



Ag Innovation News

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Putting Down Roots in Western Minnesota

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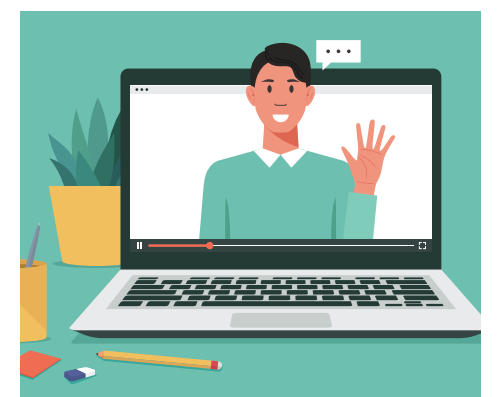
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Expanding Opportunities for Minnesota's Crops and Ag Products

BY SHANNON SCHLECHT
AURI EXECUTIVE DIRECTOR

“
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ACROSS THE STATE.

”

When the Agricultural Utilization Research Institute (AURI) was founded in the late 1980s, it was tasked with helping Minnesota producers, companies and entrepreneurs achieve success through applied research, promotional marketing and commercialization efforts to expand opportunities for Minnesota grown crops and ag products. In that respect, AURI has consistently achieved that goal for over three decades. AURI works with many collaborators and stakeholders, but simply could not have achieved such heights without the vision of the Minnesota Legislature.

Their foresight into the agriculture sector's needs led to AURI's creation, and since day one, their support and partnership provides the foundation of this organization's ability to make a difference in rural and metro communities across the state. For this, I want to extend the most heartfelt thank you to all of the current and past members of the Minnesota Legislature.

In return for their support over the past 31 years, AURI has worked tirelessly to create the highest possible return on their investment in the way of market expansion, new jobs created, and new dollars invested within the state. I am proud of the impact clients self-reported to AURI, including 606 jobs created or retained, and \$128 million in new capital invested over the most recent five-year period, as well as the generation of \$322 million in new gross annual sales.

Beyond client projects, AURI actively seeks out new industry opportunities and works to de-risk these ideas for commercial investment. These types of activities range from supporting feasibility studies, to creating commercial roadmaps, to convening value-chain participants to explore innovative opportunities.

Finally, AURI plays a vital role in both supporting other organization's efforts involved in the food and agriculture industry as well as by connecting the food and agricultural ecosystem through several initiatives and activities. Over the past 30 years, it is clear Minnesotans have creative ideas and from my perspective, AURI plays a pivotal role in connecting challenges to opportunities to enhance commercial opportunities through its broad industry network and understanding of value-added agriculture. While more challenging to illustrate impact, this vital role accelerates innovative outcomes for the food and agriculture industry.

As you can see, the relationship between AURI and the Minnesota Legislature creates a significant economic and social impact across the state and the upper Midwest region. For that reason, I want to say, again, thank you to the legislature, our stakeholders and collaborators and here's to another 30 years of fruitful collaboration for the benefit of Minnesota's economy and food and agriculture sector!



BY AURI

This quarter, Ag Innovation News highlights one of its newest board members, Rep. Mike Sundin. In addition to his role on the Board of Directors, Rep. Sundin is also the chair of the Minnesota House Agriculture Finance and Policy Committee. Read on to learn more about his background and goals for the future.

AIN

Please tell our readers a little about your background.

MS

I was fortunate enough to have been raised on a family farm in Cucina county where my father and his father established a small but vibrant dairy operation. This farm was homesteaded in 1898 by my grandfather. After leaving the farm I entered the construction industry and enjoyed a productive career in the Duluth, Minnesota area. In 2012, the opportunity arose for me to run for the legislature, and I grasped it with both hands, knowing the impact that the legislature can make on Minnesotans' lives. My wife Teresa and I have raised three children who are now productive members of society.

AIN

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

MS

As the new chair of the agricultural finance and policy committee in the House of Representatives, I realized many challenges that Minnesota agriculture faces every day. While serving in the legislature, I have responded to the needs of farmers in times of disaster, for example the avian influenza epidemic and the dairy barns collapsing that crippled the industry a couple of years back. The importance of maintaining a reliable and pure food source for domestic consumption and meeting the demands of export to other nations must be maintained. We certainly know that we can produce a lot of products, but it must be high-quality. Threats from influences we cannot control, such as energy prices and possibly transportation interruptions, could surface at any time.

AIN

How can Minnesota best support its agricultural industry?

MS

I believe that the Minnesota legislature should support agriculture in a couple of different ways. Firstly, fostering locally grown markets would enable smaller operations to provide good healthy food choices throughout the state; this should be a focus of the

legislature. Secondly, the marketplaces that provide opportunity for the large operations to produce the bulk of the food for not only Minnesota, but the rest of the world, need constant attention. Stability and predictability in these markets are key to success for the commodities we export.

AIN

What are your goals as a new board member?

MS

As one of the newest members of the AURI board, I am focused on learning as much as I can about the mission of the board and how to fulfill these objectives. I am very proud to say that I have already embarked on some of the legislative efforts to supply AURI the means to follow through on initiatives, such as a meat scientist in one facility and some capital improvement projects that will help with the research and education available through the institute.

