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Ag Innovation News

The newspaper of the Agricultural Utilization Research Institute

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BY SHANNON SCHLECHT
AURI EXECUTIVE DIRECTOR

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Happy New Year! I hope you celebrated the start of 2020 in good spirits with family and friends. Now that we're a few days into the new year, I'm excited to share the achievement of several important milestones to expand AURI's capabilities and enhance its client resources. The result being AURI is better positioning itself to make significant advances in the coming years.

First, toward the end of 2019 AURI added new infrastructure to its labs in Waseca and Marshall. In Waseca, AURI's Coproducts Lab installed a new drying system as well as a decorticator and finisher. Both of which will be an invaluable resource for AURI's work in Minnesota's burgeoning hemp industry. What's more, to accommodate an increase in project activity, the Coproducts Lab added another site location and now utilizes two separate lab spaces in the Waseca area.

AURI's Marshall facility also expanded to accommodate the needs of our clients by opening a new Food Product Evaluation and Sensory Lab on the campus of Southwest Minnesota State University. This new facility was custom built and is a unique resource for food entrepreneurs. I invite you to read the article on pages 6-7 to learn more about it.

In addition to these expansions, I'm pleased to report that AURI began providing small scale product lots for market research purposes for companies to test their ideas at a slightly larger commercial scale to help move them accelerate their commercialization efforts. I expect this new capability to be popular among clients who are trying to be as efficient as possible in their go-to-market strategy.

Last, but certainly not least, as I write this letter AURI is in the process of electing its second at-large board position. This new board member will bring additional perspectives to the board of directors, which is beneficial for an organization such as AURI that encompasses such a diversity of work and opportunities. I look forward to sharing more information about AURI leadership in the next issue of Ag Innovation News, but in the mean time keep an eye on auri.org for an announcement.

In closing, 2020 is starting off on the right path to be a bright year for AURI. The staff and board worked hard throughout the past year in an effort to position the organization as one that powers the future and develops innovative solutions for the development of the food and ag sectors.

Board Spotlight

Q&A with Rep. Jeanne Poppe



BY AURI
This quarter, Ag Innovation News highlights one of its newest board members, Rep. Jeanne Poppe. In addition to her role on the Board of Directors, Poppe is also currently the chair of the Minnesota House Agriculture and Food Finance and Policy Division. Read on to learn more about her background and goals for the future.

AIN

Please tell our readers a little about your background

JP

I am a native of southeastern MN. I grew up on a farm about a mile outside of the city limits of Houston, MN. After graduating from Houston High School, I attended college in LaCrosse, Wisconsin and then transferred to the University of Wisconsin River Falls where I graduated with a BA in sociology. After a couple of years of working, I continued my education by going to Winona State University for a Master's degree in counseling.

I have worked as a county financial worker, a legal services paralegal, and a family counselor, prior to beginning my career with Riverland Community College. I recently retired after 28 years from my work as a college counselor.

I have lived in Austin since 1984 where my husband and I raised our three children. I served on the Austin City Council for 8 years. I was elected to the MN House in 2004 and have served continuously since.

I currently serve as chair of the House Agriculture and Food Finance and Policy Division.

AIN

How can Minnesota best support its agricultural industry?

JP

Farmers generally make the best decisions they know how to make for their enterprise. So first and foremost, listening to our farmers and understanding their struggles and perspectives will go a long way in showing support. As the weather changes cause them to consider new practices for soil health and economic prosperity, the legislature should support research in new crops and animal welfare, as well as provide incentives for new ideas and transitions. Helping them increase their markets (locally and globally), helping them as they want to begin or retire from farming, and assisting them as they adapt to climate change and disease are all ways to provide support.

AIN

What do you think is the biggest challenge faced by farmers today?

JP

It may be difficult to pinpoint one thing as the biggest challenge. Farmers are accustomed to taking risks and facing the usual ups and downs with weather and markets. It seems the biggest challenge or frustration is when they are subject to decisions made by others which doesn't help their farming operation (and by perception or reality harms them).

AIN

Which Ag-related issues are most important to you?

JP

While I am interested in a wide variety of ag-related issues there are three that are most important to me.

Agricultural education, including growing the number of students within these programs in the state. If we have more agriculture educators, we will have more FFA chapters, which will lead to more students gaining exposure to agricultural education and future career opportunities in agriculture.

Strengthening and increasing mental health resources for farmers.

Growing possibilities for emerging farmers – including transitions from those wanting to retire to those wanting to begin farming.

AIN

What are your goals as a new board member?

JP

I want to be helpful to the operation and supportive of the entrepreneurial nature of the Institute.



The New Uses Forum, created to accelerate innovation and investment in value-added agriculture, ultimately utilizing more Minnesota agricultural commodities as a result, has rapidly gained momentum and recognition.

Food Ag Ideas Week Brought Technology, Innovation and Dynamic Speakers Together

Fresh, exciting new ideas, from beer to bees and data to dollars, dominated the panels and presentations at this year’s Food | Ag | Ideas Week, October 10-15

BY AURI

Fresh, exciting new ideas, from beer to bees and data to dollars, dominated the panels and presentations at this year’s Food | Ag | Ideas Week, October 10-15.

