

LEGISLATIVE EDITION

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AURI.org



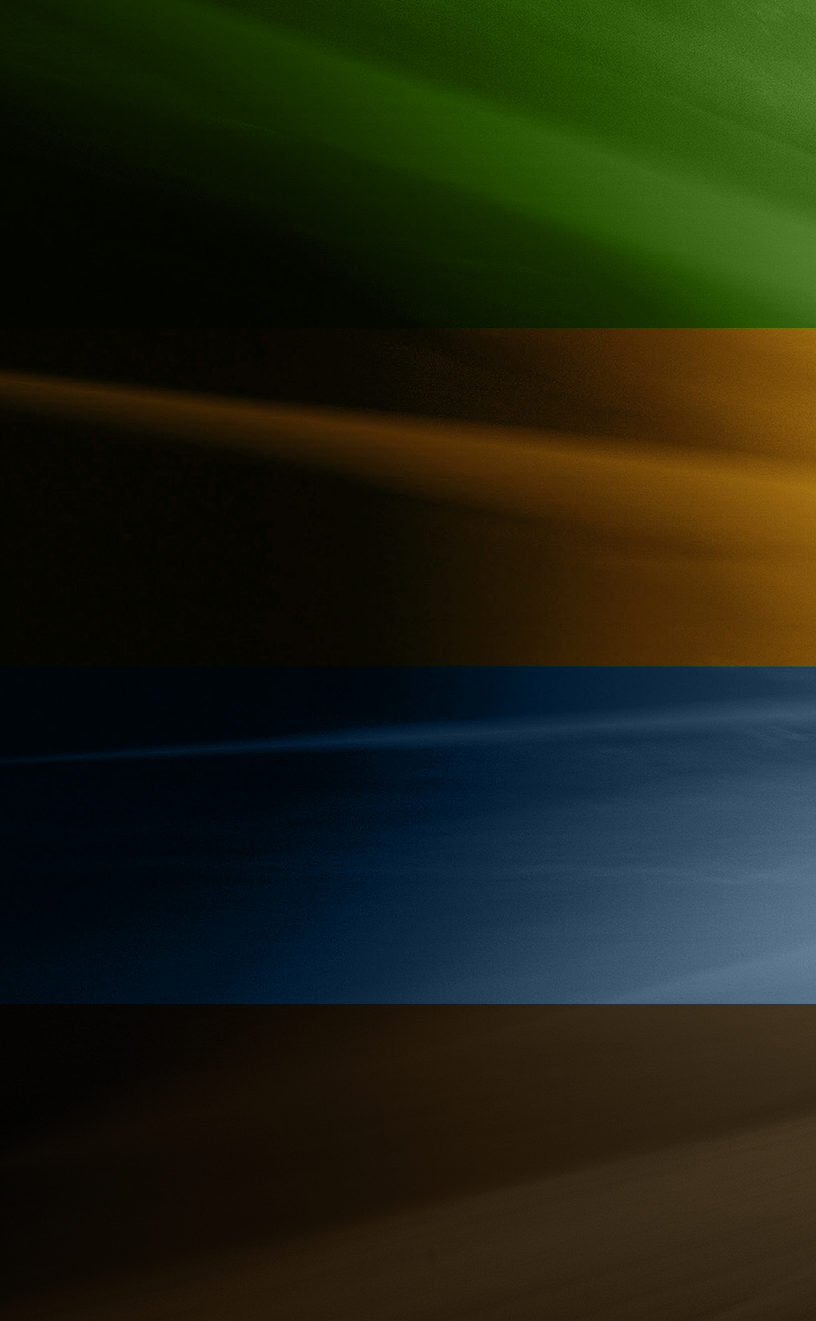


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FROM THE EXECUTIVE DIRECTOR



On behalf of the Agricultural Utilization Research Institute (AURI), its esteemed Board of Directors and dedicated staff, it is my great pleasure to share with you the operational results for Fiscal Year 2020 (FY20).

This past fiscal year provided a bounty of opportunities and challenges for AURI. Throughout the year staff worked on a number of successful projects and introduced new innovations that will positively impact a number of ag-related sectors in Minnesota and beyond. At the same time, during the latter half of FY20, AURI's normal operations were disrupted due to the COVID-19 pandemic.

