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LEGISLATIVE
REPORT

auri

AURI.ORG



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▶ FROM THE EXECUTIVE DIRECTOR

Welcome to the FY21 edition of AURI's Annual Report! As you read through this report, I hope it will become clear that even during a global pandemic AURI was able to serve its stakeholders. AURI transitioned its approach to virtual, hybrid and limited in-person activities, and even realized an expansion in its project portfolio, initiatives and public events.

To that end, I'd like to highlight some of AURI's most notable successes.

First of all, FY21 was a successful year. Through the dedication of AURI's staff and Board of Directors, the organization proved to be agile and made significant progress despite the limitations of navigating the pandemic. During the fiscal year, the organization worked on more than 200 projects, a 15 percent increase over the previous year. What's more, our talented team opened 101 new projects during the same time period and completed 75 projects for clients and public dissemination. These results would be commendable even under normal conditions; however, they are especially impressive when one considers the ever-changing environment in which they happened.

What makes these results more meaningful is the financial impact they had on Minnesota's economy and its rural communities. During a five-year period ending with the close of FY21, clients self-reported that AURI's work contributed to the creation and retention of 579 jobs across the state and \$118 million in new capital investments. The work during the past five years also resulted in \$321 million in new gross annual sales by clients. When we look to the coming months and years, clients estimate that AURI's support will help create and retain 785 additional jobs while spurring another \$311 million in future capital investment.

In terms of preparing for future impact, AURI recently completed a five-year strategic planning cycle and began implementing it. This multi-year strategic plan guides AURI to stay on course and conduct its work in an efficient and effective way, creating the highest impact for Minnesota.

In addition to these examples of internal growth and achievement, I'd also like to share some collaborative successes achieved through AURI's external partnerships in FY21.

First, I'd like to point to AURI's partnership with MBOLD, which is a coalition of Minnesota's largest and most prominent companies operating across the food and agriculture supply chain as well as researchers, nonprofits and other partners helping drive the future of food. During FY21, AURI partnered with MBOLD on the annual Bold Open Reverse Pitch event, which brought together nearly a dozen forward looking Minnesota food and agriculture companies to propose 20 food and ag industry challenges in search of novel solutions from entrepreneurs, researchers and innovators from around the globe. The FY21 event successfully garnered significant attention from across the United States and internationally.

AURI partnered with AgriGrowth, GreenSeam, the MN Department of Agriculture and University of Minnesota to better understand supply chain challenges early in FY21 (July 2020) to shed a light on gaps and collaborative solutions to the COVID pandemic disruptions. Over 100 value-added businesses from across Minnesota participated in a study that helped guide efforts by the collaborating organizations to create awareness around pain points and explore solutions to new challenges.

Another example worth sharing is AURI's efforts to support the Ag Innovation Campus in Crookston, Minnesota. While still in its nascent state, the campus will eventually serve as an incubator for agricultural innovations, with a goal to foster new and novel products, create jobs and increase the value of agriculture in the state and region. The campus has been a long-time dream for Minnesota soy growers. It will include a crush plant to support soybean and other oilseed crop production as well as enable innovation for oilseed uses.

In closing, I hope you can see that FY21 was a successful year for AURI, which allowed the organization to utilize its flexibility and nimble approach to make significant advances during the pandemic. I am proud of the efforts made by AURI's staff and leadership. It truly was a cooperative environment where everyone's strengths were allowed to shine while creating a positive impact for the agricultural industry and Minnesota's economy.



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

Shannon M. Schlecht, Executive Director



▶ **Board of Directors**
July 2020 - June 2021

RON OBERMOLLER — CHAIR
Minnesota Soybean Research
& Promotion Council

KENNETH ASP
Minnesota Wheat Research
& Promotion Council

SEN. RICH DRAHEIM
Minnesota Senate

JEFF GREV
Director-At-Large

JERRY HASNEDL
Minnesota Farmers Union

CAROLYN OLSON
Minnesota Farm Bureau

REP. JEANNE POPPE
Minnesota House of Representatives

JOHN SCHAFFER
Minnesota Beef Council

FEDERICO A. TRIPODI
Director-At-Large

JON VELDHOUSE
Agribusiness

ERIN HEITKAMP
Agribusiness

▶ **MESSAGE FROM AURI'S BOARD CHAIR**

As the Board Chair of the Agricultural Utilization Research Institute, it is my pleasure to share the FY21 Annual Report. On behalf of the Board of Directors and the entire organization, I'd like to thank all of our strategic partners, clients and funding organizations for supporting AURI in its endeavors to be a driving force behind innovation throughout Minnesota and the Upper Midwest region. I also want to extend my sincere thanks to the Minnesota Legislature for its ongoing partnership with AURI.

I'm pleased to report that FY21 was a successful year for the board, as we welcomed new board directors from the legislature and agribusiness who are all immersed in the value-added agriculture sector. In addition, each and every returning board member actively participated in AURI's accomplishments by bringing together a diverse set of voices and expertise. I believe the board's level of engagement with staff, projects and initiatives is superlative and stands as a shining example of what can be accomplished by working together.

The information included in this year's report is proof positive that when people from different backgrounds work together, the results can be truly amazing. That said, FY21 did present both challenges and opportunities, and AURI's agility to adapt to virtual and hybrid events allowed it to reach new audiences and expand its outreach capabilities.