This, the second annual event, was hosted by Grow North, an organization that connects food and agriculture entrepreneurs, industry leaders and problem-solvers. At this conference, Grow North emphasized visibility, connectivity and growth for Minnesota’s food and agriculture industry. Over the course of six days, the conference brought together varying views and conversations outside their traditional audiences. These panels, speakers, investors and growers convened in venues across Minneapolis and St. Paul, creating a dynamic platform of inspiring discussions surrounding the agriculture and food sectors.

The conference kicked off with an event organized by AURI in partnership with Renewing the Countryside, BevSource, AgriGrowth Council and the Artisan Grains Collaborative. From Field to Glass showcased innovations in brewing and distilling with locally sourced agricultural

products. This event took place at The Lab, a production facility for beverage creators to brew and ferment recipes. This production facility and taproom features a rotational selection of small batch brewers and a testing facility to ensure quality and consistency for brewers in residence as well as outside producers. The Lab is operated by BevSource, a provider of beverage development, production, sourcing and logistics solutions for new and established beverage visionaries. Brewing and distilling was a popular subject of a panel entitled “Innovating for an Edge.” Sandy Boss Febbo, co-owner of Bang Brewing talked about the use of kernza, a perennial grain boasting a number of environmental benefits. “Kernza provides a lot of benefits; it’s a self-sustaining wheat that’s capable of boosting soil and water health while providing an incredible flavor profile,” Febbo said. Bang Brewing is the third brewery in the state to produce a commercial release using kernza. In addition, Ryan Mihm, head brewer at Finnegan’s Brewing Company, spoke about the use of CDB as an ingredient for brewing.

Innovation remains vital to staying ahead in the brewing and distilling industry with numerous competitors and a constant battle for market share.

The “Brewing Up New Opportunities” panel featured businesses that sell to, buy from, or provide services to brewers, distillers and beverage makers. Each panelist brought a different perspective and provided thoughts on barriers and problems that need to be solved in order to grow this sector of the industry. Adam Wagner, Co-founder, Owner and Operator of Vertical Malt educated the room on the limited variety of malt plants used in brewing operations and the opportunity for the utilization of small grains like barley, wheat or rye. Rob Davis, Director of the Center for Pollinators in Energy at Fresh Energy talked about his drive to innovate, drawing inspiration from Dr. Marla Spivak, a leading bee scientist whose research led to incorporating flowers on solar farms. This pairing creates a pollinator habitat producing both renewable energy and honey. This approach is currently

being utilized by Connexus Energy a company that initially built a pollinator habitat called SolarWise. Eric Sannerud, founding farmer of Mighty Axe Hops, shared his experience starting small, growing his business while still learning how to be a farmer. One of the stated barriers he faced is “growing a new crop in a space where insurance is difficult to acquire for an unknown product like hops in Minnesota,” Sannerud said. With fledgling beginnings, Mighty Axe Hops has grown to become the largest hop farm in Minnesota producing hop varieties for numerous breweries throughout the state and beyond.

The “Unfurling Innovation Through Research and Development” panel explored new developments in brewing and distilling and looked at how research is being utilized to create a positive impact. Topics ranged from product variety to barriers and opportunities for brewers large and small. Matt Hall, Director of Innovation and Pilot services at The Lab discussed the benchmark for quality for brewers, citing consistency as paramount and the capability to work with different grains and ingredients. The Lab gives beverage makers a resource and site to perform pilot runs and test the quality of their recipes. “It can be hard for small brewers to work and develop products when competing with largescale brewers,” Hall said. The variety and changing selection of products at The Lab allows the consumer to experience small batch brews on a rotating basis while delivering feedback and insights to the producer. Data utilization and optimization for benefits beyond production were recurring topics for this panel. Kevin Smith, Professor of Agronomy and Plant Genetics at the University of Minnesota shared how we should create a better system that connects field data and how it can benefit production in the brewing world. “We need to figure out barley varieties and what is influencing the type of environment they grow in while creating a positive economic impact,” Smith said. George Annor, Professor of Cereal Chemistry at the University of Minnesota shared his thoughts about the changing demand for flavor. “There is a demand for creating something that is sweet by infusing sweetness and fruity flavors to beer profiles, a trend that is becoming more and more common.” Annor said. Research and development play vital roles in creating products that keep up with the preferences of the consumer.

From Field to Glass featured a range of topics celebrating the diversity of the brewing and distilling industries. It explored opportunities for continued growth in networking, innovation, and research in this burgeoning space. This inaugural event on Day 1 of Food | Ag | Ideas concluded at a well-attended happy hour hosted by Grow North at Finnegan’s Brewing Company in Minneapolis.

