shared thoughts including “as an emerging farmer I’ve struggled to find farmland that I can afford near the markets I hope to sell to” and “centuries of injustice against people of color and indigenous communities render their access to land even more difficult as they suffer from a lack of wealth building that centuries of white people have had.”

One repeated concern related to access to resources. Participants noted that many farm service providers in Minnesota tend to focus their business on larger-scale commodity-based farms. While other emerging farmers are struggling to find culturally appropriate resources that support their farming practices and markets, such as locally grown kosher and halal meat.

There was also confusion and disappointment over the current education and training resources available for emerging farmers. Many participants expressed issues with educational resources that do not address the needs of a non-traditional farming businesses. Also, participants cited issues with the access and use of the Internet in rural Minnesota as a barrier to continuing education as well as e-commerce and marketing efforts.

The report concludes by laying out recommendations to support and cultivate emerging farmers in Minnesota. It starts by suggesting the creation of an *Emerging Farmers* Task Force to provide guidance to the Commissioner of Agriculture in the development of programs and initiatives, which began looking for participants in May 2020. Other recommendations include the translation of MDA training materials, incentives for farm services providers, and creation of grants that support emerging farmers.

The *Emerging Farmers in Minnesota* legislative report is available on the Minnesota Department of Agriculture’s website at [www.mda.state.mn.us/report-addressing-future-farming-minnesota-released](http://www.mda.state.mn.us/report-addressing-future-farming-minnesota-released)

# Energized to Reuse Organic Waste

BY AURI

Organic waste may be part of the future of renewable energy in Minnesota as the Agricultural Utilization Research Institute (AURI) aims to support and foster the development of anaerobic digestion systems in the state through a new industry thought leader initiative.

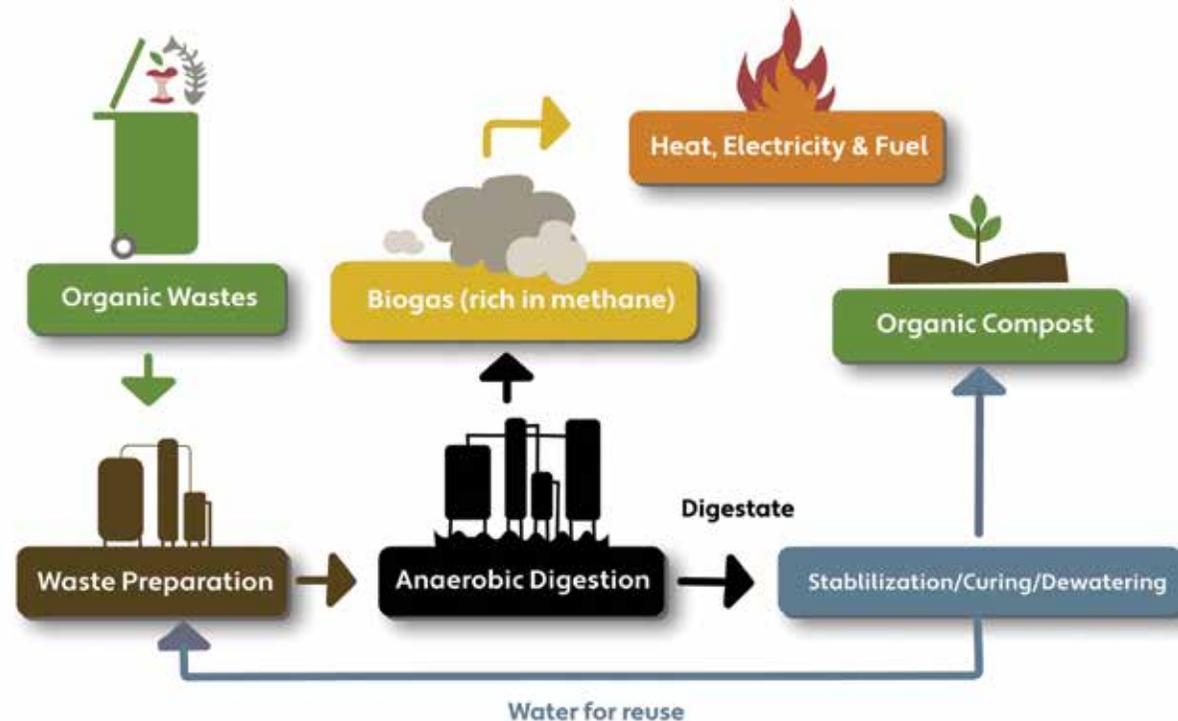
There has been a concerted effort throughout the last decade to implement programs reducing organic waste. The United States Department of Agriculture and the United States Environmental Protection Agency have a joint goal of reducing the country's food waste by 50 percent by the year 2030. Meanwhile, Minnesota state law also established a 2030 goal for the seven metro-area counties to recycle or compost 75 percent of solid organic waste.

