



Ag Innovation News

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Happy New Year to All AIN Readers

BY SHANNON SCHLECHT
AURI EXECUTIVE DIRECTOR

On behalf of everyone at AURI, I want to wish you a happy New Year. Even though we are still in the midst of the COVID-19 crisis, it is my sincerest hope that you were able to celebrate the holiday season and beginning of 2021 in good spirits and cheer.

Regardless of what is happening in the world, I enjoy this time of year because it gives me the opportunity to pause and consider the successes of the past year, while also envisioning the future for AURI.

I am pleased to report Fiscal Year 2020 was full of growth and evolution for AURI. In that time, the organization's scientists, experts and project teams worked on 183 unique projects, 116 of which were brand new projects with a mixture of new and returning clients. At the same time, our diverse team of experts brought nearly 100 projects to completion. I am proud of everyone's efforts and see these metrics as signs of success for AURI and a signal for great things ahead!

During this past summer, in response to the COVID-19 pandemic, AURI successfully transitioned to hosting events online. A great example of this includes the 2020 Bold Open, which brought together some of the most innovative and well-known food and agricultural businesses in the world to identify specific industry challenges, and then request proposals for solutions and ideas from producers, researchers, entrepreneurs and other businesses. At the same time, our AURI Connects team launched a new series of virtual events, called Webinar Wednesdays, which has successfully allowed AURI to continue its role in educating the public while sharing important research and innovations in the value-added agriculture sector.

Looking forward, AURI will continue to evolve and adapt in order to further innovations that benefit the value-added agriculture sector. Specifically, in the coming year, AURI will focus much of its efforts on four distinct areas of endeavor.

1. Protein Exploration: In 2021, AURI's staff will investigate market opportunities for both plant-based and livestock proteins. This is an important topic as the world population continues to grow and the desire for protein increases. To that end, we will collaborate with a variety of organizations to enhance opportunities for resiliency in the protein creation and processing sectors.

2. New Crop Market Opportunities: Consumer desire for new sustainable products continues to rise and research is underway to implement new crops that can bring additional environmental benefit. AURI launched the Fields of Innovation program in October 2020 to share information about market opportunities across the value chain and inform various groups of the potential benefits of new crops. Additionally, AURI will work with several entities such as the UMN Forever Green Partnership to explore utilization opportunities for these crops.

3. Biobased Products: In light of consumers trending away from many sources of plastics, this transition to non-plastic products is again consumer-driven. I am happy to say that the creation of new biobased materials using renewable ag-based ingredients is on target with AURI's capabilities. We have and will continue to work with clients and organizations devoted to increasing the use of agricultural materials in biobased materials that reduces the use of petroleum-based products.

4. Collaborations: To me, this is the key to the first three objectives listed above. In order to make significant progress, AURI must continue to place a premium on its relationships, while creating new collaborative opportunities. In doing so, we can better navigate the ever increasingly complex value chains and meet market needs at the same time.

In closing, I hope the innovative efforts in the food and ag space highlighted in this AIN edition bring a bright moment to our readers as we continue to navigate through challenging times!

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BY AURI

This quarter, Ag Innovation News highlights board chair Ron Obermoller and his vision for 2021. Ron is a dedicated leader for the organization and brings a wealth of agricultural knowledge to the board thanks to his many years as a farmer and leader in other commodity groups.

AIN

With the new year upon us, what do you hope will be AURI's greatest achievements in 2021?

RO

First thought is to get back to normal operations or as close to it as possible. While we have not seen a decrease in activity or productivity, in fact in some areas we are seeing more, but at what cost? We are all in need of personal contact and interaction.

AIN

What role will the Minnesota Legislature play in AURI's success during 2021?

RO

While AURI has always had a great return for the state's investment, we need to earn our support from the State Legislature and illustrate the return on investment of that long-term partnership.

AIN

In 2021 what topics do you hope will get some attention and help ag producers?

RO

I believe carbon credits should get more attention as a real opportunity for Minnesota farmers. If the environmental communities and consumers are willing to pay farmers for some of the things we are already doing, we should be willing to accept their contributions and work with them to accomplish more carbon sequestration.

AIN

How has participating on AURI's board helped you grow, either as a professional or in a personal way?

RO

Participating on the AURI board has made me more aware of just how many great ideas Minnesotans have and gives us the opportunity to help use the state's bountiful ag products. It is a great opportunity for me to work with some outstanding board members and learn from their experience and talents.

AIN

What do you feel will be the biggest challenge facing the value-added agriculture industry?

RO

It might be money, with all the spending on fighting the pandemic and the slow economy, we will need to keep informing all our funding sources about the value of AURI and the value-added food and ag businesses to the state of Minnesota.

AIN

As AURI's Board Chair, do you have any goals for the organization as it moves through the new year?

RO

Goals are to make AURI more accessible to our clients with the online format. A big part of my job is to make sure we use the talents of board members and get them involved in areas that match their interests and expertise.

AIN

What issues do you feel AURI could assist or support the Minnesota Legislature with?

RO

The emerging hydrogen economy and carbon credit programs need to work for Minnesota agriculture. It is not just going to magically happen to the benefit of Minnesota without someone learning the programs and making sure they work here. We already work with many of the new home-grown food entities around the Twin Cities and can help the State Legislature ensure good local food availability.

AIN

What important lessons do you think the agriculture sector learned throughout 2020?

RO

Lessons learned include that the world can survive conducting business remotely. No matter how we come out of the lockdown there are a lot of lessons about how operations don't need big fancy offices to do business and be successful. While AURI always operated somewhat remotely, we have improved on an already workable model.

In the ag sector, we are learning we can get the information we need by attending meetings on the internet. We are learning how much we depend on the internet and how our metro friends are ahead of the rural areas.

AURI Launches

FOURTH YEAR

of Ag Innovation Partnership Research



PHOTOS BY ROLF HAGBERG

BY AURI

The spread of the COVID-19 virus has forced Minnesota food companies to pivot their business plans and distribution systems to an online focus in order to meet consumer demand, while also allaying safety concerns.

Minnesota is well known for its thriving cattle, turkey, poultry and pork industries, but it also has a rapidly expanding aquaculture sector growing fish across the state.

The Agricultural Utilization Research Institute's (AURI) 2020 Ag Innovation Partnership (AIP) program focuses on these two topics. Each year AURI sponsors this initiative to spur innovation and long-term economic impact for Minnesota's agriculture sector. In the fourth year of the program, AURI selected two projects that will drive value for the food and ag industry and help AURI better serve its stakeholders.