The balance of Food | Ag | Ideas Week featured panel discussions, an investors summit, the Maker to Market Showcase and more. The Minnesota History Center was an excellent venue to host the first day of events because it showcases Minnesota’s past and the important role agriculture plays in the state. The center is only steps away from the MN Capitol, where agriculture legislation is often in the spotlight. Every part of the supply chain was represented in the panel discussion, “Unlocking What’s Under Our Feet: Innovation in Regenerative Agriculture.” This forum provided compelling information on a range of regenerative farming practices and their impact on the farm. The topics of discussion included emerging technologies, collaboration, and financial challenges and opportunities for the changing agricultural landscape. One of panelists, Grant Breikreutz of Stoney Creek Farm in Redwood Falls, shared his thoughts on the impact

of regenerative techniques on crop attributes and livestock. “Sustainable agriculture is keeping a living root in the soil at all times.” Breikreutz said. In fact, the utilization of cover crops on his farm not only changed the water cycle on his land, it also led to reduced synthetic inputs, improved soil health and boosted protection for the land and livestock.

Measuring the impact of regenerative agriculture remains a challenge for farmers who are considering employing these kinds of approaches. While the jury is still out on how these practices are being adopted by the Minnesota farming community at large, it is clearly gaining interest. In response to that trend, the Forever Green Initiative is spearheading opportunities for Minnesota farmers to incorporate cropping systems which provide ecosystem benefits. The project focuses on the development of cover cropping systems and perennial crops for Minnesota. Industry experts are looking at programs like Forever Green to lead the way toward a future of greater agricultural sustainability approaches across the state.

The panels continued into the afternoon with “A Conversation on the Future of Farming” panel, including discussions about new agriculture practices and technology, financial realities and innovation in the field of farming. The panel consisted of growers and producers from different fields and disciplines including Carolyn Olson, Co-Owner of Olson Organics of Cottonwood and AURI Board member.

The second day was held at the Walker Art Center in Minneapolis. The Walker is an internationally acclaimed art museum that offers several unique spaces for presentations and networking alongside their galleries, theater and sculpture garden.

At the Walker, there were exciting discussions and presentations about the subject of the incorporation of technology at the farm level. With regard to a growing population, there is a concerted emphasis to expand production output on the farm and better understand the data that might enable those goals. In fact, the “Bridging the Gap: Big Data, Tech Innovation and On Farm Realities” panel provided a robust conversation about start-up companies that are developing technology solutions leveraging farm level data and its impact on the farmer.

Ag technology is continuing to gather momentum as corporations and entrepreneurs enter the space by bringing technology to farming. This is creating real-time information about soil moisture, irrigation forecasting, level sensors in grain silos and bulk tanks, along with data and automation, which is accessible via smart devices.

The panel discussed how the food and ag landscape is evolving and what will impact the farmer as they move further into the digital world and incorporate more on-farm data.

“Investing in Growth: A Conversation on Capital Across Food and Agriculture” panel rounded out the week’s activities bringing together thought leaders from different capital sources to discuss trends, growth and ways to catalyze investment planning and strategy. Digitization and its impact across the value chain in food and ag was a subject of discussion by Sanjeev Krishnan, Chief Investment Officer and managing director of S2G Ventures. “When a channel gets digitized, that is when you see the most market share. Today, nearly 8% of grocery is digitized,” Krishnan said. Seed 2 Growth Ventures is a multi-stage food and agriculture venture fund investing in entrepreneurs whose products and services meet the shifting demands for healthy and sustainable food. The adoption of technology into the ag

sector was a topic of discussion, led by Taylor Moore with Carlson Private Capital Partners who mentioned the high amount of technology adopted in the ag industry--from fertilizer to seed tech. The power of the consumer was also front and center in this panel discussion. “Riches are in the niches in the food marketplace,” Krishnan said. A lot of commodity producers are interested in commodity scale but should be encouraged to look at specific players like PURIS, a plant protein company that started as a niche operation and now has a partnership with Cargill. Investment continues to excite and provide growth for players big and small in food and agriculture arenas.

This year’s Food | Ag | Ideas Week was filled with timely subjects, high-profile speakers and vigorous panel discussions and conversations that lasted well beyond their scheduled times. “The goal of Food | Ag | Ideas Week is to showcase our community and build connections that last beyond the week of programming,” said Lauren Mehler Pradhan Managing Director of Grow North.

Food | Ag | Ideas Week was an exceptional forum for collaboration, with 25 sponsors and over 1,000 attendees. Planning is already underway for next year’s event to include more success stories and exciting panelists. For more information about the events and speakers, visit <https://www.foodagideas.com/>



This, the second annual event, was hosted by Grow North, an organization that connects food and agriculture entrepreneurs, industry leaders and problem-solvers. At this conference, Grow North promoted an emphasis on visibility, connectivity and growth for Minnesota food and agriculture. Over the course of six days, the conference brought together varying views and deliberate conversations outside their traditional audiences.

SENSORY SUCCESS

New Food Product Evaluation and Sensory Laboratory Expands AURI Capabilities

BY DAN LEMKE



PHOTOS BY ROLF HAGBERG



The Agricultural Utilization Research Institute, in partnership with Southwest Minnesota State University (SMSU), the Minnesota Department of Agriculture and the Minnesota Legislature recently opened a new Food Product Evaluation and Sensory Laboratory on SMSU's campus in Marshall, Minn.