AIN

What goals do you hope to achieve in your current term within the Minnesota Legislature?

MS

I have always maintained that the best healthcare, education opportunity, social programming, and crime prevention is achieved through meaningful employment for as many Minnesotans as possible. If idle hands are required by evil spirits, I maintain we should keep as many people employed as possible in as many fields as possible. My hope is that every legislator, urban or rural, recognize this and work to keep their constituents gainfully employed.

Catalyzing Innovation in Minnesota

AURI Relaunches the Entrepreneur in Residence Program.

By AURI

The Agricultural Utilization Research Institute (AURI) relaunched its Entrepreneur in Residence (EiR) Program. Originated in 2016, the EiR program provides food and ag entrepreneurs access to laboratory facilities and scientists.

“The Entrepreneur in Residence program provides access to equipment and facilities that startups may not have or are unable to afford to take the next steps in their product idea. This could be pilot lab equipment, facilities, technical support or chemical analysis for proof-of-concept,” said Dr. Michael Stutelberg, chemistry scientist for AURI and principal investigator for the EiR program participants in Marshall, Minnesota.

AURI activities utilize a comprehensive program framework designed to catalyze innovation. It includes five stages: explore, generate, connect, implement and impact measurement. This framework encompasses analyzing future opportunities and building industry connections to implementing ideas at the commercial level. AURI programs and services support different stages of the framework and the organization works cohesively to create long-term economic benefit for Minnesota.

AURI's EiR program also supports entrepreneurs in their efforts to attract federal, state and other sources of grant funding. Research grants provide early-stage resources in driving the research and development work necessary when creating intellectual property. Owning intellectual property is key for many entrepreneurs to attract external investment in a new product. By utilizing the EiR program, Minnesota-based applicants can incorporate access to laboratory and equipment resources in grant proposals to make them more competitive to grant reviewers.

According to program lead and AURI's Senior Director of Science and Technology, Rod Larkins, there is a state-wide effort to enable entrepreneurship and innovation. The EiR program is one way for AURI to contribute to this effort through its mission to foster long-term economic benefit for Minnesota through value-added agricultural products.

“Many ag entrepreneurs need laboratory space, as well as access to analytical equipment and the utilities available at research labs. They need all of those things for process intensive work like making fertilizer or feed, i.e., projects that can't be done in your garage,” said Larkins. “Having laboratory space is a rare commodity and typically very expensive. This program provides an affordable option that can make all the difference in the world.”

To be eligible for the EiR program, applicants need to propose projects that benefit Minnesota agricultural sectors, demonstrate a positive impact on Minnesota's economy, and have commercial viability. Clients must also demonstrate the capacity and intent to commercialize their concept upon the project's completion.

Past EiR participants include Goutham Vemuri, founder and chief technologist for Saisa, whose company focused on developing sustainable technology to produce



ag-based counterparts to fossil fuel-derived products. Through the program Vemuri was given access to AURI's Marshall facility, which currently offers chemical processing and analytical chemistry capabilities, food development kitchen, meat facility, and a food product evaluation and sensory laboratory.

Dave Geobel, CEO and founder of enVerde LLC, also used AURI's services through the EiR program. enVerde worked to commercialize breakthrough technology acquired from the University of Minnesota that converts a wide range of organic material into synthetic gas, or syngas. The program allowed enVerde to further develop its sophisticated gasification process and prove the concept on a larger scale.

“Entrepreneurs often need flexibility and AURI has created a framework that accommodates lab space and equipment use as long as they are trained and follow the user agreements,” said Larkins.

AURI believes this program can be highly valuable to food and ag innovators and has worked to make it more sustainable in the long run as AURI continues to expand services and resources available to ag innovators and entrepreneurs.

To learn more about the AURI Entrepreneur in Residence Program or any of AURI's other programs, visit auri.org.

AURI Connects: Webinar Wednesday has hosted two webinars on AURI's facilities:

- AURI Marshall Facilities Capability Showcase
- AURI Coproduct Pilot Lab Capability Showcase

To watch these webinars, go to auri.org/webinar-wednesday or visit AURI's YouTube channel.

AURI'S PROGRAM FRAMEWORK

EXPLORE

Opportunity Scanning

Analyze future opportunities

Scan the social, economic, technological and political factors affecting the agbioscience industry to identify barriers to growth and emerging opportunities

GENERATE

Research Partnerships

Move exploration into action

Build capacity to further enable the cluster to innovate
Conduct public domain research initiatives to generate ideas and share knowledge
Resource alignment

CONNECT

Innovation Network Development

Connect opportunity to industry

Engage industry leaders to vet and prioritize viable opportunities
Connect viable opportunities to industry

IMPLEMENT

Catalyze Innovation and Commercialization

Implement ideas with small businesses at the commercial level

Enable small businesses to bring new, innovative products and processes to the marketplace

IMPACTS

Economic Activity

Long-term economic benefits

Capital investment
Products and processes commercialized
Improved efficiencies
Wealth created and retained
Jobs created and retained

PAVING THE WAY for Ag-Based Asphalt Preservation Solutions

By AURI

For the last five years, the Agricultural Utilization Research Institute (AURI) has worked with the Minnesota Soybean Research & Promotional Council (MSR&PC) to promote an environmentally-friendly USDA biobased certified asphalt preservation product called RePlay Agricultural Oil and Preservation Agent® (RePlay). RePlay is a patented product created and manufactured by BioSpan Technologies, Inc.