I hope that you will take a few moments to read on and learn about many of the highlights AURI experienced in FY21. The information comes directly from our staff and clients' experiences, which I find inspirational.

After reading this year's report, I'm sure you will feel as invigorated as I do about the importance of innovation in Minnesota's agricultural and food industry and come away with some new insight into the critical role AURI serves for the state. More so, I hope you find the information contained within this document to be valuable not only to you, but to the entirety of the state's agriculture sector.



Ron Obermoller

Ron Obermoller, AURI Board Chair
.....

\$5,140,357 Fiscal Year Revenue

\$4,730,458 Fiscal Year Expenses

75
Projects and Initiatives Closed

- 1 Renewable Energy
- 16 Coproducts
- 37 Food
- 9 Biobased
- 12 Multi-Area

101
New Projects and Initiatives Opened

- 3 Renewable Energy
- 18 Coproducts
- 51 Food
- 5 Biobased
- 24 Multi-Area

Project and Initiative Hours by Focus Area

- 5% Renewable Energy
- 19% Coproducts
- 22% Food
- 17% Biobased
- 37% Multi-Area

210
Total Projects and Initiatives Serviced

- 4 Renewable Energy
- 37 Coproducts
- 109 Food
- 17 Biobased
- 43 Multi-Area

31
AURI Connects Events

2,577
Total Participants at AURI Connects Events

949
New Participants at AURI Connects Events

▶ CLIENT IMPACT

July 2016 - June 2021



195

Estimated Number
of Jobs Created



384

Estimated Number
of Jobs Retained



785

Estimated Number of
Future Jobs Created
and Retained



\$118 M

Estimated New
Capital Invested



\$311 M

Potential Future
Capital Investments



\$321 M

Estimated New
Gross Annual Sales



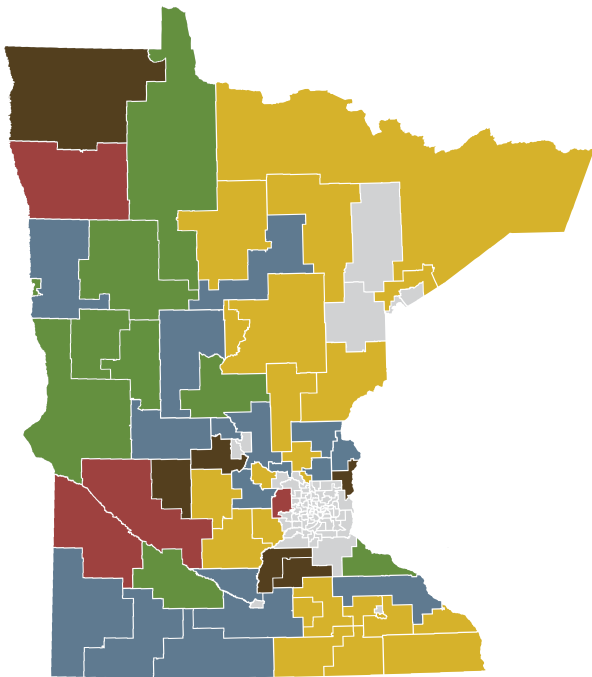


▶ AURI CLIENT PROJECTS WORKED ON | JULY 2011 - JUNE 2021

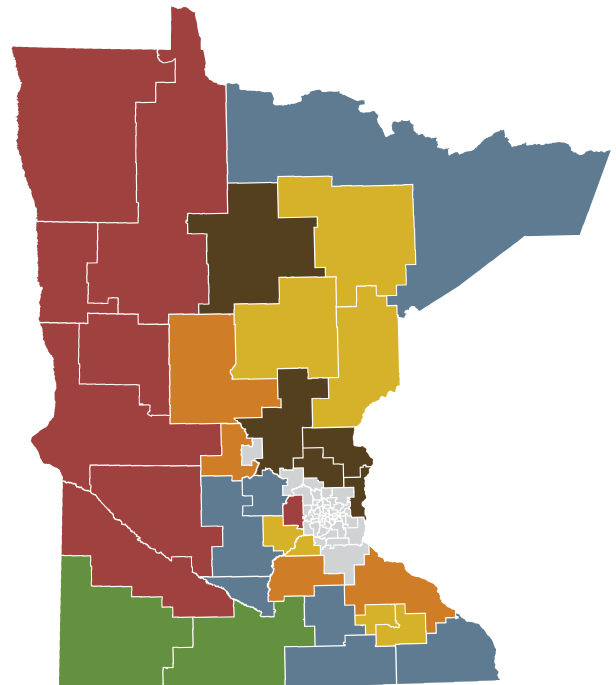
AURI is proud to partner with producers, businesses and entrepreneurs throughout Minnesota. As the map below shows, AURI worked on client projects in most of Minnesota's 87 counties between July 1, 2011 and June 30, 2021. The impact of these collaborations was significant to communities throughout the state. AURI also conducted several state-wide initiatives throughout the year.