The new facility provides food producers with an additional opportunity to collect and analyze qualitative and quantitative data about the sensory aspects of food — like taste, smell, sight and feel. This is an important step for innovative food businesses as it shows how products could be adjusted to better meet consumer preferences as part of the commercialization process.

Professional sensory evaluations are costly and typically consist of highly trained professionals to tweak certain product characteristics. However, with the opening of this lab, AURI is able to offer beginning food product optimization services to startup businesses at an affordable price point. By using the services and technology at the lab, AURI's endeavors to help clients bring more preferred food products to the market faster.

AURI's clients had been asking for a resource with these capabilities for some time, said Shannon Schlecht, AURI's executive director. Consumer preference is fickle and hard to predict. But in the competitive food product market, being able to test and measure food to deliver desired characteristics before bringing it to market can be the difference between a product's success or failure. Receiving unbiased feedback on basic attributes like appearance, aroma, flavor and texture can help food producers eliminate less preferred products or refine and improve their products before they hit shelves.

"Most facilities focus on very specific attributes with trained panelists, which is a much more expensive endeavor. While this facility could provide that type of feedback as well, the focus will be on more general sensory characteristics to overcome initial hurdles or concerns around a market launch," Schlecht said.

The Food Product Evaluation and Sensory Laboratory is state-of-art and will serve a vast array of stakeholders throughout the region. Among them are producers, companies, entrepreneurs and researchers. The lab is a vehicle for exploration to drive innovation through facilitating sensory analysis of food products, advancing both commercial and educational goals.

In addition to sensory characteristic analysis, researchers can use the lab to

receive input on packaging, recipe refinement and overall market readiness of food products. Businesses will also be able to take advantage of AURI's professional approach to test design and results interpretation to answer their critical product questions.

To begin with, lab professionals will recruit food panelists from the SMSU student body and the Marshall area. As the facility evolves and capabilities expand, the lab could bring in more highly trained sensory panelists to provide a more in-depth sensory evaluation capability.

The Food Product Evaluation and Sensory Lab is versatile and well equipped. The facility includes a testing room with nine isolated sensory evaluation booths; a product preparation room to facilitate on-site preparation; a conference room that provides a focus group setting, accommodating up to

eight panelists; and it employs digital technology, special lighting and air pressure systems to remove as much bias as possible to obtain the highest quality evaluations for the facility's users.

The lab directly supports AURI's mission of fostering long-term economic benefit for Minnesota through value-added agricultural products and its commitment to developing, maintaining and upgrading its infrastructure and assets. AURI's clients depend on the organization for cutting-edge resources to help them enter and stay at the forefront of a competitive and evolving market.

The facility also strengthens the collaborative relationship between AURI and SMSU. In addition to serving Minnesota's food entrepreneurs, this new facility serves as a professional test room for required —coursework in SMSU's Culinology curriculum.

A unique partnership between AURI and SMSU, and funding from the Minnesota Department of Agriculture and Minnesota Legislature, brought the Food Product Evaluation and Sensory Lab to realization. The lab was planned, designed, and funded through collaborative efforts by both organizations. As such, both AURI and SMSU will enjoy joint use of the facility for the benefit of their stakeholders throughout the region. Utilizing existing classroom space for the construction of the facility and existing SMSU food prep areas minimized construction costs.

The lab's benefits are immediate and long-term to the state's agricultural community and overall economy, said Lolly Occhino, AURI's Scientist of Food & Nutrition.

From AURI's side, the lab provides sensory feedback from general consumers on various products to help accelerate a successful product launch into the market. By using this new center, companies can more quickly find the most desired product selected by the sensory panel to fine tune their launch which minimizes costs of developing other formulations at commercial market scale and more quickly accelerates sales growth with the best possible product introduction to the marketplace.

"Many small food businesses rely on friends and family to provide product feedback and direction for change. This new capability will enable business

owners to receive unbiased product feedback, which is especially important while trying to establish a foothold in the marketplace," said Occhino.

"The impact is to minimize costs to starting businesses with their product introduction and help give them the best opportunity to quickly accelerate sales with more desired products. It will also be a great educational resource for SMSU's Culinology department," said Schlecht.

From the SMSU side, the sensory laboratory is a resource for the Culinology students to obtain unbiased feedback on their academic work, on food product evaluations, and for educating their peers on what is desired and not desired. Students in the program will take required coursework in the lab and receive scientific training

on practical experience in sensory evaluation. This training will accelerate their understanding of methods to further utilize in obtaining the most palatable, and "market ready" product. The lab will also be a recruitment tool for SMSU and ultimately help draw more students into the field.

Linda Thompson, AURI's Organization Development Director who is based in Marshall added, "the partnership with SMSU will lead to a stronger food science education program for students in the region."

Both organizations will use the facility and it will be available for broad use for businesses in the state and across the region for the purposes of education of

food scientists and students as well as the development of new food products from crops produced in the region.