While these challenges forced AURI to adjust its operations, I choose to look at the process and results as an opportunity. All staff transitioned to virtual arrangements, with laboratory staff returning to the sites as soon as possible to continue advancing our mission and service approach to the industry. Through the disruption, we saw only a limited drop in project numbers, slowdowns and ecosystem activity. This shows the resiliency of the agricultural industry and the commitment of AURI staff to continue serving its mission in whatever way possible. Challenging times typically bring about new innovation and AURI's ability to adapt and serve businesses and producers during this time is another testament to the Minnesota Legislature's foresight in creating AURI for the good of Minnesota.

For further proof of this, I look to the efforts of AURI in developing new client resources, including the new "Food Product Shelf-Life Guide for Scaling Businesses," the collaborative report on the market potential for Halal and Kosher meats in Minnesota, and the launch of an industry thought leaders group around food processing byproducts to help inform new activities.

Furthermore, AURI continued its community efforts to work with the public through educational events and providing support to historically underserved communities. As you will see in the pages that follow, AURI launched its new AURI Connects program to convene in-person and virtual events to share the latest in industry innovations and further connect value chain members. You will also see a number of projects worked on in conjunction with minority-owned businesses, helping them achieve new levels of success within the state.

In regards to project work, FY20 was another successful year for AURI. Thanks to the dedication of the staff and board of directors, as well as the support of our many partners, the organization worked on more than 180 projects during Fiscal Year 2020. Of these, more than 100 were new projects, which is a significant increase over Fiscal Year 2019. In addition, AURI's team closed out 97 projects. To me, this clearly shows that even in the face of a pandemic, AURI was able to successfully adjust to the new work environment and not only maintain productivity but increase it in several areas.

As in the past, AURI's project work made a significant impact on clients and Minnesota's overall economic health. During a five-year period ending with the close of FY20, AURI's work contributed to the creation and retention of 606 jobs across the state and \$128 million in new capital investments. The work during the past five years also resulted in \$322 million in new gross annual sales by clients. Not only are these great numbers to report for AURI's 30th year in operation, this contribution to the industry and economy illustrate the tangible returns AURI strives to deliver to its partners and supporters to benefit the food and ag industry.

In closing, FY20 was both an unusual year and a successful one at the same time. I am proud of the efforts made by everyone within the organization to advance new innovations as well as the entire industry's ability to adapt and illustrate the essential importance of food and agriculture. I hope that as you read the following pages you will gain a deeper understanding of AURI's critical work with producers, entrepreneurs, small businesses and the agriculture industry in general to create positive impacts for Minnesota's ecosystem and the upper Midwest region.

Respectfully,

A handwritten signature in black ink, appearing to read "Shannon M. Schlecht". The signature is fluid and cursive, with a long horizontal stroke at the end.

Shannon M. Schlecht, Executive Director

2020 BOARD OF DIRECTORS

Ron Obermoller — Chair
Minnesota Soybean Research
& Promotion Council

Kenneth Asp
Minnesota Wheat Research
& Promotion Council

Sen. Rich Draheim
Minnesota Senate

Jeff Grev
Hormel Foods, Director-At-Large

Jerry Hasnedl
Minnesota Farmers Union

Carolyn Olson
Minnesota Farm Bureau

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Minnesota House of Representatives

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Director-At-Large

Jon Veldhouse
Cargill, Agribusiness

Larry Johnson
Agribusiness



MESSAGE FROM AURI'S BOARD CHAIR



I am proud to be addressing you as the Board Chair of the Agricultural Utilization Research Institute (AURI).

On behalf of the entire organization, I want to thank you for supporting AURI's efforts to drive innovation throughout the state and region during FY20. I also want to extend my sincere thanks to the Minnesota Legislature for its continued partnership with AURI during its 30th anniversary year.

Throughout the year, the Board of Directors actively participated in all of AURI's focus areas, providing diverse voices, expertise and counsel from throughout the value chain to various project teams. I could not be prouder of the board's level of engagement with the organization and its future vision to benefit Minnesota's agricultural industry.