- 1 to 5 Projects
- 6 to 10 Projects
- 11 to 15 Projects
- 16 to 20 Projects
- 21 to 25 Projects
- 26+ Projects

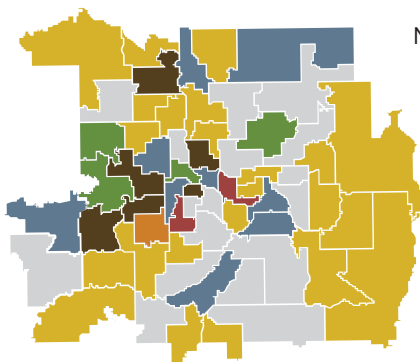
Minnesota House Districts



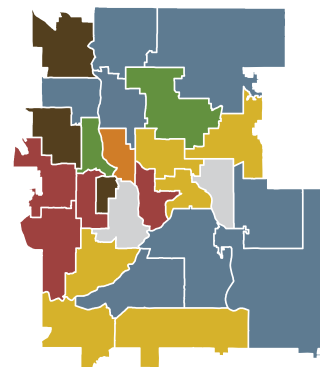
Minnesota Senate Districts



Metro

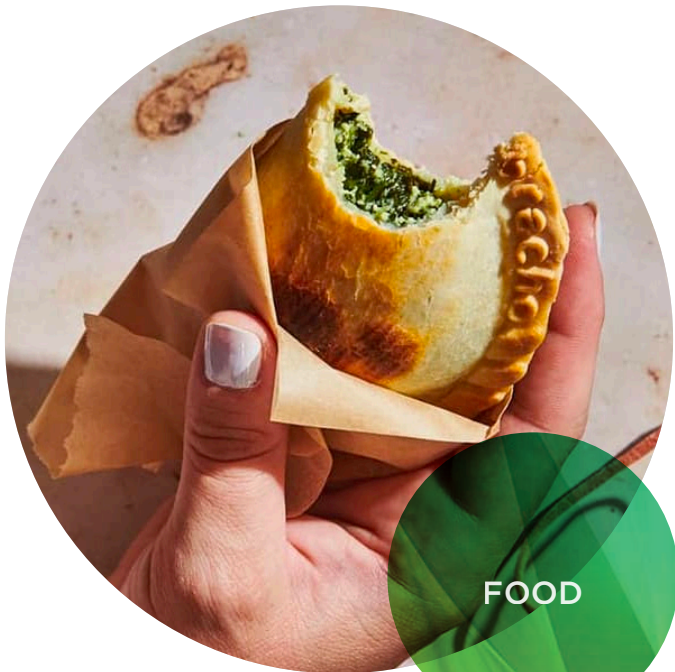


Metro



FOCUS AREAS

Our work in ag-based commodities focuses on four core areas: food, renewable energy, biobased products, coproducts, as well as multi-disciplinary. The following pages provide an overview of the focus area resources and efforts AURI dedicates to advancing value-added opportunities in each area.



FOOD



RENEWABLE ENERGY



COPRODUCTS



BIOBASED



FOOD

Minnesota has a proud history of food and beverage production and is home to many established and emerging companies. The industry employs tens of thousands of people and generates billions of dollars for the state's economy. ▶

AURI's food team plays a vital role in helping entrepreneurs take their business ideas to reality to further the value-added development of Minnesota's agricultural products through technical expertise and a variety of other services. In FY21, the food team worked on 109 projects throughout the state. Of those, 51 were new endeavors.

For example, the team partnered with Belén Rodríguez, the owner of Quebracho Empanadas in St. Paul, Minnesota. Rodríguez started a catering business based on her grandmother's empanadas recipes. In FY21, she contacted AURI for support in expanding the business to include wholesale manufacturing and distribution across the United States.

The food team advised Rodríguez on many of the technical questions and considerations associated with launching a packaged foods business, including finalizing her nutritional information and licensing requirements from the U.S. Department of Agriculture. From a business development side, the team assisted Rodríguez with refining her package design and consumer value proposition in preparation for expansion to a national distribution model. Rodríguez uses a variety of ingredients in her products, including wheat, chicken, beef, eggs, canola oil and dairy.

Artisan Naan Bakery is a small batch specialty bakery in St. Cloud, Minnesota. The bakery's signature item is fresh naan, an oven baked flatbread found in the cuisines of South Asia and the Indian subcontinent. The owner of the bakery, Gwen Williams, worked with AURI to develop a food label for a new naan product made with wheat and Kernza® flour. It is now available in grocery stores across the state. Identifying market opportunities like this for Kernza will encourage more farmers to consider planting it which can diversify their crop production and bring environmental benefits due to it being a perennial crop.

AURI's food team worked with the company as part of a Legislative-Citizen Commission on Minnesota Resources project to expand the use of Kernza grain across the state. Kernza grain is harvested from a perennial wheatgrass. It has a deep root system that protects soil from erosion, improves soil structure, sequesters carbon and protects groundwater from excess nitrates. Kernza has recently been domesticated for human use, and can be used in many applications.

Baking it Real was started by Sarah Lofgren and Stacie Dudy because they wanted to give families an easy way to enjoy the nostalgia of holiday baking. In order to simplify the process for families, they developed a baking kit containing the pre-measured ingredients needed to make four types of holiday cookies. The AURI Food Team advised the co-owners on regulatory issues, helped create nutrition labels and provided guidance on ingredient sourcing.

51

New Projects and Initiatives Opened

37

Projects and Initiatives Closed

109

Total Projects and Initiatives Serviced



“

It was a fantastic experience to work with AURI. The staff was helpful to work with and very welcoming. It was very important to me that as our company grew, we could stay true to our values. AURI understood that and made sure we made decisions together that were aligned with the roots of my business and my family.