To celebrate the grand opening of the lab, AURI co-hosted an open house at the facility in November. Attendees were able to tour the lab's prep kitchen, booth area and conference room to see firsthand the capabilities, features and uses, visit SMSU's science and technology building and learn more about the school's Culinology and Hospitality Management program.

Schlecht said opening the lab took the collaboration of many partners and stakeholders. The end result will bring economic and educational benefits to the region, the industry and the entire state of Minnesota.

"We are excited to open the new Food Product Evaluation and Sensory Laboratory and we are deeply grateful to the Minnesota legislature, the Minnesota Department of Agriculture and Southwest Minnesota State University for their partnership," said Schlecht.

To learn more about the new lab, visit: auri.org/sensorylab or auri.org/about-auri/facilities/food-product-evaluation-and-sensory-lab/



AURI's new facility utilizes a product color neutralizing light system in order to obtain the most accurate feedback for clients.



Sensory lab clients have access to current technology and data analysis tools.



A group of AURI and SMSU dignitaries tour the new facilities.

Evaluation and Sensory Laboratory



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The New Uses Forum, created to accelerate innovation and investment in value-added agriculture, ultimately utilizing more Minnesota agricultural commodities as a result, has rapidly gained momentum and recognition.

BY AURI

If AURI's annual New Uses Forum is any indication, the entrepreneurial spirit is alive and well and living in Minnesota. Generating new ideas is important, but equally valuable is a recognition by the state's business and agriculture leaders that collaboration and a network of supporting resources are key to delivering on the promise innovative ideas present.

The fourth annual New Uses Forum will be held April 8-9, 2020 at the Earle Brown Heritage Center in Minneapolis. The event, created to accelerate innovation and investment in value-added agriculture, ultimately utilizing more Minnesota agricultural commodities as a result, has rapidly gained momentum and recognition.

Nan Larson, AURI's Director of Innovative Networks, says in its first two years, the New Uses Forum's primary focus was on value-added agriculture.



Governor Tim Walz opened the Reverse Pitch event by welcoming the audience and sharing his vision for innovation in Minnesota.

"In year three, we partnered with Compeer Financial and Georgetown University's Rural Opportunity Initiative, adding to the mix a strong financial resources component," Larson says. "In addition, we included Minnesota's first Open Innovation Reverse Pitch session, which will also be a part of this year's event."

Connecting Resources

Compeer Financial came on board as a partner for the 2019 event. Compeer Financial is a Farm Credit cooperative that serves agriculture and rural communities in Minnesota, Illinois, and Wisconsin. The organization is renewing their partnership role for the 2020 New Uses Forum.

"It lines up with our mission to enrich rural America and agriculture," says Aaron Knewton, Compeer Financial vice president for food and agribusiness. "As a later-stage investor and lender, we always look for ways to make sure we're investing capital in rural America because we want to support emerging ag businesses."

Many entrepreneurs and agribusinesses that look to expand or develop new ag-based products face a need for capital, so Knewton says the New Uses Forum was a logical fit for Compeer Financial.

"As it relates to new uses, we support it because it supports the entrepreneurial community, which is strong in Minnesota. We look at what we can do to back developments in food and biobased products," Knewton says. "As an organization we want to support those industries as well as the entrepreneurs, and Minnesota is a good place to do it."

Because entrepreneurship and business development are multi-faceted, the New Uses Forum draws a wide array of participants. Larson says the forum targets ag innovators, farmers, resource providers, commodity group representatives, industry, banks, venture capitalists and other financiers, as well as representatives from academia, including students. The event also draws numerous government officials.

"AURI started this event to create a platform for awareness and dialogue about exciting changes around innovation in the food and ag space, to share insight on how to advance innovative ideas that advance the agricultural industry, especially around investment capital and technical resources," says AURI Executive Director Shannon Schlecht. "We wanted to better connect resources and needs, and to further expand participants' networks to accelerate opportunities."

Schlecht says the New Uses Forum became an even more collaborative event since Compeer Financial and Georgetown University's Rural Opportunity Initiative became partners in curating the event.

"This brought in new perspectives and participants that really add to the content and diversity in participants," Schlecht adds.

Who You Know

Decades of working with existing and emerging businesses has reinforced to AURI staff the notion that an entrepreneur's resource network greatly affects success. As the business axiom explains, 'it's not just what you know, it's who you know.' That's why the New Uses Forum is open to anyone interested in innovation and advancing ideas in the food and agriculture space.

"Last year, we had producers, entrepreneurs, Fortune 500 representatives, private equity, banks, coop members, political representatives and several other stakeholder organizations all in the same room for these dialogues," Schlecht recalls. "At its core though, the event brought the agricultural industry value chain players together to really focus on value-added challenges and opportunities."

Resources are available to help businesses, but that support is only valuable if entrepreneurs and others know what's out there and how to access it.

"There is value in making connections," Knewton says. "The New Uses Forum helps entrepreneurs find marketers and mature businesses to help them solve problems and develop new ideas."



Former U.S. Department of Agriculture Secretary Tom Vilsack and AURI Executive Director Shannon Schlecht at the 2019 New Uses Forum.



New Uses Forum attendees participated in a variety of breakout sessions dedicated to the advancement of innovation.