“Our farmer leaders have been very vocal about making sure that soybean checkoff dollars are utilized for not only developing new value-added products but also ensuring there is a market and demand. Investing in soy biobased pavement preservation products like RePlay has shown to be a win-win for both Minnesota soybean farmers, as well as our state,” said Mike Youngerberg, senior director of product development and commercialization for MSR&PC.

In May 2021, AURI and MSR&PC released a third-party validation prepared by SRF Consulting Group, Inc (SRF) of the infrastructural and economic performance of RePlay. The “RePlay Pavement Preservation and Life-Cycle Cost Analysis (Phase 2)” report reviews 24 years of data from the City of Hutchinson, Minnesota, including eight years of RePlay use on local asphalt roads to determine that the sealant could extend a road’s service life by three and a half to 11 years.

“The main takeaway from the report is the results of a data-driven analysis of RePlay and how it can be a benefit to a pavement program,” said Jackie Nowak, the report’s project manager and data analyst, as she expressed her excitement for the industry trend towards a more data-driven approach.

For the first phase of the study, AURI worked with SRF to model RePlay use scenarios for determining the product’s effectiveness and to build a Life-Cycle Cost Analysis (LCCA). The results of the initial modeling showed that RePlay use reduced asphalt distress (cracking) by up to four times relative to roads that received standard maintenance.

With the model application scenarios showing a strong benefit, the SRF team revisited the first study with three years of additional data for the phase two report. With the new data, updated calculations were used to create two additional models to determine asphalt road service life extension. Taken together, the two model approach indicates the City of Hutchinson is likely to see years of additional service life from asphalt treated with RePlay.

The team also completed a sensitivity analysis based on accepted Minnesota Department of Transportation (DOT) methodology as a part of the LCCA. The sensitivity analysis illustrated RePlay use incurred a lower cost over the base case scenario of untreated roads with standard maintenance.



“Another key takeaway is the statistics behind the evaluation. At least in the case of the City of Hutchinson, there is a significant difference in RePlay treated pavement over time – especially in comparison to untreated pavement and chip-sealed pavement,” said Nowak.

In all, the new study underscores the economic viability of RePlay for public agencies when it comes to reducing maintenance costs of low-volume roads.

“We could easily see three or four treatment cycles over 15 – 20+ years, where we treat a roadway before it would require any higher-level maintenance,” said John Olson, public works manager for the City of Hutchinson. “That would be incredible. Especially in Minnesota where winter is hard on us.”

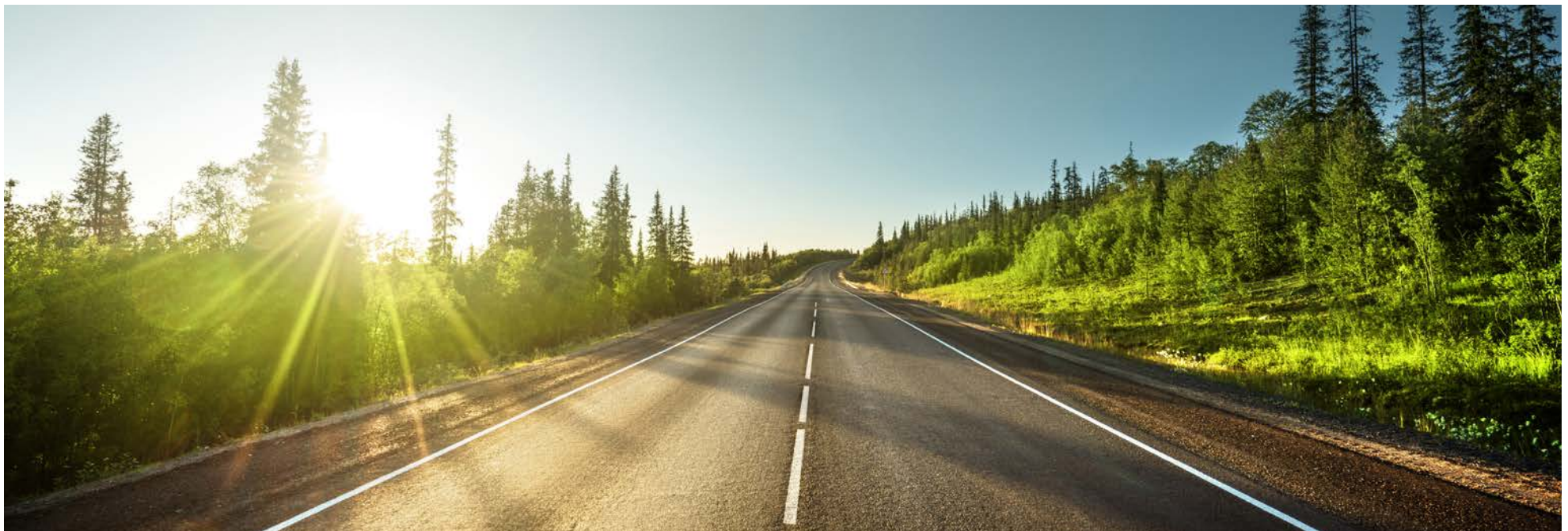
Public transportation agencies can have confidence in predicting the financial return of RePlay pavement preservation treatment since the methodology followed in this study includes a sensitivity analysis established in fundamental life cycle cost analysis theory. The financial benefits of adopting soy-based asphalt preservation products do not end at the city line but extend to regional soy farmers as another value-added market opportunity.