I have referred other business owners to AURI, and some will ask me, “What does AURI do?” I tell them, “What don’t they do?”

The organization is such a valuable resource for small business owners.

▶ Belén Rodríguez, Founder/CEO
Quebracho Empanadas



RENEWABLE ENERGY

Production of renewable energy from agricultural products is an important segment of the state's agricultural sector. AURI's Renewable Energy Team is proud to continue work on projects that bring value to Minnesota's commodities.



Clients seek AURI's assistance to develop and improve innovative uses of agricultural products in fuels for transportation, heat and electricity. In FY21, the Renewable Energy Team worked on a variety of projects and initiatives. In total, the team worked on four projects and initiatives, and of those three were new.

AURI's Renewable Energy Team helped organize and guide a green hydrogen working group of stakeholders that holds regular meetings and information sessions to explore how the Upper Midwest can capitalize on the opportunities to produce cleaner energy and benefit the region's ag economy.

As part of this working group, AURI is creating a strategic roadmap that outlines how to turn the technology into a cohesive, interconnected market. Presenting a convincing story to legislative leaders and the public on the capabilities of hydrogen technology and its opportunities for the agricultural industry will be an important task of the working group going forward. AURI will be very involved in those efforts.

Energy produced through green ammonia and green hydrogen has significant potential to reduce greenhouse gas emissions in agriculture and farming operations. This market also has untapped economic potential for the Upper Midwest's agricultural industry.

AURI also continued its decades-long work advancing the technology and ecosystem opportunities for anaerobic digestion in FY21. AURI is part of a collaboration with Xcel Energy and the University of Florida that is studying new applications for energy produced through anaerobic digestion across the state of Minnesota. AURI also partnered with several entities during the past year to accelerate opportunities for renewable natural gas, including CenterPoint Energy.

To further these efforts, AURI obtained new equipment for its Waseca lab in FY21 that can measure the environmental and economic impact of producing gas through agricultural waste. This technology helps researchers estimate the cost associated with producing energy and selling it back to the grid on a local and community level. This data gives businesses and utilities important financial information to make informed investment decisions.

The continued development of this technology as an energy source is crucial for the rural areas AURI serves. The process creates renewable energy, reduces emissions and reduces the need for synthetic fertilizers, reducing costs for farmers. Many legislative and economic factors aligned in a positive way in FY21 that will encourage rapid development and investment in anaerobic digestion. AURI's Renewable Energy Team will continue to advocate for more advancement in this space to the benefit of Minnesota's ag economy.

3

New Projects and
Initiatives Opened

1

Project and
Initiative Closed

4

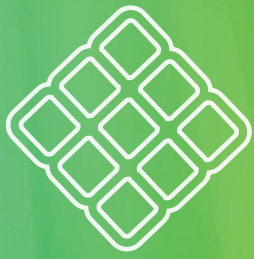
Total Projects and
Initiatives Serviced



“



We worked with AURI and many others on the creation and passage of the Natural Gas Innovation Act this past session. This law will help CenterPoint and other utilities transition to lower carbon emissions with the help of anaerobic digestion and other sources. The work of decarbonizing the natural gas system will be a multi-sector solution. It is so important to find the right partners with different knowledge bases to be a part of the work. AURI was instrumental in helping us think about how we can move our business forward to achieve our ambitious climate and emissions goals.

▶ Erica Larson, Counsel
Minnesota Gas at CenterPoint Energy



COPRODUCTS

Nearly every facet of agriculture generates coproducts. Developing new uses for these by-products can create significant new revenue streams for businesses, adding to the state's economy, contributing to a cleaner planet and resulting in a more resilient industry. This work is central to AURI's mission.

In FY21, AURI's Coproducts Team worked with producers, entrepreneurs, businesses, agricultural leaders and industries across Minnesota to identify new uses for coproducts. It also made significant investments in equipment and technology to catalyze innovation and spur economic growth. The Coproducts Team worked on 37 projects and initiatives in FY21, of which 18 were new endeavors.

AURI's Coproducts Pilot Lab in Waseca recently expanded its capabilities with the addition of a certified food grade area which houses AURI's oilseed pressing and filtration equipment along with grain cleaning equipment, including a small scale impact huller and indent separator. The primary purpose of this lab is to fill an industry gap for small-scale food grade oilseed pressing and filtration to achieve oil and meal which can be directly utilized by food clients for developmental purposes. AURI is involved in many projects exploring new crop opportunities for producers that will benefit from this new resource, including farmers and businesses interested in camelina, pennycress, industrial hemp and high oleic soybeans as examples. The addition of this small-scale food grade oil processing will support market development activities for agricultural producers interested in diversifying their crop production. The small-scale grain cleaning and dehulling equipment is available to support process development for grains recently coming to market, such as Kernza (a perennial wheat grass) and industrial hemp.

The expansion of the Pilot Lab was prompted, in part, by demand from clients and industry stakeholders. Using this equipment, research can occur on different kinds of cooking oils to gather data on performance, smoke temperature, sensory evaluation and other key factors for new product development. Further, researchers can evaluate the resulting meal for protein and energy content which is useful for identifying new applications for food use or livestock feed that will ultimately drive innovation and value-added economic growth. The Waseca Pilot Lab also has a filter press to remove impurities from the oil, resulting in a food grade product.