Delivering Value

Larson says feedback from previous New Uses Forum participants is overwhelmingly positive and interest in the 2020 New Uses Forum is strong. While a successful event is important, even more valuable are the connections made between businesses and the resources available to support them. Larson says some successful relationships have developed as a result of the forums, but because those dealings are confidential, she isn't at liberty to comment on their nature. However, those relationships are evidence that the New Uses Forum is delivering on its promise.

Schlecht says the New Uses Forum's mission is three-fold – to inspire, accelerate and connect. The event is designed to inspire participants to advance their idea to the marketplace as they uncover resources, services and collaborators at the event; to accelerate some of the innovative happenings AURI sees on the ground each day through further network creation; and that connections are made across different segments of the value chain that don't typically interface since this event brings together a diverse audience.

"What amazes me each year is the 'buzz' throughout the roughly two-day session," Schlecht says. "It is often challenging to get the next session started on time as participants engage with each other about the previous session. That is testament to both the quality of the content the event curates, with regional and national subject-matter experts on various topics, but also participants engaging in dialogue to foster opportunities in this space."

AURI works in the areas of food, biobased products, coproduct utilization and renewable energy. Schlecht says all of those agriculture sectors show promise and will be represented at the 2020 New Uses Forum.

"The local food movement continues to create enthusiasm and interest for new products, as do sustainability metrics and how byproducts/coproducts can be further utilized into new opportunities," Schlecht explains. "While we don't see a great number of projects in the biobased area currently, interest is growing, offering great opportunity for Minnesota and the region."

"We want these efforts to result in value creation in Minnesota because of shared knowledge," Knewton adds, "and if we attract more investors to Minnesota, that's a win. If we end up funding new products, that's part of our goal as well."

Reversing the Pitch

At the 2019 event, AURI launched a "reverse pitch" concept at the forum, which included industry challenges from larger food and agriculture businesses. The concept turns the traditional model of pitching novel ideas 180 degrees. Leading food and ag companies gathered to share their industry challenges and then invited an audience of researchers, entrepreneurs, producers, and innovators to propose novel ideas to those problem areas.

"The reverse pitch was a fantastic addition to the program to illustrate the range of innovation needs at both the entrepreneurial level and Fortune 500 level," Schlecht says. "We are working to incorporate this type of platform again at the 2020 forum."

In addition to the reverse pitch process, the April 2020 New Uses Forum will include keynote speakers and panel discussions addressing issues in food, biobased products, renewable energy and coproduct utilization. Other sessions will feature experts in capital resources and consumer trends as well as ample time for networking. In addition, AURI will announce its 2020 Ag Innovator of the Year during the New Uses Forum.

Still A Need

AURI formed in the 1980s in response to the farm crisis when commodity prices were low, agriculture and rural economies struggled, and farmers needed new opportunities. Identifying and supporting value-added uses helped to create new markets for agricultural products, thereby increasing demand. Thirty years later, uncertain export markets for farm commodities illustrates the ongoing need for value-added development.

"It's extremely important as we face trade uncertainty for the agriculture market," Schlecht contends. "Exports are extremely important to the producer bottom line but growing other value-chain opportunities to manage market risk is increasingly of interest. This event can help start those conversations and showcase value-added opportunities to further the ideation and commercialization pathway opportunity."

More information, including an event agenda and registration materials, is available at www.auri.org.

The New Uses Forum's mission is three-fold – to inspire, accelerate and connect.

AURI Executive Director Shannon Schlecht.



Project Manager Becky Philipp

Innovation on Display

The annual New Uses Forum may be AURI's premier value-added agriculture event, but it's far from the only place AURI promotes emerging opportunities and the services it provides to further develop those innovations.

Project Manager Becky Philipp says AURI staff participates in over 30 events each year, including tradeshow, conferences, forums, and other partner events.

"They provide an opportunity for teamwork and collaboration with agribusiness, farmers and others," Philipp says. "There is also the opportunity to network and build relationships with the industry and commodity sectors, and hopefully, identify new value-added project opportunities that AURI can help develop and move towards commercialization."

The MN Ag Expo is a key event. Hosted by the Minnesota Corn Growers Association and the Minnesota Soybean Growers Association, MN Ag Expo is scheduled for January 22-23, 2020, at the Verizon Center in Mankato.

"AURI participates in the MN Ag Expo to collaborate with the agricultural sector, soybean and corn growers, industry professionals, and to offer AURI's assistance in adding value to Minnesota commodities through innovation and new and expanded uses," says AURI Project Development Director Harold Stanislawski. "We also participate to continue our collective efforts to educate people about sustainable biobased products made from the commodities grown in Minnesota and to showcase those products. It's all in an effort to expand market opportunities."

Events like the MN Ag Expo are largely grower focused. Philipp says since AURI's mission is to add value to Minnesota agriculture commodities, it's important to connect with growers.

"Working hand in hand with farmers and grower organizations is the way collaboration gets done," Philipp explains. "Showcasing products made from the commodities farmers grow reinforces the valuable roles AURI and the promotion councils play within the value-added supply chain."