In addition, these endeavors were further strengthened by the addition of another at-large board member, Jeff Grev from Hormel Foods. Not only did this addition bring the Board of Directors to full strength, Jeff's skills, strengths and expertise enhanced AURI's capabilities in a number of livestock, food and regulatory areas.

After reading the report that follows, I hope you will join me in celebrating the importance of innovation in the agricultural industry and come away with some new insight into the critical role AURI serves for the state of Minnesota. 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 ag sector.

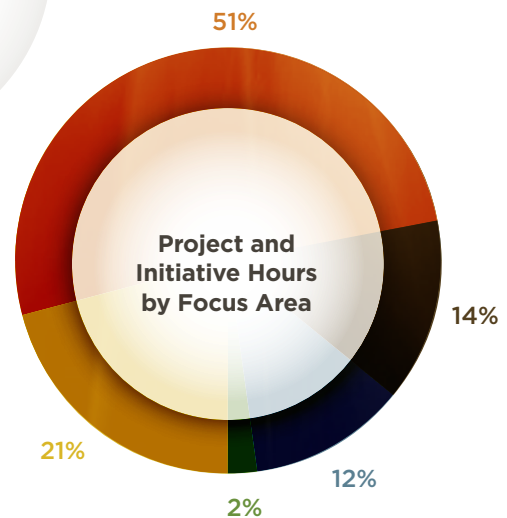
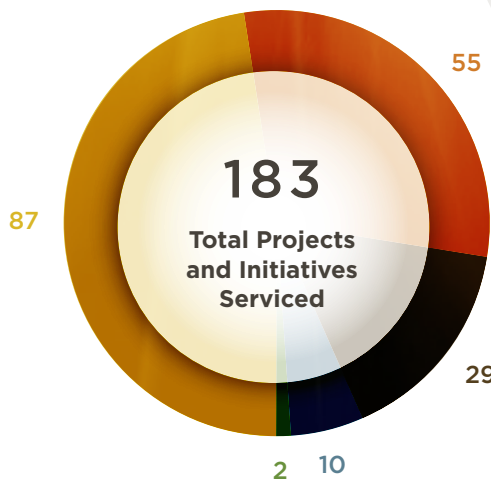
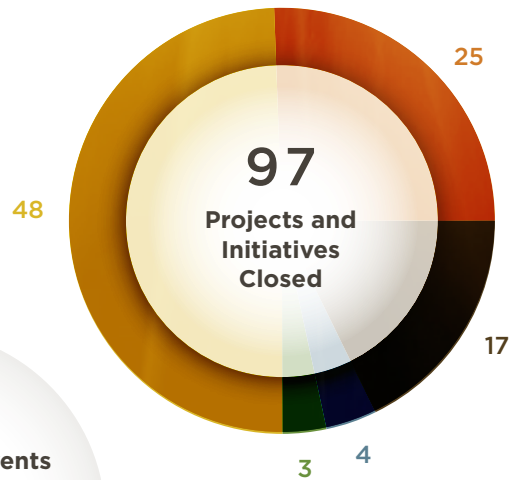
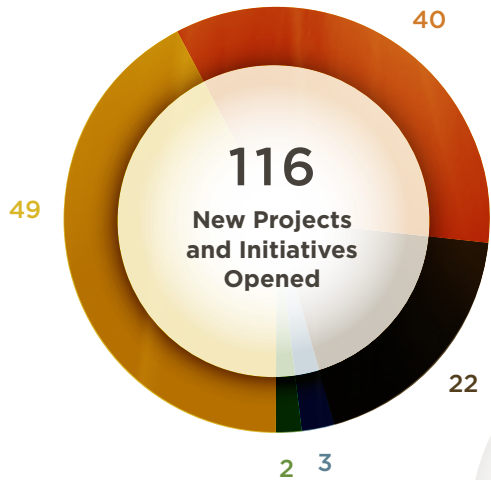
Sincerely,

Ron Obermoller, AURI Board Chair

In July of 2020, the Board of Directors lost a significant voice with the passing of Larry Johnson.