The Coproducts Team also continued its long working relationship with High Island Organics in FY21. The company is located in Winthrop, Minnesota, and manufactures organic fertilizer among other products. High Island Organics actively explores circular approaches to repurpose any product from its operations. It develops products using ingredients that are sustainably sourced and natural. AURI first started work with the company in 2017 assisting with research and development focused on fertilizer pelleting. In FY21, owners Michael and Adam Asmus contacted AURI for assistance to expand their product lines due to significant growth in customer demand for organic fertilizer. The Coproducts Team provided High Island Organics with product formulation and testing assistance on different nutrient sources to achieve the desired levels of nitrogen, phosphorus and potassium in its new fertilizer blends. With this assistance, the company was able to develop new product lines to meet increased retail market demand.

18

New Projects and Initiatives Opened

16

Projects and Initiatives Closed

37

Total Projects and Initiatives Serviced



“

AURI was amazing to work with. They were extremely responsive and brought some great ideas to our project. I know for a fact that our business would not be anywhere near where it is today without AURI. To have that ability to test products for us, and to offset the R&D work that we don't have the budget or the expertise for, was invaluable.

▶ Adam Asmus, Co-founder
Agricultural Innovations, LLC



BIOBASED PRODUCTS

AURI's Biobased Team works with clients to find ways to use agricultural products to replace traditionally petroleum-based ingredients in materials such as plastics, films, building materials, lubricants, sealants and more. AURI's scientists and staff provide technical assistance in the laboratory, product development and onsite guidance throughout the state for a variety of clients. AURI staff routinely support the creation of intellectual property, including trade secrets and other proprietary information to support Minnesota businesses.

In FY21, the Biobased Team worked on 17 projects and initiatives, five of which were new.

Plymouth, Minnesota-based NewStarch Solutions is a manufacturer and distributor of sustainable packaging products made from locally sourced starches from crops. Its products are an environmentally friendly and cost-effective alternative to those made from synthetic expanded polystyrene. The company is growing rapidly, and recently launched a new product line for the medical and hospitality industry. AURI's team provided input on a technical specification sheet, as well as the product durability and biodegradability. To further marketing goals, AURI assisted in obtaining environmental certification for the new product from the federal government.

In another important project, the Biobased Team completed its work with the Lower Sioux Indian Community (LSIC) on a feasibility study for hempcrete in FY21. The LSIC in Redwood County, Minnesota has been exploring the creation of a hemp growing and processing operation to make a fiber glass insulation substitute, called Hempcrete, for use in home construction on the reservation. Hempcrete is an innovative lime-based insulation product that is breathable, environmentally friendly and has a high thermal mass, which can reduce heating and cooling costs.

AURI provided technical guidance and business counsel on this project. Through a successful grant application, the LSIC was able to purchase equipment to process hemp and advance its idea. The home building project will bring new jobs and a more environmentally friendly building product for use in homes on the reservation.

5

New Projects and
Initiatives Opened

9

Projects and
Initiatives Closed

17

Total Projects and
Initiatives Serviced



“

We at New Starch Solutions are extremely grateful for the services AURI has been able to provide us over the last couple of years. Their team has helped us greatly as we expand our business and product line. Their Engineer has been instrumental in evaluating iterations of our new starch sheet product to help us make formulation decisions as we look to bring it to market. AURI has also introduced us to various grant opportunities which have significantly aided in financing the growth of our business. AURI continues to be a fantastic resource for New Starch Solutions, most recently by helping us achieve BPI certification on our products as well as continuing to assist us in bringing new products to market. We are fortunate to have an organization like AURI in our state, the value they provide to businesses like ours cannot be understated.

▶ Dean Bartels, Vice President
New Starch Solutions



AURI CONNECTS

In spite of COVID-19, AURI Connects continued to successfully convene events throughout FY21 that actively engaged the value chain on topics related to value-added agricultural opportunities and challenges. In doing so, the Connects program achieved its vision of supporting the state's agriculture and food sectors through the ongoing, purposeful building of networks while educating individuals on current opportunities, technologies and trends.

AURI Connects created a variety of options for virtual engagement throughout FY21. From single-topic webinars to large online events that included participants from around the globe, the Connects program devoted itself to increasing knowledge of various food and ag industries throughout Minnesota. The end result of these opportunities was the creation of new innovations in food, coproducts, biobased products and renewable energy, as well as the development of business relationships to accelerate economic impact for the state.

Throughout the fiscal year, AURI Connects hosted 31 separate events, which was an average of 2.5 events per month. In that same period, 2,577 people attended these events, of whom 949 were new to AURI events. These positive results showed that despite the pandemic, AURI's audiences maintained a high level of engagement and a desire to learn about new opportunities in Minnesota's food and agricultural sector.

Primarily, the AURI Connects Team devoted its time and efforts to two distinct web-based event series — Webinar Wednesday and Fields of Innovation.

Webinar Wednesday is a monthly webinar series hosted by the Agricultural Utilization Research Institute. Each webinar explores different aspects of the food and ag sectors in Minnesota—from resources for food entrepreneurs to innovations in coproducts and biobased energy.

Fields of Innovation is an event series focused on bringing together Minnesota's ag and food value chains to build capacity and successful commercialization of new and emerging crops. Events highlight promising new crops, examine market opportunities and create awareness of new technologies that can expand markets for existing crops.