AURI has enjoyed relationships with commodity groups since the organization's creation in the 1980s. Those connections remain vital more than 30 years later. Recent successful corn and soybean-based projects include soy-based road sealants and the expanded uses for corn in sustainable packaging. Those projects and more will be on display at the MN Ag Expo.

"We plan to have an exciting and interesting research and innovation exhibit" Philipp says.

AURI Conducts Stakeholder Research

BY AURI

Every biennium AURI conducts a broad scale research project, during which the organization's staff meets face-to-face with representatives from various ag-related stakeholder groups to gain insight into the current industry challenges and opportunities. The results of this research provide an opportunity to identify stakeholder priorities and industry sentiments while finding areas of strategic synergy and collaborative opportunities.

2) Stakeholders work toward fair and competitive promotional practices and social responsibility.

In 2019 AURI's staff conducted more than 40 interviews with stakeholder groups from throughout Minnesota's ag sector. Over the course of the interviews a number of common themes rose to the surface, indicating a certain level of mutual experiences across the sector. Below are four of the most common themes discovered though the stakeholder analysis process as well as insight into how AURI plans to address these areas for the benefit of Minnesota agriculture.

1) The agriculture ecosystem is becoming more diverse, complex and ambiguous, requiring networking, cross-collaboration and marketing expertise.

With so many new entrants into Minnesota's ag landscape (e.g. hemp, cover crops, new oil seeds) and new value chains developing there is an ever-increasing need for additional collaboration partners to maintain a high level of focus on organizational priorities. Essentially, organizations can no longer afford to try to be everything to everyone. Instead, as the ecosystem expands and becomes more complex, organizations need to rely more on other expertise through collaborations.

To address this theme, AURI plans to spend much of 2020 amplifying messaging and communication to build awareness of AURI activities, especially as it relates to meeting direct stakeholder needs. This includes convening

networking events with educational components, and addressing the increasing complexity of ecosystems while helping develop more deliberate connections between interested parties.

This theme stems from a number of groups who referred to concepts like local sourcing and truth in labeling. These same organizations also indicated a desire for greater environmental stewardship and fair international trade policies. What this tells us is that organizations are approaching strategies from a more transparent and holistic position. This is important to recognize, because it denotes a realization of growing consumer-based trends, to which producers and value chains must react.

In this case, AURI will undertake various steps to enable stakeholders in achieving their desired outcome. First, AURI will build programming and services intended to increase awareness and inclusion of locally sourced ingredients, while at the same time, the organization will explore, vet and catalyze commercialization of functional properties of MN-grown/raised agricultural products. AURI will also continue its value-chain work on novel crops via emerging crop roundtable opportunities to help develop new ingredient opportunities along with new environmental stewardship benefits.

3) One third of stakeholder's report ongoing concerns of uncontrollable obstacles.

AURI staff received numerous comments throughout this research project about frustrations related to long-term down cycles, low

commodity prices, limited equity and challenging farm transfers. Interviewers found that respondents felt these were all issues outside of their control, which contributed to a high level of financial and emotional anxiety and low morale.

The most effective way AURI can address this theme is by continuing to pursue its mission—specifically through the development of value-added agricultural products to help add value and offset basic commodity supply risk. A good example of this is the organization's efforts to evaluate protein concentrates and isolates made from MN crops. Also, AURI is committed to continuing the exploration of opportunities for biobased products from fibers, resins, oils, etc.

In taking these steps, AURI can help create new opportunities for producers to both diversify cropping options while also adding value to existing and new crop opportunities, which, in turn, helps mitigate market risk.

4) Emerging innovations on the horizon provide flourishing opportunities for entrepreneurs.

Respondents were quick to acknowledge that part of their optimism was rooted in their belief the agriculture sector is on the cusp of enhanced scientific technologies and processes, new uses for commodities and ag residues, better consumer communications and significant advances in plant and animal health.

In order to support these opportunities, AURI will continue to optimize its facilities, equipment and technical know-how as it relates to new and ongoing industry needs. At the same time, it will continue to build upon its expertise in supply/ value chain development to build new and emerging industry sectors and improve existing and legacy supply chains.

Enhancing poultry performance with specialized soy products

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Current breeds of commercial broiler chickens and turkeys grow very quickly. To improve early growth and immune system development, some research suggests that young poultry would develop better when fed starting diets containing highly digestible ingredients and a lower amount of anti-nutritional factors (ANF).

Most feed ingredients, while providing valuable nutrients, also contain some ANFs in varying quantities. For poultry, due to the high protein and amino acid requirements, most of that protein comes from soybean meal, which is an excellent source of amino acids, but contains large amounts of oligosaccharides that can disrupt the digestive system of young birds. Through processing technology, the oligosaccharide content can be reduced while also increasing the protein concentration of the product.

An example of such a product is NutriVance™ produced by Midwest Ag Enterprises Inc., which substantially reduces the ANF content, including oligosaccharides-raffinose, stachyose and trypsin inhibitors.