"The AIP program is an important piece of the puzzle in terms of activating AURI's mission to address emerging issues and meet industry needs," said Jen Wagner-Lahr, AURI's senior director of commercialization. "In the end, we moved these projects forward based on overall merit and budget considerations."

The 2020 AIP projects selected include a guide to e-commerce and digital marketing for Minnesota's food businesses and a report on the state's aquaculture

industry. Both address timely subjects and will have wide-ranging benefits for Minnesota businesses and producers. Further, the selected projects align with AURI's mission to foster long-term economic benefit through value-added agricultural products.

Demystifying E-Commerce and Digital Marketing

E-commerce is a critical and increasingly important channel in a food company's growth strategy. Industry research concludes that e-commerce grew by 300 percent from 2013 to 2017, and that by 2021 nearly 18 percent of global retail sales will occur online. The COVID-19 pandemic has made online business even more critical as consumers utilized features like curbside pickup and online ordering for restaurant meals and groceries to minimize virus exposure.

This shift in consumer preferences has forced many small and large businesses to adjust and adapt. Companies know they need to have a stronger digital presence, but many questions arise about topics like social media, online marketing, e-commerce platforms and distribution tied to e-commerce, said Jason Robinson, AURI's business development director.

To address these issues, AURI is partnering with Clutch Performance, a Minneapolis-based food marketing firm to develop a toolkit for food entrepreneurs. The research will provide guidance and a concise online learning module to help AURI better share information with clients. Ultimately, Robinson said, the guide will help demystify the rapidly evolving world of e-commerce and digital marketing.

“What we recognized is that there really isn’t a good tool, that was easily accessible, to help Minnesota businesses figure out some of the concepts and strategies in this space,” Robinson said. “It is also clear that the COVID-19 pandemic has greatly accelerated this need in the marketplace. It forced more businesses to shift to an ‘online-first’ model before they were ready or before they knew what they were doing.”

The Minnesota Department of Agriculture is partnering with AURI to provide both funding and thought leadership for this project.

The guide will cover several topics, including recommendations and best practices to develop a company website and overall online presence. It will also address some of the most useful and popular tools, platforms and services that businesses can use to effectively connect with clients as part of a digital marketing strategy. The final section will address e-commerce considerations specific to food and ag businesses, and key factors to best price, sell, store and ship products to consumers.

“The COVID-19 pandemic impacted many distribution channels for startups, small and medium businesses that AURI serves on a regular basis. E-commerce emerged as a viable channel and many businesses scrambled to figure it out. This initiative is intended as a primer to assist companies as they navigate digital marketing and e-commerce channels,” Wagner-Lahr said.

AURI worked with Clutch on previous AIP projects, including a “Packaging Guide for Scaling Food Businesses” and “Food Shelf-Life Guide for Scaling Businesses.” The goal for the e-commerce and digital marketing guide is to create a “one-stop” shop for established and emerging businesses at a critical time, said Dave Miller, Clutch’s vice president of the food practice.



Dave Miller, Vice President of the Food Practice at Clutch

“For a business that is scaling up and ready to expand, so many different options are available for these topics. But many of the resources are scattered and it is difficult to marshal all the information into a cohesive strategy,” said Miller. “For this guide, we are not looking to provide the definitive answer to the myriad of questions a business will have, but rather to help businesses understand the questions they should ask when it is ready to take that step.”

Miller said many food companies know the basics of digital marketing and e-commerce, but often struggle with getting the most out of their efforts. The guide can help businesses streamline and improve their processes in both areas, he said.

“A business can spend \$10,000 building a website with all kinds of content and great photography. It can also devote hours and hours to writing posts for several social media platforms,” Miller said. “But before investing that time and energy, business owners need to ask themselves if having an expensive website, or all kinds of content, moves their brand forward? We want to help businesses use these tools effectively to help tell their stories to consumers.”

Building and Enhancing a Food Fish Industry

The second AIP project is a research report on Minnesota’s aquaculture industry. AURI is working with Minneapolis-based marketing firm Russell Herder to develop a guide to aid state planners, producers, retailers and researchers in this field. The report will produce actionable data and market knowledge on the commercially practical business opportunities for trout, walleye, shrimp and more. These new business ventures have great potential to produce new jobs and economic impact in several related sectors.

The published research will serve as a roadmap to help producers grow their operations and market their product. It will also gauge industry readiness, identify public education needs, and highlight key insights to help facilitate better industry collaboration.

As most know, Minnesota has a rich history with fish and fishing, for both sport and food. What is perhaps not as well known is that Minnesota has a burgeoning food fish industry, both wild caught and grown, with many businesses paying good wages in all regions of the state. There is significant opportunity to grow the state’s aquaculture sector according to Harold Stanislawski, AURI’s business development director. To help facilitate that advancement, the aquaculture report will explore common questions facing businesses, barriers to entry, and potential market growth and collaboration opportunities.

“The report will be a guide to help get the industry up and running,” Stanislawski said. “To achieve that goal, we need to address some of the investment, technology, regulatory and processing issues first.”

The first challenge is to assess how big the industry can become. To answer that question, Russell Herder and AURI will attempt to determine how big the consumer base is for raised fish and which pricing models are necessary for producers and retailers to make a profit. Research will pinpoint the current and projected demand of fish and the most popular species of fish in the market. The researchers will also study the existing aquaculture infrastructure in Minnesota to evaluate supply and production techniques. Further exploration will focus on the technology and regulatory framework necessary to help businesses be successful. More specific sections will explore how the byproducts from aquaculture are useful in a value-added economy, and how Minnesota farmers and producers can contribute in a mutually beneficial way through feed products. Fish have been an important part of Minnesota’s food landscape for many years.

“Besides outdoor fishing for species such as walleye that goes back many generations, commercially viable indoor business opportunities for production of products such as shrimp are expanding, creating employment, economic impact and growth for related sectors in the form of fish feed, fish health and byproducts,” said Carol Russell, the CEO of Russell Herder. “The resulting guide will serve as a resource and educational tool for decision makers, industry, academia and others to expand market opportunities in Minnesota, resulting in a positive shift in public perception, and serving to inspire successive projects with clients and stakeholder partners.”

Upon conclusion, both AIP projects will be published and widely distributed. The research and findings from this work are an important component of AURI’s long-term commitment to catalyzing economic growth in the ag and food sectors, said Wagner-Lahr. The research will also assist AURI to better serve its clients by refining and improving its current service line and expertise.

“AURI’s public domain initiatives are intended to benefit the state’s food and agricultural businesses – to help them navigate the innovation and commercialization process to develop new products and technologies for the market. This in turn leads to economic growth, such as increased sales and revenue, new jobs and investment in equipment and infrastructure,” Wagner-Lahr said.