A third, and equally important component of AURI Connects' efforts in FY21 was hosting a Minnesota Renewable Energy Roundtable. This event brings together a diverse network of industry participants ranging from business and industry leaders to academic, nonprofit and government representatives. The roundtable's goal is to offer insight into the challenges and priorities for advancing Minnesota's renewable energy industry. In FY21, the event focused on the important topic of resiliency and innovation in biofuels and its presenters included Minnesota Department of Agriculture Commissioner Thom Petersen, Senator Tina Smith and experts from many facets of the biofuels industry.

31

AURI Connects
Events

2,577

Total Participants at
AURI Connects Events

949

New Participants at AURI
Connects Events





FISCAL YEAR 2021 FINANCIAL STATEMENT

Unaudited

► Revenue

State Appropriations	\$3,893,000
Paycheck Protection Program (PPP)	\$483,700
Collaboration & Partnership Grants	\$314,722
Federal Grants	\$205,637
Fee-For-Service	\$146,730
Interest - Investments	\$25,886
Project Fees	\$15,744
Private Grants	\$13,500
Registrations	\$12,663
Donations	\$11,540
Sponsorships	\$7,962
Miscellaneous	\$5,254
Royalties	\$4,019
Total	\$5,140,357

► Expenses

Programs & Services	\$2,500,690
Program Support	\$880,437
Operations	\$740,379
Institutional Advancement	\$608,952
Total	\$4,730,458

► **Net Income (Loss)** **\$409,899**



STATEMENT ON FINANCIAL ACTIVITIES

AURI ended the fiscal year with a net gain of \$409,899 (unaudited), largely due to the use of a Paycheck Protection Program Loan that qualified for forgiveness. The majority of those funds were expended in the previous fiscal year. With the recognition of the Paycheck Protection Program funds, AURI's revenue exceeded its forecast for the year, while expenses were under projected forecasts, ending the year with a net gain. Overall, AURI generated an estimated \$5,140,357 in revenue and expended \$4,730,458.

AURI's short-term financial outlook is positive. The organization over the past year has a pipeline of grants awarded which will generate revenue through the subsequent fiscal years. AURI continues to have a robust project portfolio and has had several noteworthy accomplishments in FY21, including Federal Grant award commitments from the USDA Rural Cooperative Development program of \$200,000, several other grant commitments, subawards and contracting related to Legislative-Citizen Commission on Minnesota Resources (LCCMR) projects, and continued support from the Minnesota Soybean Research & Promotion Council, Minnesota Department of Agriculture and Minnesota Association of Wheat Growers. Long-term, AURI continues to leverage the funding it receives from the State of Minnesota to maximize its impact for Minnesota agriculture. AURI looks forward to FY22 and continuing its exceptional service to benefit Minnesota's agricultural industry.

▶ LOOKING FORWARD



Looking forward, AURI has a bright horizon. One in which we explore opportunities and challenges for Minnesota's vast value-added agricultural sector. More specifically, in the coming months and years, the organization aims to expand its resources, while endeavoring to shed light on topics related to aquaculture, food and beverage co-manufacturing, e-commerce for food businesses, renewable energy and meat processing. Each of these topics has the potential to spur new innovation and make a lasting and meaningful economic impact on the state. What's more, they each have the ability to strengthen rural communities throughout Minnesota by creating new businesses, new jobs and enhancing the quality of life.

Expanding AURI Resources

In order to keep abreast of advances that will benefit Minnesota agriculture, AURI is committed to ensuring its resource capabilities serve clients in developing industries. A great example is the addition of a new Business Development Director of Novel Supply Chains, who will focus on the intersectionality of food sovereignty, regenerative agriculture, and climate resilient solutions when working with clients to add value to their agricultural products. This position will be a resource and people connector with a focus on developing markets for emerging crops, ecosystem service payments, value-added novel supply chains, and supporting BIPOC, immigrant, historically under-represented, and emerging farmers to access market opportunities in Minnesota's agricultural economy.

This new resource will support clients who are developing new uses for emerging crops and help clients navigate the ecosystem, which will have great potential for expansion and innovation, and thus AURI expects this new position to be useful for companies throughout the state.

Aquaculture

Globally, aquaculture is one of the fastest-growing food industries. The key drivers are technological developments, increased demand and growing understanding of the health benefits of fish consumption. As populations grow, there's an even greater need for sustainable sources of protein that can keep pace with demand. Through the cooperation and collaboration of stakeholders in government, business, agriculture and higher education, Minnesota is poised to benefit, and AURI is advancing the opportunity. AURI will release a comprehensive document reporting the opportunities and challenges faced by the state's burgeoning aquaculture industry in FY22. The report will also include the results of a market study to better understand Minnesotans' interest in buying and consuming fish in their diets. This report has the potential to answer a lot of questions about the industry and demystify the potential for investing in future infrastructure.

Food and Beverage Co-Manufacturing

The Minnesota Department of Agriculture and the Agricultural Utilization Research Institute commissioned a report in response to a perceived lack of capacity or access to affordable, right-sized manufacturing options in Minnesota for growing, ready-to-scale small food and beverage businesses. Failure to address this infrastructure places Minnesota at risk of losing the economic benefit MN food businesses provide today (jobs, revenue, capital and agricultural product utilization) and also minimizes the economic potential of attracting new food and beverage businesses to the state.