The Minnesota Soybean Research and Promotion Council (MSRPC) funded feeding trials with market turkey toms and broiler chickens to examine potential performance improvements with the inclusion of NutriVance™ products in the starter diets of turkeys (up to 2 or 6 weeks of age) and broilers (up to 1 week of age).

Turkey starter diets included NutriVance™ at levels of 2.5 percent and 5.0 percent and 2.5 percent in broiler starter diets. In addition, products containing NutriVance™ (Neptide, with fish solubles; and Fermotide, with porcine solubles) were included at 2.5 percent in separate diet treatments. The control diet was a conventional (100 percent) soybean meal.

Turkey Tom European Efficiency Index Score to 18 wks of Age by Diet Treatment



Figure 1: Efficiency Index Score for male turkeys to 18 weeks of age and fed starter diets with processed soy product up to 6 weeks of age (except Diet 4). Treatment description:

- Diet 1 = Control;
- Diet 2 = 2.5% Nutrivance;
- Diet 3 = 5% Nutrivance;
- Diet 4 = 2.5% Nutrivance to 2 weeks;
- Diet 5 = 2.5% Neptide;
- Diet 6 = 2.5% Fermotide

After the starting period, turkeys were reared to 18 weeks of age to achieve a market weight of 43 pounds, while the broilers were raised to 42 days of age, achieving a market weight of 6.4 pounds. Body weight and feed consumption measures were taken at the end of each feeding period.

Researchers used the European Efficiency Index (EEI) score to assess the combined effect of rate of gain and a feed conversion ratio. The EEI was calculated as follows: EEI= (Average daily gain x Livability proportion)/ (Feed efficiency x 10) with larger numbers indicating better performance. For the turkey trial (Figure 1), diets with NutriVance™ were no different than the control. However, NutriVance at 5.0 percent or 2.5 percent Neptide or Fermotide tended to have improved efficiency scores as compared to the control. For the broiler trial, the EEI score averaged 4.64 with a range of 4.6 to 4.7.

When feeding to 6 weeks of age, NutriVance™ at 2.5 percent resulted in the best turkey tom performance followed by Fermotide and Neptide products in comparison to the control. Feeding NutriVance™ for a shorter time period (0 to 2 wks of age) was not effective. The short time period of feeding the modified soy in the broiler diets might explain the lack of an effect for the broiler chickens.

In conclusion, the processed soy product exhibited reduced levels of anti-nutritional factors and increased protein content. Based on this research, an acceptable inclusion level of Nutrivance™ in turkey diets is 2.5 percent for up to six weeks of age.

Customers "Rave" for Ice Cream

BY AURI

In Northern Minnesota, there are limited options for specialty foods and products that fulfill the dietary needs of the surrounding area. Many consumers who appreciate premium specialty foods or have dietary restrictions are forced to shop larger metropolitan areas and stockpile products due to limited local availability. This growing community is looking for foods made with ingredients that are natural and have familiar, simple ingredients. With that backdrop, the small town of Crosby is the perfect place for serving this consumer base seeking specialty products.

Victual is a gourmet specialty store that's serving the demands of these consumers by offering premium products crafted from high-quality ingredients. Created by Paul Kirkman and Paul VanderWaal, Victual features

artisan cheeses, charcuterie, packaged gourmet foods, spirits/ wines, and super premium lactose-free ice cream, all carefully curated or crafted to the owners' exacting standards for depth and variety.

Born out of a personal need to indulge in the ice cream experience without suffering the side effects of lactose intolerance, Kirkman turned to AURI for assistance with the development of Victual's ice cream business, Rave Creamworks. To create lactose-free ice cream, an enzyme called lactase is employed through a process called hydrolysis to break down the milk sugar lactose into its more digestible building blocks, glucose and galactose – a process called hydrolysis. AURI initially provided in-depth technical guidance on recipe development and ingredient sourcing. As Kirkman's launch date



Kirkman turned to AURI for assistance with the development of Victual's ice cream business, Rave Creamworks.

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Customers "Rave" for Ice Cream

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drew near, AURI also identified and helped scale up his recipe at a local micro creamery for ongoing production, including analytical confirmation of lactose hydrolysis.

Rave contracted with Autumnwood Farm in Forest Lake, MN, to manufacture their lactose-free, high butterfat ice cream mix, resulting in a velvety mouthfeel with the perfect "melt" – a truly indulgent experience. AURI provided product testing as well as technical assistance on the ice cream's nutritional profile.

Rave has developed a strong following at Victual with store regulars and Kirkman recognizes a range of customers from lake dwellers to mountain bikers who have an appreciation for fine foods. With 16 different flavors, the shop's best seller is the Pink Squirrel, a popular supper club drink that makes for a unique ice cream experience.

Rave Creamworks hopes to redefine ice cream for those suffering from lactose intolerance and provide people in the surrounding Crosby-Ironton area with a great tasting, natural ice cream that delivers a super premium experience in line with Victual's consumer promise. The result is a rich, velvety smooth, full dairy lactose-free ice cream that truly everyone can enjoy.

In this little corner of Minnesota, the partnership of brands like Rave and AURI can lead to sweet success where you least expect it.



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