Russell Herder Team
(Listed clockwise from the left)

- Alix Hines,
Associate Brand Planner
- Brian Herder,
Partner, Chief Creative Officer
- Robin Melville,
Director of Brand Planning
- Carol Russell,
Partner, Chief Executive Officer



Ag Innovation Partnership Program

AURI’s AIP program is a competitive process. Each year AURI puts out a call for submissions from businesses, researchers, entrepreneurs and producers, encouraging them to submit a proposal. A panel of AURI staff members reviews and selects projects based on the submissions most closely aligned with AURI’s mission of supporting innovation and creating long-term economic impact. Project selection is based on how they meet an agriculture sector need.

The selected projects receive AURI’s resources, funding and support to help businesses turn their ideas into reality and catalyze innovation in the state’s agriculture industry. All applicants are also required to share in the project cost by contributing at least 25 percent of the dollars, hours or value of the project. Each project selected in 2020 aligns with one of AURI’s core focus areas: biobased products, renewable energy, coproducts and food. The information generated from each project is made publicly available to help producers, entrepreneurs, businesses and agriculture processors.

MORE SUSTAINABLE PACKAGING SOLUTIONS FOR GROUND BEEF

BY AURI

Consumer demand is driving the food industry to reassess its sustainability practices. Everything from environmentally responsible farming methods to providing consumers with supply chain transparency are now on the table. Consumers increasingly want to know the impact their eating habits have on the environment and how to lessen that impact through their purchases.

The Minnesota Beef Council is focused on illustrating sustainability improvements in the industry and researched consumer perceptions on ground beef packaging. Last year, the Agricultural Utilization Research Institute (AURI) in partnership with Dr. Claire Sand of Packaging Technology and Research (PTR) published a report titled “More Sustainable Packaging Solutions to Improve Consumer Confidence in Ground Beef.” Beef Checkoff dollars funded the project.

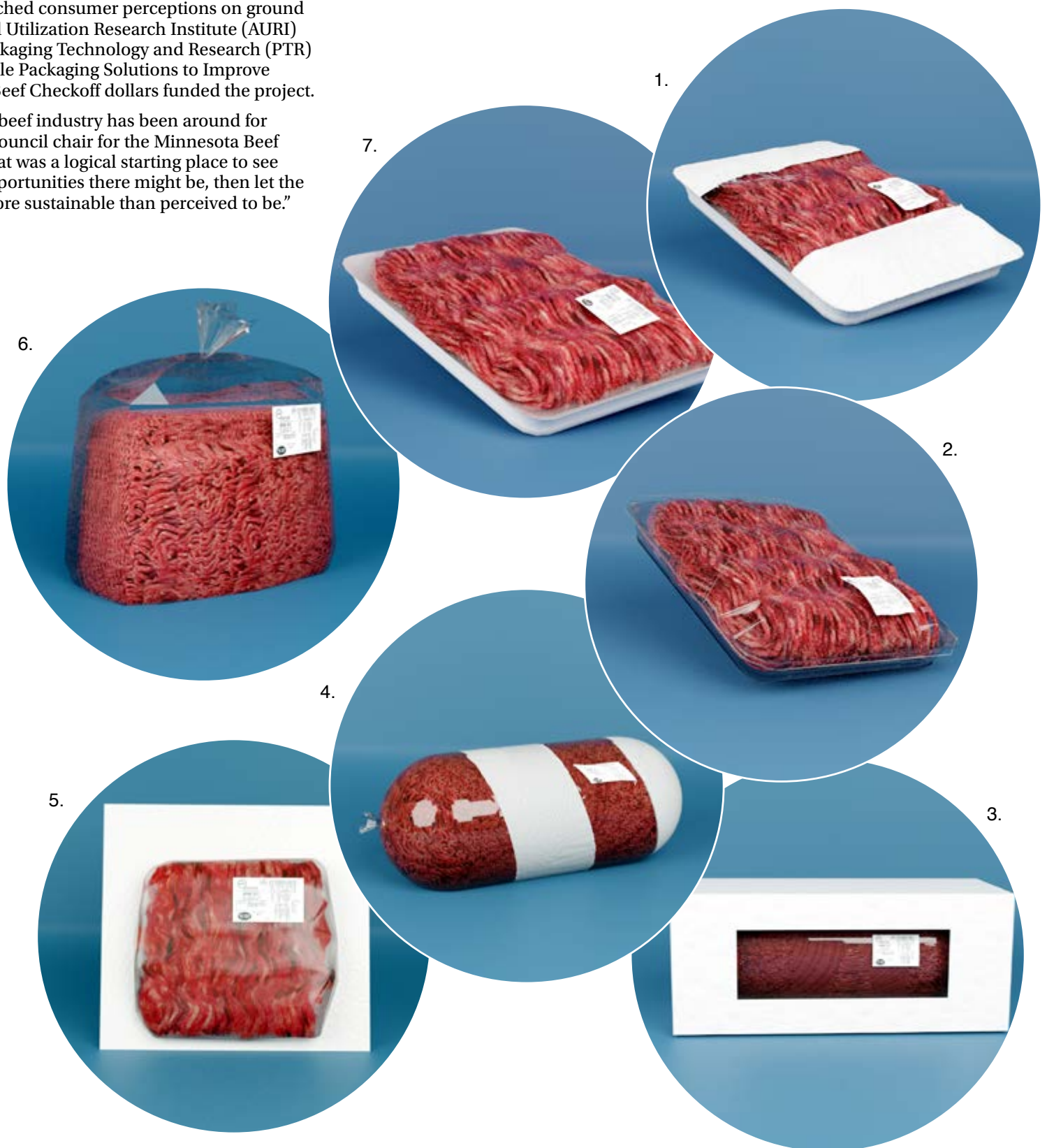
“Packaging used currently by the ground beef industry has been around for a while,” says John Schafer, the research council chair for the Minnesota Beef Council and AURI board member. “So, that was a logical starting place to see what the current situation is and what opportunities there might be, then let the research determine what practices are more sustainable than perceived to be.”

According to the Minnesota Department of Agriculture, cattle production is the second largest livestock sector in the state. Last assessed in 2017, it provided 26,945 jobs to the state with an output impact of \$4.2 billion. Minnesota’s beef production engages other economic sectors outside of agriculture such as manufacturing, transportation and insurance. In short, beef has a large impact in Minnesota.

The primary objective of this research project was to improve consumer confidence in beef through identification and refinement of more sustainable packaging solutions. By altering a product’s packaging, there is potential for reducing its environmental impact, reducing food waste and better illustrating the emphasis the industry overall is placing on sustainable practices.