The reduction of organic waste from landfills has two positive effects: it reduces a need for landfills and slows the growth of greenhouse gas emissions. Food waste in landfills is a known producer of methane and responsible for at least 2.6% of all U.S. greenhouse gas emissions.

"Food waste becomes an important feedstock for anaerobic digestion," says Rod Larkins, senior director of science and technology at AURI. "It is the current technology of choice for converting food waste to energy and other important coproducts."

Anaerobic digestion systems allow producers to divert organic waste sources away from landfills and convert it into renewable energy. Using a microbial process, anaerobic digestion breaks down biodegradable materials to produce methane and other gases.

This biogas can replace a fossil fuel derived natural gas when burned in a furnace or purified to power a generator or adding it to the natural gas pipeline. Additionally, byproducts of anaerobic digestion systems include livestock bedding and fertilizer.



the moment and it is a learning curve. It is an exciting opportunity."

AURI is launching a new working group of technology and commercialization experts to support the development of sites using anaerobic digestion in Minnesota.

The group will focus on identifying potential anaerobic digestion projects and connecting them with resources. Larkins' top goals include developing a catalogue of waste streams and sites around the state as well as establishing pilot sites to define best practices in processing biogas for the natural gas pipeline.

There is potential for this work to have a large impact on the food and ag industries as well as

for the renewable energy sector. Anaerobic digestion is an opportunity to recover food and ag waste by giving it a new life as biogas and other byproducts. It can provide ag with more sustainable and profitable options when dealing with waste.

This is not the first time AURI has engaged in the pursuit of anaerobic digestion in Minnesota. Previous, AURI projects in this area include a study of the feasibility of making methane and fertilizer from corn solids left over from ethanol production and the joint publication of an anaerobic digester casebook for food processors with the Energy Center of Wisconsin.

AURI's new anaerobic digestion working group will not be alone in its efforts. It is a topic of exploration for two other AURI initiatives: the MN Renewable Energy Roundtable and the Food Waste Industry Thought Leaders group.

The City of St. Cloud is already utilizing anaerobic digestion to produce energy from waste solids recovered from their wastewater system as well as byproducts from local industries such as breweries and food processing facilities. Currently treating wastewater for over 120,000 people in six cities, biogas from its anaerobic digestion system is cleaned before use as fuel for the facility's generator. The City of St. Cloud also sells solid byproducts from the anaerobic digestion process as commercial grade fertilizer. Most of the product primarily ends up in the Red River Valley region.

"We have used our methane from anaerobic digestion for our boilers to heat our facilities. Next, we used it to fuel our generators," says Emma Larson, assistant public utilities director for the City of St. Cloud. "It would be a huge leap forward if we could get this on the natural gas grid."

City of St. Cloud Public Services Director Tracy Hodel agrees, "no one is doing this in Minnesota at

## ABOUT AG INNOVATION NEWS

Erik Evans, managing editor  
Rolf Hagberg, photography  
Design by pounce.com

Electronic pdf copies of current and previous *Ag Innovation News* issues are available on the website: [auri.org](http://auri.org).