Larry was a committed board member and advocate for AURI and Minnesota's agricultural community. He began his board service with AURI in January 2017 and his contributions to Minnesota's value-added agriculture extended for decades beyond his service for AURI. The positive impact Larry had on his fellow directors, AURI staff and the industry will be long-lasting.

FISCAL YEAR 2020 AT A GLANCE



● Food ● Multi-Area ● Coproducts ● Biobased Products ● Renewable Energy

610 Total Participants at AURI Industry Events

229 New Participants at AURI Industry Events

\$5,042,758 Fiscal Year 2020 Revenue

\$4,709,501 Fiscal Year 2020 Expenses



606

**Estimated Number of Jobs
Created and Retained**

\$128 MILLION

Estimated New Capital Invested

\$322 MILLION

Estimated New Gross Annual Sales

864

**Estimated Number of Future
Jobs Created and Retained**

\$364 MILLION

**Estimated Potential Future
Capital Investment**

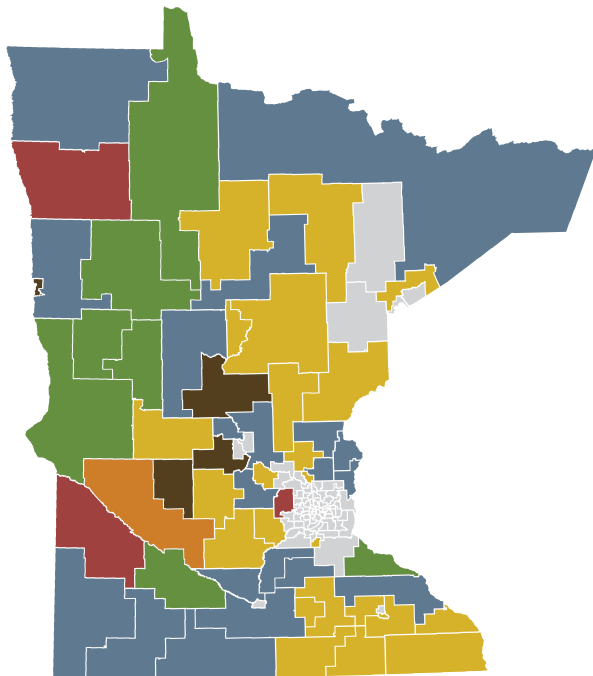
AURI Client Projects Worked On | July 2010 - June 2020

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, 2010 and June 30, 2020. The impact of these collaborations were 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