“The beef industry has made significant improvements in terms of its environmental footprint,” says Jason Robinson, business development director for AURI’s food team. “These more sustainable packaging options are really meant to improve consumer confidence by creating a tangible and visual connection between the beef industry’s environmental footprint improvements and the product that is on the shelf today.”

1. Paper Tray with Paper-Plastic Overwrap
2. Clear Tray with Mesh Overwrap
3. Chub-in-a-Box
4. Chub with Paper-Plastic Overwrap
5. Card with a Skin Pack
6. Minimized Plastic Bag
7. Current EPS Tray Package



The Minnesota Beef Council has been a key stakeholder for AURI since its establishment by the Minnesota Legislature in 1989. To initiate the project, AURI responded to an open research call for proposals. After some preliminary research into current projects conducted on packaging options for beef, AURI submitted a proposal for two phases of research.

The new report covers the first phase of research and focuses on consumer perceptions of a package's sustainability factors versus quantitative life cycle analysis of the package. Plans for a second phase hope to dive deeper into the packaging's correlation to food waste.

Research Methodology and COVID Pivot

This research project employed three methods: concept development, consumer evaluation and environmental impact profiling of the packaging concepts. The team's plan was to develop multiple packaging concepts for ground beef that would undergo both in-person consumer review and qualitative analysis of its environmental impact. Consumer feedback would take place at AURI's new Food Product Evaluation and Sensory Laboratory in Marshall, Minn. This would allow a sample of Minnesota consumers to physically examine and interact with the packaging prototypes.

Like much of the world, the project was forced to pivot in response to the COVID-19 pandemic. The platform Howspace, a digital social learning collaboration tool, was used to conduct remote consumer reviews.

Concept development of the more sustainable packaging started with an understanding of prior research. The concepts sought to align with what is already known about ground beef consumers and sustainability practices. The project team consulted two primary pieces of research: the "Ground Beef Package Design Analysis" report supplied by the Minnesota Beef Council and a literature review of consumer testing and research associated with consumer views on sustainable packaging. Considerations include recycle-ready systems, sustainable sourcing of bioderived recyclable material, and the reuse and minimizing of packaging.

"More sustainable packaging for the meat industry is viewed entirely differently than in any other industry or produce," says Dr. Claire Sand. "And that's because the needs of the product and sometimes the value of the product come into play."

Dr. Claire Sand and PTR brought experience with prior meat category project work. Because beef is a higher value product the sustainability of the packaging must balance against its ability to preserve shelf life. For this reason, researchers developed packaging concepts with consideration of the value chain's needs from production to consumer as well as sustainability attributes, including sourcing and disposal options. Finally, a global review of meat packaging enabled an applicability assessment of these solutions to ground beef packaging.

In total, AURI and PTR developed six packaging options for testing. These concepts included (1) paper tray with paper-plastic overwrap, (2) clear tray with mesh overwrap, (3) chub-in-a-box, (4) chub with paper-plastic overwrap, (5) card with a skin pack and (6) a minimized plastic bag. Assessment also included the common expanded polystyrene foam (EPS) tray package that many providers currently use. Additionally, researchers examined elements such as assorted colors and a "freshness indicator," an example of intelligent packaging, used to better communicate the ground beef's remaining shelf life.

In November 2020, Dr. Claire Sand presented findings on more sustainable beef packaging through the AURI Connects: Webinar Wednesday program.

Watch the recording at auri.org/webinar-wednesday

Participants evaluated digital renderings of the packaging concepts across several metrics to gauge their perception of eco-friendliness. The digital platform then used artificial intelligence to help the researchers correlate the feedback.

In total, 25 Minnesota consumers participated in the study. The demographics were 80 percent female and 20 percent male with the average age of 54. All participants indicated an interest in more sustainable food packaging during screening. Over half of the respondents used ground beef on a weekly basis.

The final element of the research involved environmental impact profiling, or life cycle assessment, which assesses the packaging concepts' environmental impact to compare with the current EPS trays. This assessment also took into consideration

technical feasibility as well as the logistical needs of the packaging to fit within a value chain.

"The methodology focused on marrying the quantifiable environmental impact through life cycle analysis with consumer perceptions to arrive at the recommendations outlined in the report," says Robinson.

The life cycle assessment provided a quantitative analysis of the packaging's environmental impact from its source to end life. Researchers assessed the different packaging solutions from raw materials to end of life destination, whether that be recycling or landfill. Metrics included climate change, water use volume and land use impact.

More Sustainable Options

Results indicated consumers felt all six packaging concepts created for this research were more eco-friendly than the current overwrapped EPS tray package, an opinion the life cycle assessment contradicts. However, the EPS tray option actually ranked as one of the best among the more sustainable approaches due to the lower amount of plastic utilized for it.

"So, there is a big opportunity to take the existing package, which is one of the more sustainable options because it's a lot of air, and just communicate that to consumers in a meaningful way. That was a big 'a-ha' moment," says Dr. Sand.

This realization put into stark contrast the difference between consumer perceptions versus the science. Only two of the packaging concepts had a lower environmental impact than the EPS tray: the chub with paper-plastic overwrap and the minimized plastic bag. While neither are recyclable, the reduction in plastic means the packaging is more sustainable over its life cycle by requiring fewer resources from creation to disposal.

Read the full "More Sustainable Packaging Solutions to Improve Consumer Confidence in Ground Beef" Report at auri.org/beef_packaging

When presented with uncolored versions of package concepts meant to mimic a natural-looking kraft paper, 83 percent of consumers considered this packaging as the most sustainable versus other colors assessed. The presence of a "freshness indicator" went over very well with consumers, with participants stating they would pay an average of \$1.00 more for the "freshness indicator" for one pound of ground beef. It is understood that the indicator connects with consumers to improve food safety, thus reducing food waste.

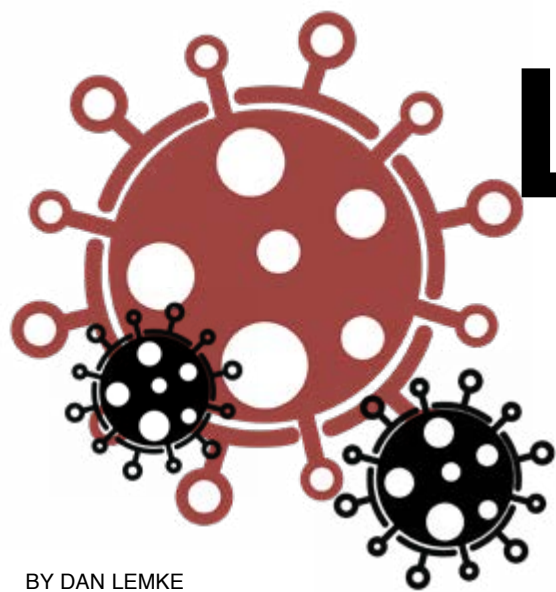
Overall, consumer perception of the more sustainable packaging options did not align with the actual environmental impact. The report provides recommendations to the beef industry to bridge this gap between perception and reality. Actionable steps include using elements like the kraft paper color to improve consumer perception of packaging's sustainability, incorporating recycled paper as part of the existing overwrap for chub packaging, and advocating for curbside recycling of polystyrene.