“Seeing the results of using RePlay on treated surfaces has confirmed the benefit of being innovative with checkoff dollars. Our farmer leaders continue to think outside the box when it comes to investing in new and fresh ideas. RePlay is a great example of this,” said Youngerberg.

The technology is being used successfully in the State of Minnesota as well as many other states, including Oregon, Nebraska, and Iowa.

“If your roads are good, you want to keep them that way,” said Olson. “RePlay appears to be a cost-effective solution that does just that.”

To read the full report, “RePlay Pavement Preservation and Life-Cycle Cost Analysis (Phase 2),” and learn more about AURI’s work with the Minnesota Soybean Research & Promotion Council, go to auri.org/minnesota-soybean-research-and-promotion-council.



Putting Down Roots in Western Minnesota



PHOTO COURTESY OF FRESHA. ALL OTHER PHOTOS BY ROLF HAGBERG.



By Dan Lemke

Tucked among the corn, sugarbeet and soybean fields of western Minnesota, several hundred acres of plants sport feathery green fronds. The sight of large fields of carrots growing in Minnesota is enough to make even seasoned farmers do a double take.

“It’s kind of funny because people will stop on the road, especially when you’re harvesting or planting,” says Paul Schmidgall, general manager for Fresha, a Morris-based carrot company. “We get a lot of sightseers, which is cool.”

Morris area farmer Dan Schaefer grew carrots for companies in Minnesota and Wisconsin for several years. Most of the carrots he grew were bound for the processed foods market.

“We were just looking for some value-added crops that would be a good fit for our climate and soil,” Schaefer, Fresha CEO recalls.

Schaefer and Schmidgall, who have food processing and manufacturing backgrounds, pondered the possibility of starting an enterprise to process and package Minnesota-grown carrots for fresh markets.

“We were searching for ways to expand our acres, so we looked at where the consumption was and there’s a lot more consumption in the fresh than there is in the processed, canned or frozen categories,” Schaefer says. “We looked into that and it seemed like 85 percent of the carrots were coming from California.”

Schaefer says with freight accounting for a large percentage of the product cost and California growers facing water and environmental challenges, they saw a real opportunity for a regional player to enter the market.

Schaefer and Schmidgall did extensive research in 2018 on what farmers in Europe and Canada do to raise and store carrots. Fresha, LLC was formed in 2019, with a storage and processing facility constructed near Morris, Minnesota.

Close to Home

According to the U.S. Department of Agriculture (USDA), the states of California, Texas and Washington are the top three carrot-producing states in the country. To get fresh carrots from those states to markets in the Midwest and elsewhere means the carrots can spend a lot of time in storage and transit. Schaefer and Schmidgall recognized that growing carrots closer to Midwestern markets meant fresher, better-tasting products.

“I would say that locally grown translates into less time on the road, fresher, more flavorful carrots,” Schmidgall says. “We believe we have a flavor advantage with our northern climate carrot. Growing in the cooler climate like we get towards the fall tends to gather more of the sugars into the root and produces sweeter flavored carrots. Our late season carrots especially have a bit of a flavor advantage.”

Carrots are primarily consumed fresh and, according to the USDA, carrots are the sixth-most consumed fresh vegetable in the United States. Annual consumption of fresh carrots is approximately 8.3 pounds per person. Baby-cut carrot products have been the fastest-growing segment of the carrot industry since the early 1990s and are among the most popular produce items in the supermarket aisle.

Fresha produces an array of fresh carrot items including whole carrots, baby carrots, mini carrots, carrot chips, carrot plugs, carrot coins, matchstick carrots and jumbo carrots. Fresha’s processing and storage facility features advanced technology that keeps carrots stored in optimal conditions before they are marketed. The bulk of Fresha’s products are bound for markets primarily in the Midwest.

“Our focus is mainly on a six-state area. Minneapolis is a major market. Nevertheless, we actually have done quite a bit of shipping into Chicago, we’ve done Des Moines, Kansas City, and the I-29 corridor including Sioux Falls and Fargo,” Schmidgall explains. “In lower quantities, we’ve actually shipped out to the East Coast. We’ve done the terminal market and some of the bigger cities. If we get some excess loads, we can do Philadelphia and New York City. We’ve done Atlanta before, but we mostly focus on the upper Midwest.”

“We need a certain volume to make it work,” Schaefer says. “We’re targeting about a 600-mile radius. Compared to California, that’s still pretty close.”

Favorable Conditions

Schmidgall says Fresha harvested about 8,000 tons of carrots in 2020. About 5,000 tons were stored and sold throughout the year while the other 3,000 pounds were marketed right around harvest. For 2021, about 380 acres of carrots have been planted, including a small organic parcel used as a pilot project.