Address correspondence or subscription requests to:

*Ag Innovation News*  
PO Box 251  
Waseca MN 56093  
218-281-7600  
[news@auri.org](mailto:news@auri.org)

## BOARD OF DIRECTORS

**Ron Obermoller, Chair**  
Minnesota Soybean Research & Promotion Council

**Jerry Hasnedl, Vice Chair**  
Minnesota Farmers Union

**Larry Johnson, Secretary/Treasurer**  
Agribusiness

**Sen. Rich Draheim**  
Minnesota Senate

**Rep. Jeanne Poppe**  
Minnesota House of Representatives

**John Schafer**  
Minnesota Beef Council

**Jon Veldhouse**  
Cargill

**Carolyn Olson**  
Minnesota Farm Bureau

**Ken Asp**  
Minnesota Wheat Research & Promotion Council

**Federico Tripodi**  
At-Large Board Member

**Jeff Grev**  
At-Large Board Member

## CONTACT US

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

**St. Paul**  
64 McNeal Hall  
1985 Buford Avenue  
St. Paul, MN 55108

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

**Waseca**  
PO Box 251  
Waseca, MN 56093

# Ag Innovation Program

## Bolsters Minnesota's Food Ecosystem

AURI is proud to announce the fourth installment of the Agricultural Innovation Partnership (AIP) program. This program will help catalyze innovation, generate new ideas and support collaborative partnerships that advance Minnesota's value-added agricultural industry. For this year's program, AURI is seeking proposals on four distinct topics related to innovation and food in Minnesota.

### 1 Building and Enhancing an Indoor and Outdoor Food Fish Industry in Minnesota

For this partnership, AURI seeks consultants and technical writers to assemble a comprehensive science and economic based guide to building and enhancing an indoor/outdoor food fish industry in Minnesota. The guide will include the following topics: regulatory and permitting requirements, infrastructure and processing, fish health protocols, food fish markets and supply chain analysis, business and financial resources, and coproducts utilization such as pet food, fertilizers and other uses.

### 2 Demystifying Digital Marketing and E-Commerce for Food Businesses

AURI seeks proposals to create public domain self-guided tools and/or modules for the purpose of demystifying e-commerce and digital marketing for Minnesota's food businesses. These could come in a number of forms and should help food businesses address the following:

- What is e-commerce and digital marketing, and how do I start?
- What are the different online platforms?
- What is the difference between self and 3PL order fulfillment?

### 3 Creating a Marketing Guide for Food Businesses

AURI recognizes the need for development of effective marketing strategies to build and grow a sustainable food business. As such, AURI is seeking proposals to create a food business marketing guide highlighting strategies, tools and resources in:

- Creating and communicating a value proposition to transform a product into a brand
- How distributors, brokers and retailers work
- Managing investment and cash flow to build a sustainable growth model
- Best practices for effective advertising and market identification/growth strategies

### 4 Conducting a Food Ecosystem Benchmarking Study

AURI is seeking proposals to conduct a food innovation ecosystem benchmarking study. This study would unveil the characteristics of a highly collaborative and integrated innovation ecosystem that delivers national and global impacts. The best practices identified in this study should help foster innovations, new businesses and new technologies necessary to solve the global challenges of food security, health, sustainability and supply chain resiliency. The ultimate goal is to identify strategies that would enhance MN's reputation as a global leader for food innovation.

To learn more about the Ag Innovation Program or how to submit a proposal for one or more of the challenges, visit [auri.org](http://auri.org).

Non-profit  
Organization  
U.S. Postage  
**PAID**  
Permit No. 14  
Detroit Lakes,  
MN 56501



The newspaper of the Agricultural Utilization Research Institute

510 County Road 71  
Suite 120  
Crookston, MN 56716

Change Service Requested