"The important part of the research - like any other research project - is to show the reality of the sustainable packaging crossed with the consumer perspective," says Kelly Schmidt, chief executive officer for the Minnesota Beef Council. "We need to look at all aspects of the product to gain more understanding of how beef plays a role in a more sustainable market. The more we learn, the more we can be strategic about how we move forward."

According to John Schafer, more sustainable packaging is the future. While this research is specific for ground beef, takeaways from the report could be insightful to other industries and products.

"This project focused on reducing food waste, specifically of ground beef, but I think in the entire food industry sustainability and packaging are going to get a lot of attention," says Schafer. "Can it be simplified? Can it improve shelf life? Are there ways we can reduce the amount of packaging used? Are there ways that packaging can be better recycled? Are there ways, for example, some of the plastic can be compostable that would naturally degrade? I see a tremendous number of opportunities in this area. I am fairly confident that within the next 10-15 years there will be a lot of innovation in food packaging."

Read the full report on more sustainable packaging solutions for ground beef at www.auri.org.



Lessons Learned from a Pandemic

Survey provides insights into value chain impacts

BY DAN LEMKE

There is no playbook for businesses to follow when navigating a global pandemic. The COVID-19 outbreak brought widespread disruptions to commerce of all types, including agribusiness. Businesses did their best to manage during unprecedented times; some successfully, while others struggled.

AURI and several key partners are digging deeper into the impacts COVID-19 had on food and agriculture to help create greater resiliency along the entire supply chain.

When COVID-19 emerged and grew into a global concern, the nation's food and agricultural supply chain that had operated smoothly for decades, suddenly faced unprecedented challenges. Consumers who could previously find nearly any type of food product in ample supply at nearly any time, now saw intermittent shortages. Food processors faced labor shortages and numerous livestock producers suddenly found themselves without a facility able to process their animals.

AURI leaders recognized the need to determine the underlying cause behind spot shortages and supply chain interruptions. The AURI effort focused on the causes of disruptions to that supply chain and sought to identify potential new resources or collective solutions that could benefit Minnesota businesses.

"The overall idea of this study was to act quickly and be more proactive about solutions that AURI could support immediately or begin planning new initiatives that would be helpful to Minnesota's ag and food processing sector," says AURI Executive Director Shannon Schlecht. "Other efforts focused on the grocery store shelves and the consumer perspective. We all know the first point of delivery or intermediate processing segment of the ag industry is vital to ensuring consistent demand opportunities for our producers."

Taking the Pulse

AURI, AgriGrowth, the University of Minnesota College of Food, Agriculture and Natural Resource Sciences, GreenSeam and the Minnesota Department of Agriculture partnered on a survey to better understand how COVID affected the food and agricultural supply chain. The survey sought to identify problem areas for businesses while identifying potential solutions.

"We wanted to know what pain points respondents experienced; what did they need, and what potential supportive actions could help improve supply chain resiliency," says Linda Thompson, AURI director of organizational advancement.

Each partnering organization contacted their database of food and ag manufacturers and processors. The groups used the North American Industry Classification System to identify businesses that fell into the food and agriculture supply chain.

Shannon Schlecht, AURI's executive director, presented on the survey outcomes at AgriGrowth's 2020 Minnesota Ag and Food Summit. Watch the recording at agrigrowth.org/events/minnesota-ag-and-food-summit-hosted-by-agrigrowth

"We focused on the messy middle as it is sometimes referred to, everything that went into and out of the manufacturer and the processor that connects production agriculture to the consumer," Thompson says.

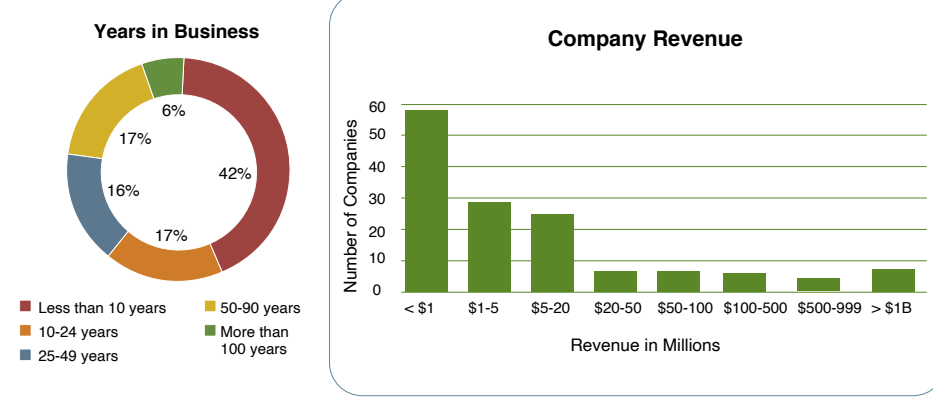
From late June through early August, more than 110 Minnesota businesses responded to the survey. Thompson says there was a well-rounded response.

Thompson says 35 percent of survey respondents came from the Twin Cities metropolitan area and 65 percent were from greater Minnesota. Every region of Minnesota was represented in the survey.

Forty percent of respondents had been in business less than 10 years, while the biggest share of replies came from businesses that had been operating for 10 to 99 years. Thompson says 40 percent of survey respondents reported less than a million dollars in annual sales. However, larger companies, including some with over \$1 billion in annual sales, provided feedback. Forty-six percent of respondents saw their business revenue decline during the pandemic, 20 percent stayed steady and about 22 percent saw increased revenue.

"A few respondents lost their business as a result of COVID but still took the time to respond," Thompson explains. "They provided some very open responses. Other businesses that succeeded during the pandemic, still reported on things they needed to be more resilient."

Survey Demographics of 114 Respondents



Demographics of survey participants.

Inside Stories

From the varied responses, Thompson says several themes emerged. Most importantly, even though the food and supply chain bent, it did not break. Most of the responding companies used creative strategies to stabilize their businesses.