Carrots are typically planted in April and May like most familiar Minnesota crops. However, Schmidgall says carrots require an extra level of attention, especially since they have not been grown as a crop in the area for very long.

“They’re pretty new to our area, as in not more than 10 years,” Schmidgall explains. “Growing carrots is very agronomically intense – there’s the soil bed preparation, the monitoring for crop treatment through the season and monitoring to make sure of the watering. When the sprouts are small, they get a little bit of water a lot of times, sometimes every day if it isn’t raining. You have to keep the sprouts moist, so I’d say it takes quite a bit more management than a traditional corn and soybean-type of a crop.”

Schmidgall says carrots grow best in slightly cooler conditions, with 50 to 70 degrees considered a temperature sweet spot. The cool conditions, especially at night, help the carrot store more sugar, making for a sweeter, better-tasting carrot.

“Carrots really are a cooler, northern-climate crop,” Schaefer says. “That’s really their origin and that’s where they probably taste the sweetest and the crispest. Production migrated to California because they could grow them year-round. Sometimes carrots there are harvested in really hot months, but that doesn’t create as good a tasting carrot as the ones grown in the cool climate where you have the cool nights in the fall and the carrots sweeten up.”

Carrots prefer looser soils since they are a root crop. The looser soils help farmers grow long, straight carrots. Loose soils tend to be sandy, so irrigation is often required to maintain optimal soil moisture levels.

“You’re trying to get all of them to look like a perfect carrot, but that’s not how nature works,” Schaefer says. “We try to do things to maximize the amount of number one carrots we can grow per acre. We can grow nice carrots and get good yields in this region, but we’re still working on how to get the prettiest looking carrots every time.”

Schmidgall says the bulk of Fresha’s carrot harvest takes place in October. Similar to the process for harvesting sugarbeets, carrots are lifted out of the ground. The soil is loosened below the carrots by equipment that looks like a plowshare. Then the harvester plucks the carrots from the ground.

“The harvester uses the top to pull the carrot out of the dirt and then the tops are removed right at the harvester and the tops stay in the field,” Schmidgall says.

The carrots bound for long-term storage are stored without washing. Schmidgall says when the carrots are ready to market, they are cleaned and prepped.

“In the case of the table carrots, the whole carrot, we just wash and package. In the case of the baby cut, there is the peeling component,” Schmidgall adds.

Being regionally focused, Schaefer says Fresha can react more quickly to a customer’s needs than competitors located on the other side of the country.

“If someone in Minneapolis needs a load of carrots, we can have them there very quickly. They couldn’t do that from California, even if they wanted to,” Schaefer says.

Schmidgall says in addition to marketing a variety of fresh carrot products, there is potential for value-added production. But for now, Fresha needs to focus on the task at hand.

“We’re still working hard at getting our business launched and at market development for the products that we already have on the plate. We’ve got quite a bit of work to do to keep those moving forward,” Schmidgall says. “As we go, obviously more of the raw carrot pound that we can use in a finished product of some kind, the better. I’d say we’ll continue to explore the after-processing ideas or options.”

“It’s not easy to get the volume, to get the traction that you need, but it’s coming. We know it’s going to take several years to get some brand recognition,” Schaefer admits, “but I think there’s a future for us.”



Carving a Future

AURI scientific staff provided a sugar analysis for several Fresha carrot varieties and assisted in a Value-Added Producer Grant (VAPG) application to the USDA Rural Development. The VAPG program helps agricultural producers with value-added activities related to the processing and marketing of new products.

Schaefer says there are inherent challenges trying to displace a couple of large carrot growers that have been in place for decades and are very established suppliers. But he does see opportunity.

“I’d be lying if I said it was easy to go out and sell as many carrots as you want, but we have created a little following that really seems to like our product,” Schaefer says.

Top Photo (Left to Right):
Dan Schaefer,
Harold Stanislawski,
Paul Schmidgal



AURI Helps Oat Milling Business Grows in Mahnomen County

By AURI

Dave Eiyneck and Tyler Hoban are commodity farmers in Mahnomen County, Minnesota. They also run E-H Oats, an oat milling business they launched in 2018 with the help of the Agricultural Utilization Research Institute (AURI).

Eiyneck, 49, and Hoban, 39, have known each other for almost 20 years. Eiyneck's great grandfather started the farm. When Dave Eiyneck took over the operation, he acquired some additional acreage and transitioned the farm from dairy cattle and hogs to commodities like soybeans, peas and oats.

In 2017 Eiyneck and Hoban started working on a plan to start their own milling business. They had an idea for a way to separate the oat kernel from the groats and then clean it. They purchased an old combine at a farm auction and then retrofitted it to see if it would process oats. After hours of research, testing and tinkering they had a machine that worked.

"It was a lot of trial and error," Hoban said of the process. "At first it was really just to see if we could do it."

Eiyneck said one of the biggest challenges to getting started was not having anyone to ask for practical or technical advice.

"We really had to figure out how to do this on our own. We did a lot of research when we were getting started, but we quickly found there was not much information out there. Eventually we were able to figure out what worked and what did not,"

– Dave Eiyneck, E-H Oats





That was an important step in the development of the business. E-H Oats plans to purchase a second impact huller to further grow production. Becoming more efficient and growing production capabilities has opened doors to new business possibilities and growth.