The study will assess the current state of Minnesota food and beverage manufacturing capacity/capability, define the economic opportunity associated with sector investment and identify gaps, opportunities and strategies in supporting "ready-to-scale" food and beverage businesses. AURI expects key findings to include whether or not Minnesota can unlock significant economic growth through investment in food and beverage manufacturing, and to provide hard data on the perceived lack of capacity of affordable right-sized manufacturing for "ready-to-scale" food and beverage businesses.

Food E-Commerce Guide

The importance of digital marketing and e-commerce has grown steadily over the past decade, but greatly accelerated due to the COVID pandemic. Whether in response to lockdowns, closures of favorite businesses, fear of in-person shopping or a host of other factors, consumers' shift to the digital world for information and purchases exploded.

With Minnesota being a food epicenter, this is especially true, and an online presence is imperative for even the newest brands. Few consumers will see a brand as credible if they can't pick up their mobile device and quickly gain at least a little bit of knowledge about it.

To that end, AURI is working in partnership with a marketing company to develop a guide for food businesses of all sizes, which educates them on a variety of elements related to online brand building and commerce frameworks. Topics will include considerations necessary for websites, marketing and e-commerce. Within each area, the guide will explore first steps, managing efforts and provide a step-by-step guide to develop and implement a plan. AURI expects this new resource to be of significant value to the state's food businesses and Minnesota's economy as a whole.

Meat Processing

Recent events have highlighted the meat processing industry, including opportunities for small-to-medium-sized meat processing for farmers and ranchers in Minnesota. In response, the Minnesota Legislature appropriated \$500,000 last year for matching-fund grants so organizations can acquire, host and operate a mobile slaughter unit. The legislature then designated the Agricultural Utilization Research Institute (AURI) to create and administer a grant program to enable interested Minnesota entities to access these grant dollars. This program aims to benefit the Minnesota livestock industry by supporting education, research, training and value-added product development.

In FY22, AURI will select the best grant proposal and begin work to implement a new mobile meat processing program with the recipient. The grant program will provide new capacity for small-scale slaughter, help in training the workforce and provide another alternative for farmers to process their livestock for the marketplace.

These are just a handful of the many opportunities which AURI plans to pursue to advance innovation and economic opportunities for the agricultural industry and state economy. While they all address different areas of the state's value-added agricultural ecosystem, they all share the admirable goals of building upon and strengthening Minnesota's leading agriculture and food position.



STATE FISCAL YEAR 2021 ACTIVE PROJECTS AND PROGRESS REPORT

PROJECT NAME

% COMPLETE

MULTI	
Compounding Hemp Fiber	13%
Hempcrete Assistance	1%
Hemp Fiber Manufacturing	35%
Analytical Feed Development	60%
Corn Starch Product Development	14%
Forever Green FFAR Grant Project	1%
Soy Nutrition Institute 2021	9%
Bold Growth 2021	45%
2021 Bold Open	41%
Pennycress IPREFER	15%
Technical Advisory Program FY21	80%
AURI AIC Kick Starter Program	61%
New Uses Forum FY21	100%
Winter Camelina (SARE)	100%
Forever Green Initiative	100%
MBold & Open Innovation	100%
Soy Nutrition Institute 2020	100%
Upcycled Food Association	100%
Webinar Wednesday Program	100%
Ag Economic Contribution Study	100%
Pandemic Industry Survey	100%
Fields of Innovation	100%
MDA FY2021 Tech Assistance	100%
Gasification Technology Development	43%
Gummy Product Analysis	64%
Tech Support PPIC 2021	14%
Hemp Food Processing	62%
Hazelnut Processing Assistance	47%
Industrial Hemp Manufacturing	25%
Cold Press Oils	88%
Aquaculture Industry Assessment	69%
Stearns County SWCD Kernza	80%
Food Waste Mapping (AIP)	100%
Tech Support PPIC 2020	100%
Hemp Heart Roasting FY21	100%
Food Processing Waste ITL FY21	100%
Cultivated Wild Rice Quality/Processing	100%
Coproduct Assistance	41%
Conversion of Alfalfa Sugars	37%
MW Biomass Exchange	98%
AURI Anaerobic Digester	63%
Portable Anaerobic Digestion	61%
Anaerobic Digestion ITLs FY21	100%
BIOBASED PRODUCTS	
Biomulch II	46%
Fermentation Development	83%
Hemp Fiber Manufacturing	32%
BioMulch Application	86%
Feasibility Study Technical Assistance	68%
Hempcrete Feasibility Study	100%