Survey responses showed that government intervention designed to help relieve challenges brought on by the COVID pandemic sometimes had unintended consequences. Some respondents said the additional \$600 per week on top of regular unemployment benefits resulted in challenges in hiring employees. Some businesses reported scaling back production because they did not have enough workers.

Other businesses had difficulty attracting employees or getting employees to return to work due to health concerns with COVID-19.

"It was reported that some people were fearful of getting COVID, which impacted their decision to go to work," Thompson says.

States set many of their own regulations to combat the spread of the virus. For companies providing products nationwide or even regionally, adjusting to each state's rules took a tremendous effort.

Thompson says a few responding businesses felt excluded by the Paycheck Protection Plan (PPP), which provided forgivable loans to businesses to help meet payroll and other expenses.

The cause of some disruptions was not surprising. Businesses dealt with bottlenecks because upstream suppliers had to shut down due to COVID. In other cases, upstream suppliers could not get necessary inputs, meaning downstream businesses were left without important inputs. In other cases, some businesses providing inputs and services were reported to not be classified as essential, impacting parts and inputs needed.

Some responding businesses made tough decisions to shut down temporarily and furlough workers or close permanently. Some businesses and processors limited the items they chose to produce, focusing on a vital few. Others shifted some of their marketing efforts to e-commerce. Nearly all the businesses, however, had to respond to shifting markets.

“One of the most frequent responses was about the market sales and losses,” Thompson explains. “For some businesses, their markets shifted overnight. That was huge. They might have lost it while others gained overnight.”

Just as each survey respondent had a different COVID experience, many also had a different view of the future. Thompson says some respondents believe it will take 2 to 6 years to move through the pandemic, recoup their losses and get going again.

“Some thought the future looked exceptionally bright while others didn’t have that feeling at all,” Thompson adds. “The uncertainty is absolutely there.”

Lessons Learned

AURI published results of the supply chain survey in a report called “Navigating Challenges: Minnesota’s Food and Agriculture Manufacturers and Processors Supply Chains.” This report was an early analysis of the impact of the COVID-19 crisis on the supply chain of Minnesota’s food and ag processing sector.

While no one anticipates another global pandemic, lessons learned from COVID-19 are applicable to many situations where the normal business operations are suddenly disrupted.

“Resiliency isn’t a one size fits all, although a couple key themes emerged,” Schlecht says. “Management efforts that were more agile, transparent, and proactive in finding solutions versus those having a reactive mindset waiting for ‘normal’ to return weathered the situation better. Additionally, collaborations and partnerships were vital in this effort as more communication and transparency occurred across the value-chain nodes.”



Partnerships

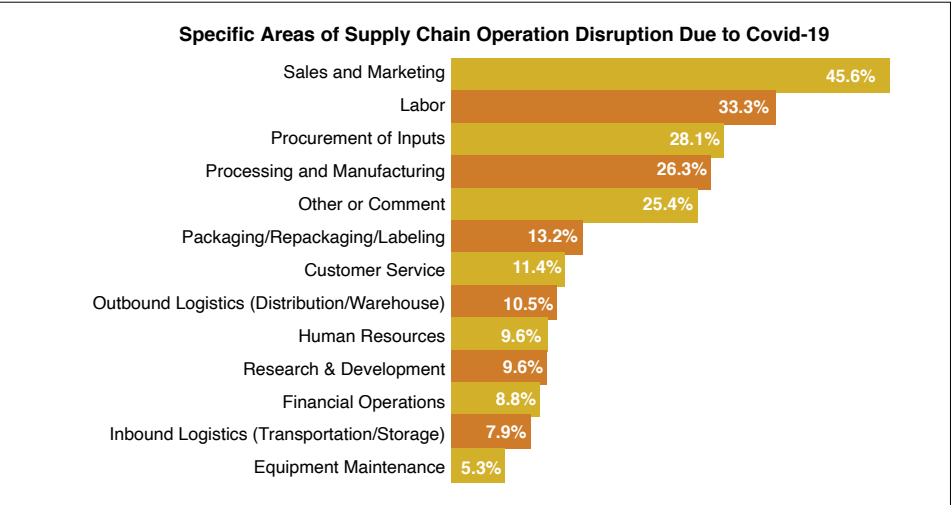
New partnerships and collaborations with other businesses and customers are critical to recovering from the economic impact. Rather than forging ahead alone or relying solely on one entity, some businesses successfully navigated the changing business climate by reaching out to their partners and diversifying their business partnerships.

“More conversations occurred with suppliers, more frequent payment terms were employed, discussions were more frequent with capital providers on needs, and new market channels were explored via connections,” Schlecht says.

New Markets

Businesses had to seek alternative markets and suppliers. They worked to develop secondary suppliers and new market channels rather than relying on one vendor or partner.

“The dedicated facilities and companies servicing one segment of the food market struggled due to the rapid drop in food service demand and being able to pivot to retail, while retail-focused companies couldn’t keep up with the high demand during the crisis period,” Schlecht says. Another example here was the pivot ethanol facilities made to hand sanitizer markets to offset the loss of demand in the fuel market.



Supply chain operations most impacted during the pandemic.

Crisis Management Plans

For future crises, companies will need a robust crisis management and response plan. While no one can anticipate all the potential disruptions that can occur, having a plan for addressing sudden changes is critical to businesses responding quickly and effectively when challenges arise.

Technology

Technology is key to helping businesses adapt and respond to significant challenges. Virtual work opportunities and the digitization at all points in the supply chain is increasingly critical. The survey also reinforced the need for broadband and the ongoing efforts to digitize supply chains for increased efficiency.

“E-commerce will get bigger,” Thompson explains. “Additionally, broadband will be needed in making resilient supply chains that have information available electronically. If you can see that information all along the supply chain, you could build in a lot more resiliency.”

Additional Resources

Better resources should be made available to help businesses find and access support available from the state and federal governments during unprecedented economic times.

“Businesses may need some management training. There may also need to be some sort of a hotline or portal when they’re going through a crisis and they don’t know what to do,” Thompson says. “It may be helpful to have a place where businesses can bounce ideas off of others and connect on changing needs.”

Moving Forward

Thompson says there is strong interest in the information gathered through the value chain study. She says lawmakers at both the state and federal level have indicated an interest in the results. Results were presented during the Agri-Growth Council annual meeting and through the AURI Connects’ Webinar Wednesday program.

“We know that the challenges of COVID-19 have put tremendous strain on Minnesota farmers, processors, and the entire agriculture industry,” Minnesota Commissioner of Agriculture Thom Petersen says about the study. “But it’s important to keep hearing from people about what they’re experiencing so we can make good policy decisions to help them. These survey results give us one more tool we can use to help guide our work.”