“In order to attract customers, we needed to have a larger capacity and more volume,” Eiyneck said. “We are kind of the new kids in town, and it can be hard to break into some of these specialty markets. Now that we have had some success, we have been able to work with some of those established business. That has been a real positive experience so far.”

More Uses for Oats

E-H Oats processes about 6,000 bushels a week and sells their product to the food grade market. In addition to selling milled oats, the business also uses the hull byproduct. They sell the fiber to dairy and beef farmers for animal feed and some customers use the product in turkey and poultry bedding. Milled oats are packed with dietary fiber and are extremely nutritious.

“That is another revenue stream for us, and it opens up markets to other farmers in the area. That is something that was important to us. Oats is a specialty crop with not as many outlets as other [crops]. To help out the other local agricultural producers in the area is something we wanted to do,” Eiyneck said.

Last year was E-H Oats’ busiest year ever. Eiyneck said the business has the capacity to expand even more but is now dealing with a new challenge: a supply shortage.

“That is our issue right now. We are always looking for more oats. We definitely have room to grow if we can get our hands on that supply,” Hoban said. “At

the same time, we are seeing a lot more people calling us that want to sell us oats every year. That also helps us keep up with the volume and customer demand.”

The next challenge is to ramp up output and expand their service area. E-H Oats would like to process more bushels and transport the oats to more customers in an efficient and cost-effective way.

For AURI, there were many positive outcomes of working with Eiyneck and Hoban, Stanislawski said.

“To do what they are doing on the scale that they are doing, you have to be really smart, and you have to right-size your equipment. When they started it was a homemade operation. We worked with [Eiyneck and Hoban] to make some adjustments to their equipment so they could realize better efficiencies,” Stanislawski said. “It is always wonderful when projects happen in greater Minnesota, especially in smaller communities. As an organization, we want to spread our resources across the entire state whenever we can.”

Eiyneck and Hoban are grateful for AURI’s assistance and guidance throughout the evolution of their business.

“Every step we took had its ups and downs. At first, we just hoped the machine would work, that it would do what we wanted it to do. Once we figured that out the next challenge was tracking down the supporting equipment to make the process faster and more efficient,” Eiyneck said. “We had to change a lot of things on the fly and rethink and redo a lot before we got to a place where it was working. That is where AURI’s assistance was the difference. We can’t say enough about how much they have helped us so far.”

AURI offers unique resources designed to help develop new uses and value additions to Minnesota-grown agricultural products. We are here to help you find new uses for traditional, unexplored or overlooked resources. Learn more at auri.org.

Photo (Left to Right): Harold Stanislawski, David Eiyneck, Tyler Hoban

“We really had to figure out how to do this on our own. We did a lot of research when we were getting started, but we quickly found there was not much information out there. Eventually, we were able to figure out what worked and what did not,” Eiyneck said.

Working with AURI

In 2017, Eiyneck and Hoban started working with AURI. Since then, the organization has been an integral part of the company’s success.

“AURI has really taken the time to understand what we are trying to accomplish. They have been out to the farm many times and are always willing to take a look at our operation, do some testing and make sure everything is working. We have had a lot of conversations with the staff. They are a great group to work with,” Hoban said.

Harold Stanislawski, AURI’s business development director, and Riley Gordon, AURI engineer, worked closely with E-H Oats, providing technical assistance and conducting research for the business to purchase new equipment to make the operation more efficient. AURI also identified potential markets for sales and growth and contributed networking and business development services.

“There are two aspects of our work with [Eiyneck and Hoban]: the project side and the technical side. On the project level I want to make sure we are good listeners, and we dig into the challenges and fully understand what they are trying to accomplish. That helps us articulate the issues to our technical team who can then do what they do best by trying to maximize the efficiency of the equipment,” Stanislawski said. “When those two pieces come together, we end up with great results.”

Gordon worked with Eiyneck and Hoban and made a strategic recommendation on equipment upgrades. He recommended purchasing an impact huller that could more quickly dehull the oats. He facilitated connections with a vendor, which expedited the purchase and delivery of the equipment.

The results were immediate and positive, Gordon said. After the first trial the new machine was nearly 95 percent efficient and could almost double output.

“What used to take them nearly a full day can now occur in a matter of hours,” Gordon said. “With those better numbers, the investment in the equipment will pay for itself in a short period of time. As an engineer, one of the things I really like to do is work with a client to identify their problems and then work to find a solution to solve any bottlenecks and increase efficiencies.”

Making the Lab Accessible for Food-Grade Projects



By AURI

The Agricultural Utilization Research Institute (AURI) now offers food-grade lab services in Waseca, Minnesota for small-scale oil pressing, oil filtration, seed cleaning and milling of oilseed meals and other products.

The process to provide food-grade lab services started about four years ago, when AURI staff noticed a growing need for food-grade oil pressing and milling to assist small and medium-sized food businesses with their product development.

“The addition of the food grade lab space at AURI’s Waseca location will enable a unique pilot scale service to clients in Minnesota and the Midwest region,” said Riley Gordon, AURI’s engineer. “The ability to produce small quantities of food grade cold pressed and filtered oil as well as concentrated protein in oilseed meals is an industry gap which we saw an opportunity to fill.”