Soy Road Treatment Phase II	100%
Corn Based Packaging	100%
Colloidal Barrier Application	100%
Center BioPlastics Biomaterial	100%
CBD-THC Level Field Testing	100%
Soy Asphalt Testing	100%
Technical Advisory Program FY20	100%
Soy-Based Road Treatment	100%
FAME Alternative Uses	100%
MDA FY2020 Tech Assistance	100%
Field Pea Characterization	100%
COPRODUCTS	
Densification of Corn Cob	92%
Grit Weeding Assessment	23%
Protein Fiber Separation	100%
Fish Fertilizer Development	22%
Shrimp Hatchery Algae Project	32%
Organic Soil Amendments	30%
Fertilizer Formulation	40%
Hemp Dog Chew Development	30%
Organic Manure Assessment	66%
Blended Feed from By-Products	7%
Horse Supplement Development	58%
Feed Additive Assessment	12%
Whey Utilization Assessment	0%
Rye Grass Barn Trial	99%
Effect of Heat on Probiotics	43%
U of M Alfalfa Use	75%
Central Lakes College-Camelina	47%
U of M Forever Green-High Oleic Pennycress	33%
Hemp Densification	100%
Soil Ammendment Development	100%
Lab Column Field Denitrifying Bioreactor Replication	100%
Equine Feed Assistance	100%
Material Value Recovery-Egg	100%
Coproduct Based Litter	100%
Feed Development Grant Support	100%
Pea Processing Coproducts	100%
Spent CBD Biomass Pellet	100%
Hemp Fiber Processing Assessment	100%
Kernza Applications	100%
Litter Blend Evaluation	100%
Wax Emulsion Evaluation	100%
Pea Processing Coproducts	100%
Clumping Litter Development	100%
Sugarbeet/Lime Production Development	100%
Groated Oats Processing	100%
Coproduct Heating Assessment	100%
Beet Sugar Pulp Utilization	100%
FOOD	
Bread Development	63%
Savory Pie Labels	78%
Cold Press Ginger-Based Juice	13%
Milk Jam Formulation	83%
Vegan Pizza Labels	100%
Soup Nutritional Development	69%

Syrup Tech Assistance	62%
Wild Rice Processing	34%
Kernza Coop Development	38%
Beer/Food Project	23%
Turkey Processing Assistance	53%
Snack Development Assistance	100%
Pepitas Development	14%
Bakery Nutrition Labels	39%
Chickpea Products Tech Help	15%
Coffee Cocktails Nutrition	43%
Cocktail Mixer Labels	52%
Jam Nutritional Labels	29%
Dairy Milk Processing	12%
Areoponic Food Process Improvement	36%
Granola Bar Labels	64%
Ethiopian Stew Nutrition	56%
Carbonated Apple Beverage	20%
Cutting/Wrapping Center	15%
Seasoning Rub Nutrition	0%
Corn Tortilla Nutrition Labels	57%
Corn Pap Nutrition Labels	28%
Meat Copacking Labels	26%
Direct to Consumer Feasibility	26%
Breakfast Bites/Flour Labels	9%
Whey Fermentation Assistance	13%
Cricket Flour Scale Up	2%
Pie Product Development	37%
Elderberry Product Development	6%
Baking Kit Nutrition	24%
Meat Snack Stick Research & Development	0%
Goat Ice Cream Tech Assistance	0%
Non Alcoholic Mixers	0%
Heritage Grains Sourdough	23%
Sourdough Fermentation	19%
Kombucha Product Development	59%
Chocolate Labels	34%
Meat Granola Bar	100%
Agri Wheat/Sourdough Analysis	100%
Shrimp Analytical Work	48%
Co-Manufacturing Assessment	100%
Asparagus Formation	30%
Kombucha Shelf Life	63%
Cultivated Wild Rice PDCAAS-AIP	35%
African Hot Sauce	58%
Teff Recipe Formulation	67%
Ethiopian Savory Pies	33%
Fermented Goat Whey Beverage	19%
Eritrean Beer Formulation #2	100%
BBQ Sauce Labels	35%
Scaling Hot Sauces	35%
Pho Sauce	80%
Non Alcoholic Beer Reformulation	100%
Pizza Nutritional Labels	30%
Baked Dessert Nutritional Labels	46%

Tea Product Development	55%
Snack Product Development	46%
Food E-commerce and Digital Marketing	69%
Fish Jerky Development	71%
Pickle Formula Assistance	1%
Shrimp Production Gallery	3%
Hemp Feasibility	11%
MSRPC-Tofu Okara Baking Demo	100%
Veggie Vegan Pizza	100%
Meat Locker Development	100%
Meat Product Innovation ITL	100%
Local Ingredient Sourcing-AIP	100%
Lactose Free Ice Cream	100%
Nut Butter Labels	100%
Ready To Eat Eggs	100%
Food Shelf Life Guide - AIP	100%
Fishery Safety	100%
Lactation Snack Bar	100%
Leaf Protein Concentrate	100%
Goat Milk Caramel	100%
Gluten Free Granola Nutrition Label	100%
Roasted Hemp Seed	100%
Snack Project Assistance	100%
Jam Process Authority	100%
Ready to Drink Cocktails Nutrition	100%
Live Wide Open Summit	100%
Chickpea Dry Mixes	100%
Tamarind and Date Sauce	100%
Cricket Protein Bar Scale-up	100%
Shrub Beverage Nutrition	100%
Pasta Pie Nutrition Labels	100%
Food ITL for FY21	100%
Ice Cream Product Development	100%
Oat Product Development	100%
Frozen Empanada Assistance	100%
Sustainable Fresh Beef Packaging	100%
Butter Processing Expansion	100%
Barley Malt Processing Development	100%
Shrimp Salinity & Meat Texture	100%
Carrot Processing Feasibility	100%
Soy Food Grade Exp Project	100%
Buckwheat Protein Isolate	100%
Coop Assessment	100%
Aquaculture Processing Assistance	100%
Whole Grain Granola Bar Development	100%
Wine and Mead Scale Up	100%
Smash the Senses	100%
Hog Coop Value Chain Development	100%
On Farm Creamery Assistance	100%
RENEWABLE ENERGY	
Value Added Ethanol	6%
Renewable Ammonia Hydrogen	100%
AURI MNRER for FY21	100%
Greenhouse Biomass Heating	100%

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