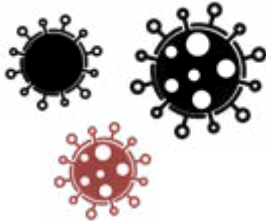
A second round of focus group conversations with responding businesses is possible as well. Thompson says when companies are caught in a crisis, it can be hard for them to know what is needed. They may have more insights once more time has passed.

“AURI will explore multiple action items with its collaborating partners to put this information to use,” Schlecht says.

Schlecht says possible options include support for management training or short courses on best practices during crisis situations, a digital-based platform to more easily connect with other members of the value chain on needs and available resources, additional resourcing on requirements and opportunities around new market channels, and exploring options to utilize AURI’s meat laboratory for additional training to assist meat processor needs.

“Our collaborating partners will undoubtedly have additional ideas for exploration and potential collaborations to best meet the needs of this vital industry segment,” Schlecht says.

The full report is available online at www.auri.org.



MBOLD Launch

New coalition aims to accelerate solutions to world's biggest food and agriculture challenges.

"AURI is proud to be a founding member of the MBOLD coalition, which strives to advance new industry opportunities and collaborative work on industry challenges."

Shannon Schlecht, AURI's Executive Director

BY JOANNE BERKENKAMP, MANAGING DIRECTOR OF MBOLD

On October 16, groups from throughout Minnesota celebrated the launch of MBOLD, a new coalition that brings together many of the state's largest food and agriculture companies, research institutions and innovators to address major challenges facing the food and agriculture sectors. The launch took place as part of Global Minnesota's World Food Day 2020 Conference.

Powered by the GREATER MSP Partnership, MBOLD includes CEOs and other c-suite leaders from Cargill, Compeer Financial, Ecolab, General Mills, Hormel Foods, Land O' Lakes, Schwan's Company, Target and the University of Minnesota, as well as the Agricultural Utilization Research Institute (AURI), the Minnesota AgriGrowth Council, Grow North and McKinsey & Co. MBOLD's members reach consumers in more than 125 countries around the world and have combined annual revenues exceeding \$250 billion.



"The MBOLD coalition seeks to harness the power, reach and expertise of our members to accelerate practical solutions to pressing global challenges and drive real impact," said Jeff Harmening, chairman and CEO of General Mills and co-chair of MBOLD. "Minnesota's unique cluster of leaders is collaborating on some of the biggest challenges facing our food system and we are poised to lead the way to a more sustainable future."

Food and agriculture businesses based in Minnesota play an outsized role in nourishing our planet, connecting farmers with markets, and driving innovations that are fundamentally shaping the way the world eats. Minnesota is also home to the University of Minnesota, AURI and other world-class researchers, as well as some of the best farmers and farmland in the world. By working together in new ways, MBOLD aims to accelerate practical solutions to twin challenges of feeding the planet's growing population while addressing climate change and other vital natural resource issues.

"AURI is proud to be a founding member of the MBOLD coalition, which strives to advance new industry opportunities and collaborative work on industry challenges," says Shannon Schlecht, AURI's executive director. "There is an overarching need to advance innovation and entrepreneurship efforts in agriculture and this network of action focused leaders will undoubtedly drive new impactful outcomes. Nowhere else in the world can such an impactful and diverse collaboration of food and agriculture leaders exist in one's back yard."

Learn more at www.mbold.org

Areas of Focus

MBOLD has embarked on initiatives to develop a circular economy for flexible film packaging, advance soil health and water stewardship, encourage innovation and entrepreneurship in food and agriculture, tackle food insecurity in the face of COVID-19, and build programs to attract and retain world-class talent to Minnesota's food and agriculture sector.

Circular Economy of Flexible Packaging Film: Massive amounts of flexible packaging film are used every year as single-use shopping bags, pallet wrap, grain bags and more, but in the U.S. less than 4 percent of that packaging is recycled. MBOLD is exploring opportunities to create a circular economy for this material, including opportunities to expand recycling capability in our region and build the market demand needed to make recycling these materials abundant and profitable.

Soil Health and Water Stewardship: Climate change continues to strain the world's natural resources. Agriculture has the potential to be a major part of the solution to greenhouse gas emissions and water issues. MBOLD is working to develop regenerative agriculture systems that build soil health, protect water resources and diversify farm incomes. For example, MBOLD members are working with farmers in Minnesota's Red River Valley to introduce regenerative soil health practices by offering cost-share funding for growers, on-farm demonstration sites, education, technical assistance and evaluation of the impact on farm economics.

Innovation and Entrepreneurship: MBOLD is bringing together the disruptive thinking of entrepreneurs and innovators from around the world with the acumen and reach of large global companies to drive solutions to today's major challenges. MBOLD is proud to partner with AURI on the Bold Open Reverse Pitch, a platform for innovators to propose and scale up practical solutions to challenges set forth by local companies and farm commodity groups.

Food Insecurity: COVID-19 has caused a surge in unemployment and economic disruption in our region. One in eight Minnesotans are currently food insecure, and that number is expected to worsen as we move into 2021. Through public-private collaboration, MBOLD is helping use predictive analytics to get ahead of food insecurity at the local level, spotlight funding needs, and scale up innovative partnerships and technology to increase the capacity of local food relief networks.

Our world faces unprecedented and urgent challenges. The need to collaborate better and drive innovation – in order to seize new opportunities – has never been greater. With its rich history of collaboration from farm to fork, Minnesota can help lead the way. To learn more, visit www.mbold.org and follow the initiative on Twitter, LinkedIn and Facebook.

The Women of Minnesota Agriculture

BY AURI

Women have long played an essential role in the agriculture industry. Unfortunately, it has not always been acknowledged or captured in industry data. As Minnesota's farmer population ages, there is an increasing need to support emerging and underserved parts of the community to strengthen the next generation. In 2020, Farmfest took a step towards recognizing female leadership in ag by selecting its first Woman Farmer of the Year: Sarah Kuschel from Sebeka, Minn.

The Farmfest Woman Farmer of the Year award honors hard-working female farmers from Minnesota who selflessly give their time to growing crops and raising livestock on the farm. Kuschel raises beef cattle and equine on a fourth-generation cattle operation while raising three children and serving as a regional curriculum specialist for Minnesota Ag in the Classroom.

"So many times, women on the farm wear multiple hats, tirelessly contributing to the farm, their communities, their children or working outside the home," says Melissa Sanders Carrol, executive director for IDEAg, producers of the Minnesota Farmfest. "This award seeks to acknowledge their commitment to production agriculture and show our appreciation."