Gordon along with Abel Tekeste, associate scientist – coproducts for AURI, took charge of the project by sourcing equipment and navigating the food grade certification process. This includead finding a new location with code-compliant plumbing as well as installing shatter-proof lights, washboard walls, an epoxied floor and stainless-steel double doors. The lab is currently state certified as a food processing facility by the Minnesota Department of Agriculture.

To make these changes, the project was partially funded by Compeer Financial through the General Use Grant Program. Compeer Financial is a member-owned, Farm Credit cooperative serving and supporting agriculture and rural communities. The food-grade lab award fell under the “Quality of Life” category for programs or initiatives that enhance the quality of life for farmers and rural communities.

“AURI appreciates the support and partnership of Compeer Financial to cost-share in the development of this food grade lab resource for innovators in the agricultural sector to explore new uses for agricultural crops and products,” said Shannon Schlecht, AURI’s executive director. “A food grade certified lab at AURI’s Waseca location provides another valuable resource for producers, entrepreneurs and businesses to explore food ingredient opportunities, which is often the highest value product use for the region’s agricultural crops and products.”

AURI also works with several University of Minnesota groups, such as the Forever Green Initiative, on developing applications and understanding functionality of new cover crops and other oilseed research related to Kernza®, Winter Camelina, Pennycress and Hemp. The new lab offers a unique resource for the future of these crops by supporting the transition from research to commercialization through the scaling of the supply chain for new ingredients. By starting with 100 pounds of flour or 30 gallons of oil, users can advance proof-of-concept products that will allow them to seek out funding for larger scale production.

“The food grade lab is important for the food ecosystem in Minnesota because it allows producers and entrepreneurs to have new resources to obtain food-grade materials for further development,” said Ben Swanson, AURI’s scientist of food and nutrition. “Plus, this food-grade space allows any resulting product to be used for future sales, which can be great for drumming up hype for a product expo or limited-production run.”

This is just the starting point for the food grade lab.

“We constructed the space with room to grow, to offer the opportunity to add future capabilities that will drive the most value to the food and ag industry,” said Gordon.

To learn more about the lab’s services and resources, contact Riley Gordon at rgordon@auri.org or (218) 281-7600 ext. 130.

AURI has multiple facilities throughout Minnesota that offer a wide range of services able to support renewable energy, coproduct, biobased and food projects.

- Analytical Chemistry Laboratory | Marshall, MN
- Biobased Products Laboratory | Marshall, MN
- Coproducts Utilization Laboratory | Waseca, MN
- Food Laboratory | Marshall, MN
- Food Product Evaluation and Sensory Laboratory | Marshall, MN
- Meat Laboratory | Marshall, MN
- St. Paul Facility | St. Paul, MN
- Waseca Food Grade Laboratory | Waseca, MN

To learn more about AURI’s facilities, go to auri.org/facilities or call (218) 281-7600

Watch our “AURI Coproduct Pilot Lab Capability Showcase” to learn more about our food-grade lab services in Waseca, Minnesota.

Available at auri.org/webinar-wednesday and AURI’s YouTube channel.

Interested in the Food Grade Lab? Contact Riley Gordon at rgodon@auri.org or (218) 281-7600 ext. 130.

BOLD OPEN 2021

Bringing Critical Innovation to Minnesota

By AURI

When it comes to Minnesota's ag and food sectors, innovation is critical to meeting the evolving needs of consumers and decision-makers. Since this means the difference between success and failure for companies of all sizes and markets, the Agricultural Utilization Research Institute (AURI) is doing its part to accelerate innovation within the state and across the nation by presenting the third annual Bold Open Reverse Pitch event on July 21st and 22nd.

This virtual event, created in partnership with MBOLD, brings together a range of entities, from producer groups to leading food and agriculture businesses based in Minnesota. It provides them a platform from which they can share industry-impacting challenges, whose solutions have thus far been elusive. More importantly, the event brings these companies together with entrepreneurs, researchers and innovators to build partnerships that aim to solve these challenges.

"AURI is thrilled to lead the third Bold Open and Reverse Pitch event in 2021 to help accelerate innovation across Minnesota's food and ag sectors," said Shannon Schlecht, AURI's executive director. "By bringing the state's forward looking producer groups and its leading food and agriculture companies together with entrepreneurs, researchers and innovators from around the world, the Bold Open provides a platform to make new connections and partnerships to accelerate solutions to today's food and agriculture challenges."

In the past, this event supported companies like Cargill, Hormel Foods, Land O' Lakes Inc., and the Schwan's Company in their efforts to find solutions, ranging from fresh meat shelf life to novel uses for milk and whey permeates.

"What drew us to the Bold Open was the ability to interact with a peer of scientific and technical team members that we would not typically come across in our day-to-day operations," said Dr. John McDonald, Land O' Lakes Inc. R&D director. "Through the platform we connected with different researchers and content experts which resulted in conversations around using our dairy products for novel materials that are many times beyond food, which we were not as familiar with beforehand."

"The audience was very engaged and it was easy to see who had interest in throwing their hat in the ring for my challenge," said Paul Bolle, the manager of energy and byproducts for Jennie-O Turkey Store. "I felt like it was the right audience and a good audience. We have a couple very interesting proposals that came from last year's event."