According to the 2017 Census of Agriculture from the United States Department of Agriculture, out of 68,822 Minnesota producers about 15 percent identified as female. Meanwhile, an overwhelming majority of Minnesota producers identify as white.

Along with Farmfest's new Woman Farmer of the Year award, other food and ag organizations are working to support female leadership in agriculture. The Minnesota Department of Agriculture (MDA) has sponsored an annual Women's Agricultural Leadership Conference for over two decades run by District 11 of the Minnesota Agri-Women. The 2019 conference focused on the changing "agscape." The 2020 conference, themed "Dare to Lead into a New Decade" was postponed due to the COVID-19 pandemic.



MDA also works to support new and emerging farmers from underserved communities, including women, by conducting research and convening an Emerging Farmers' Working Group. According to the "Barriers to Emerging Farmers in Minnesota" legislative report, data collection efforts often miss how women participate in farm businesses. Limits by the United States Department of Agriculture to count only one principal operator of a farm business during previous censuses of agriculture, meant women were not counted as principal producers even if they were in a partnership and participating fully in decision making. This was altered for the 2017 Census of Agriculture.

"Women bring a different perspective to the farm and agricultural businesses that is important," says Jennifer Wagner-Lahr, AURI's senior director of commercialization. "And their voice often resonates with primary shoppers – who are often women and moms – we care about many of the same things."

Besides her role at AURI, Wagner-Lahr is actively involved in her family's farm operation that includes raising replacement heifers, growing cash crops as well as forage crops. She is among several women on staff at AURI that are involved in farming – from working with livestock and the land to raising the next generation of ag enthusiasts with the support of programs like 4-H and FFA.

The report further notes that women in agriculture currently seek more leadership opportunities and educational resources.

The Women in Ag Network under the University of Minnesota Extension and Minnesota's Farm Service Agency also provides educational opportunities and events that enhance leadership, management and production skills for women working in agriculture. They host an annual conference as well as maintain a Facebook page and email listserv. They also offer an interactive online series on "Cultivating Resiliency for Women in Agriculture" focused on raising awareness of farm stress and teaching techniques to cope.

"Having participated in several of the women-focused events," says Wagner-Lahr, "I am grateful for the programming that has been available to women in the industry as a means to network, troubleshoot issues on the farm and in the industry, and to decompress and enjoy each other's company."

More women are actively seeking leadership roles in agriculture. The farm women of CommonGround volunteer their time to share information about how food is grown and raised in Minnesota. While others across the industry participate in opportunities like the Minnesota Agriculture & Rural Leadership (MARL) program and Annie's Project.

Leadership opportunities and educational programs targeted at women in agriculture are growing. This expansion of support for the industry's women is vital for building resiliency and diversity in Minnesota's food and ag sector.

MN Resources for Women in Ag

Women in Ag Network, University of Minnesota Extension

extension.umn.edu/business/women-ag-network

Women in Agriculture, Renewing the Countryside

renewingthecountryside.org/women_in_ag

Minnesota Women, Food & Ag Network Women's Environmental Institute

w-e-i.org/research-communities/minnesota-women-food-ag-network/

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Breaking Ground on Innovation



BY AURI

Late last year, Minnesota’s ag community saw the fruition of years of efforts to develop a new pipeline for the state’s soybean growers and other producer’s commodities. On October 28, the Ag Innovation Campus (AIC) broke ground on an oilseed crush plant and innovation center in Crookston, Minn.

Several years in the making, this event marked the fruition of many partners’ efforts to strengthen the state’s ag economy. The process began in 2018 when the Minnesota Soybean Research & Promotion Council (MSRPC) devoted checkoff dollar funds for a feasibility study for a regional soybean crush and biodiesel facility in northwest Minnesota. Based on the study’s results, the city of Crookston, Minn. rose to the top of the list of potential homes for this facility. From there, the vision for this new campus evolved into a site utilizing advanced technology to also serve as an incubator for various ag industry innovations from throughout the state.

“In Minnesota, we are proud of the strong innovation and collaboration in our ag community,” says Minnesota Governor Tim Walz. “The Ag Innovation Campus in Crookston is a perfect example of this unique Minnesota ingenuity. It will provide valuable jobs and industrial research opportunities in northwest Minnesota and spark a new wave of processing and value-added opportunities across the state.”

MSRPC conducted an advocacy campaign to raise an additional \$5 million from the State Legislature. This was later approved as part of the bipartisan omnibus agriculture finance bill signed by Gov. Tim Walz. The Legislature provided the

funding to the AIC in September 2020. Following the appropriation, the AIC received the necessary permits from the Minnesota Pollution Control Agency in October.

Since then, the AIC has acquired 10-acres of land and broke ground in late October 2020, which is the first step in building and operating a nearly 70,000 sq ft crush plant and innovation center. Current plans indicate the plant will initiate operations by the end of 2021, despite COVID-19 delays.

Soybean production in northwest Minnesota has increased by more than 300 percent in the past 20 years. Although the Ag Innovation Campus would improve the profitability of farmers throughout the state, the 11 northwest Minnesota counties that would see the most gain from the Campus produced more than 50 million bushels of soybeans in 2019.

“We’re fortunate to have hard-working farmers and families across the state who use their crops to make life better for all of us,” says Representative Jeanne Poppe (DFL-Austin), House Ag Committee chair. “The state investment in the Ag Innovation Campus tells farmers that we care about you, we value your contributions, and we believe in your ability to innovate and lead our ag economy forward.”

The purpose of this new campus is to increase economic opportunities for all farmers by helping them maximize crop value, increase employment opportunities and take advantage of current markets in biodiesel, soybean oil, soybean meal and glycerin. In doing so, some experts predict the AIC could have as much as a 10-fold economic return.

In addition to the crushing facility, the campus will provide educators, innovators and private businesses access to affordable facilities. Once established, the Campus will include research bays for private industry to develop products benefitting Minnesota’s ag sector.

The Agriculture Research Utilization Institute (AURI) was an early supporter of the AIC and is proud to be a part of the project.

“AURI is excited to see the Ag Innovation Campus advance and become a resource for the agricultural industry and innovation ecosystem,” says Shannon Schlecht, AURI’s executive director. “AURI has had a 30-year presence in Crookston and plans to have an office and laboratory presence at this new facility upon completion to capitalize on the synergies of the Ag Innovation Campus goals and AURI’s mission of fostering long-term economic benefit to Minnesota through value-added agricultural products.”

The Ag Innovation Campus promises to be a forward-thinking force for Minnesota and the country. To keep track of the project, go to www.mnsoybean.org.

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