Previous Bold Open participants have found success in the reverse pitch model because it clearly illustrates the needs that food and agriculture companies and organizations have, allowing participants with potential solutions to specific problems to easily connect.

"Attending the Bold Open has proven to be the best way for me to get NETZRO in front of industry leaders who have problems to solve. The process of submitting a proposal is simple and AURI has done an amazing job with supporting companies on how they present the projects," said Sue Marshall, founder and CEO of NETZRO, a modern food upcycling platform.

With so much past interest in topics related to proteins, this year's event will, for the first time, focus on a singular theme — protein innovation: accelerating products, processes and practices.

Spanning all forms of protein from animal to plant-based, the 2021 Bold Open aims to create new partnerships to further innovation benefitting producers, processors, consumers and the environment. Specifically, the Bold Open collaboration brings together a unique and growing ecosystem of leading Minnesota-based companies and commodity groups, representing a broad spectrum of the value-chain, including MBOLD, Cargill, Compeer Financial, Field Theory, General Mills, Grow North, Land O' Lakes Inc., McKinsey & Company, Hormel Foods, Midwest Dairy, Minnesota Beef Research and Promotion Council, Minnesota State Cattlemen's Association, SunOpta, Techstars Farm to Fork Accelerator, and the University of Minnesota, and Minnesota Department of Agriculture.

To learn more about this year's event, the challenges being presented, or to register for this exciting event, visit boldopenmn.com.



AURI has conducted multiple research projects on different protein sources. Here are a few recent reports on the topic.

- **Report for More Sustainable Packaging Solutions to Improve Consumer Confidence in Ground Beef**
- **Halal + Kosher Minnesota Meat Market Assessment**
- **Report on Minnesota Plant Based Proteins for Food**

To find all AURI research reports, go to auri.org/research-reports.

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Monthly Webinars for Minnesota's Food and Ag Sectors

By AURI



The Agricultural Utilization Research Institute (AURI) hosts a monthly webinar series called: AURI Connects: Webinar Wednesday. Each episode explores different aspects of Minnesota's food and ag sectors – from resources for food entrepreneurs to innovations in coproducts and biobased energy.

The program, launched in May 2020, is a virtual option for engaging audiences across the Midwest region and beyond. Webinars convene over the lunch hour on the second Wednesday of every month.

“Webinar Wednesday offers a great opportunity for a broad audience of entrepreneurs, business owners, educators, financiers, non-profits, producers and others interested in value-added agriculture to learn about important and timely topics that may help their operations be successful,” said Nan Larson, AURI Connects manager and program manager. “The virtual platform allows participants to partake in the comfort of their own environment, and the recordings make it possible to do so as individual schedules allow.”

The program is part of AURI Connects, which replaced AURI's Innovation Networks Program. The sub-brand houses AURI's networking programs and focuses on engaging the value chain on topics related to value-added agricultural opportunities and challenges. The goal is to improve the competitiveness of agricultural producers, businesses and entrepreneurs by providing purposeful convening opportunities for connection as well as knowledge sharing of opportunities and trends.

Past Webinar Topics

Reducing Anti-Nutrients Related to Wheat Digestibility

Research indicates that gluten protein and “anti-nutrients,” such as amylase-trypsin inhibitors (ATI), and fructans (a component of fermentable oligo-di-monosaccharides and polyols-FODMAPs) in wheat can be triggers of irritable bowel syndrome (IBS). Efforts to reduce the discomforts resulting from the consumption of wheat-based products is critical in improving the health of consumers and increasing the profitability of wheat farmers. This webinar covered a multi-year research project – funded through the Minnesota Department of Agriculture's Agricultural Growth, Research, and Innovation (AGRI) Grant program – focused on increasing wheat digestibility.

Green Ammonia's Future in Minnesota

Efforts are currently underway globally to decarbonize sources of energy, including transportation and industrial fuels. Green ammonia has the potential to be a product opportunity emerging from this energy transformation with significant economic implications and opportunities for agriculture. The University of Minnesota West Central Research and Outreach Center (WCROC) in Morris, Minnesota is a pioneer in the development and demonstration of renewable energy technology which supports the potential of green ammonia in agriculture. WCROC's Renewable Energy Director Michael Reese provided a technology overview of the systems that support production of green ammonia and the economic implications for agriculture in Minnesota and the region.

Paving the Way for Ag-Based Asphalt Preservation Solutions

Transportation budgets are a persistent and growing challenge– from the maintenance of asphalt infrastructure to funding new roads. Starting in 2016 with a partnership between the City of Hutchinson, the Minnesota Soybean Research and Promotion Council, and AURI, we began a multi-year research project for an environmentally friendly biobased asphalt preservation product for communities across Minnesota to consider. In this webinar, AURI's Dr. Jimmy Gosse takes participants on a five-year road trip through the case study on the use of RePlay Agricultural Oil and Preservation Agent® by the City of Hutchinson. This research was funded by the Minnesota Soybean Research and Promotion Council.

You can find the current Webinar Wednesday schedule as well as past recordings of presentations at auri.org/webinar-wednesday.

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