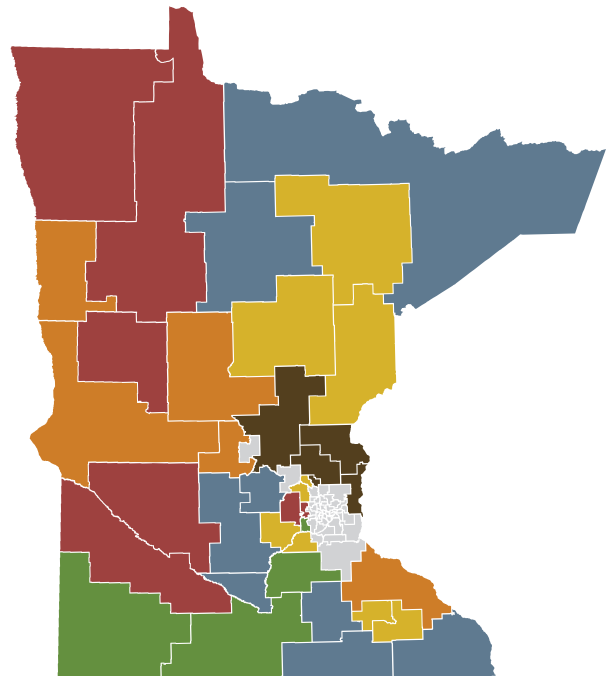
Minnesota House Districts

Statewide

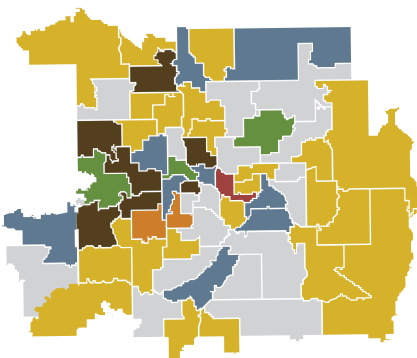


Minnesota Senate Districts

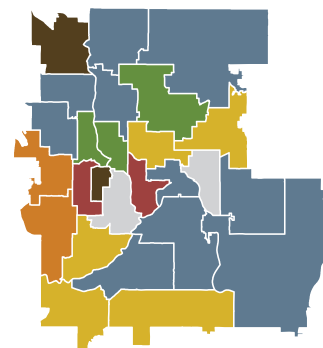
Statewide



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Metro



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FOCUS
AREAS

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FOOD

Minnesota’s food economy is central to sustaining the state’s agricultural legacy. In FY20, the AURI Food Team took a broad approach in supporting Minnesota’s food businesses and entrepreneurs. Besides supporting clients across the state, AURI expanded its ecosystem work through new projects and partnerships. This work included helping grow the food economy across the state’s diverse communities and cultural preferences. In total, AURI worked on 87 food projects and initiatives throughout the year, of which more than half were new.

Through FY20, the Food Team actively engaged in fostering Minnesota’s food ecosystem by assisting traditional projects, while also establishing new relationships with organizations focused on plant-based proteins, food waste and upcycling, and sustainable agriculture.

AURI also expanded its services by opening a new Food Product Evaluation and Sensory Laboratory in Marshall, Minnesota. Created in partnership with Southwest Minnesota State University, the Minnesota Department of Agriculture and the Minnesota Legislature, this facility offers Minnesota’s food entrepreneurs a unique resource for collecting and analyzing qualitative and quantitative data about the sensory aspects of food – like taste, smell, sight and feel. This facility provides an important step for innovative food businesses in the commercialization process by identifying potential product modifications early on to better meet consumer preferences.

In addition, AURI developed multiple new resources for Minnesota food businesses through its Ag Innovation Partnership program, including a “Food Product Shelf-Life Guide for Scaling Businesses” that helps food businesses understand the basics of a product’s shelf-life and the business implications of shelf-life decisions.

Finally, the AURI Food Team worked with several clients from the state’s historically underserved communities in the development and commercialization of their food products.

One example is the Food Team’s work with Hoyo Sambusa in Bloomington, Minnesota. Hoyo is dedicated to promoting and advancing the welfare of Somali women by creating jobs for them in the Twin Cities. Its signature product is sambusa – a savory, triangle-shaped pastry filled with spiced beef or lentils. Sambusa is an important part of Somali cultural cuisine. Each of the company’s sambusa is hand folded. AURI assisted Hoyo Sambusa to develop nutritional labels for their products.

AURI also assisted Harmony Cricket Farm to bring alternative protein sources to market. This woman-owned venture focuses on the potential of cricket protein as a healthy, planet-friendly alternative. The company is dedicated to changing Americans’ perception of insects as food by introducing them to tasty, gluten-free, nut-free options powered by crickets. Harmony Cricket Farm’s product line includes protein fortified cookies that use Minnesota-sourced ingredients, including butter, eggs, oats and flax. AURI provided Harmony Cricket Farm with the technical assistance to scale up from a home to commercial kitchen.



“With the help of AURI I was able to take my concept from idea to a reality. They provided guidance with nutritional information, print resources and process ideas. AURI was always there to answer my many questions with patience and kindness. As an entrepreneur that is new to the food industry, I am forever grateful.”

Tammy Mann
Founder, Harmony Cricket Farm

87

**Total Projects
Worked On**



7
**AURI Connects
Events**

48

**Total Projects
Completed**



RENEWABLE ENERGY

Minnesota's energy future is in transition. New opportunities are being examined across the region for their financial and logistical viability as well as for their sustainability footprints. AURI's Renewable Energy Team spent FY20 making a strategic commitment to expand efforts in renewable natural gas using anaerobic digestion. The team worked on two unique projects and initiatives to advance the new programming focus. Both were newly initiated with a coalition working group.

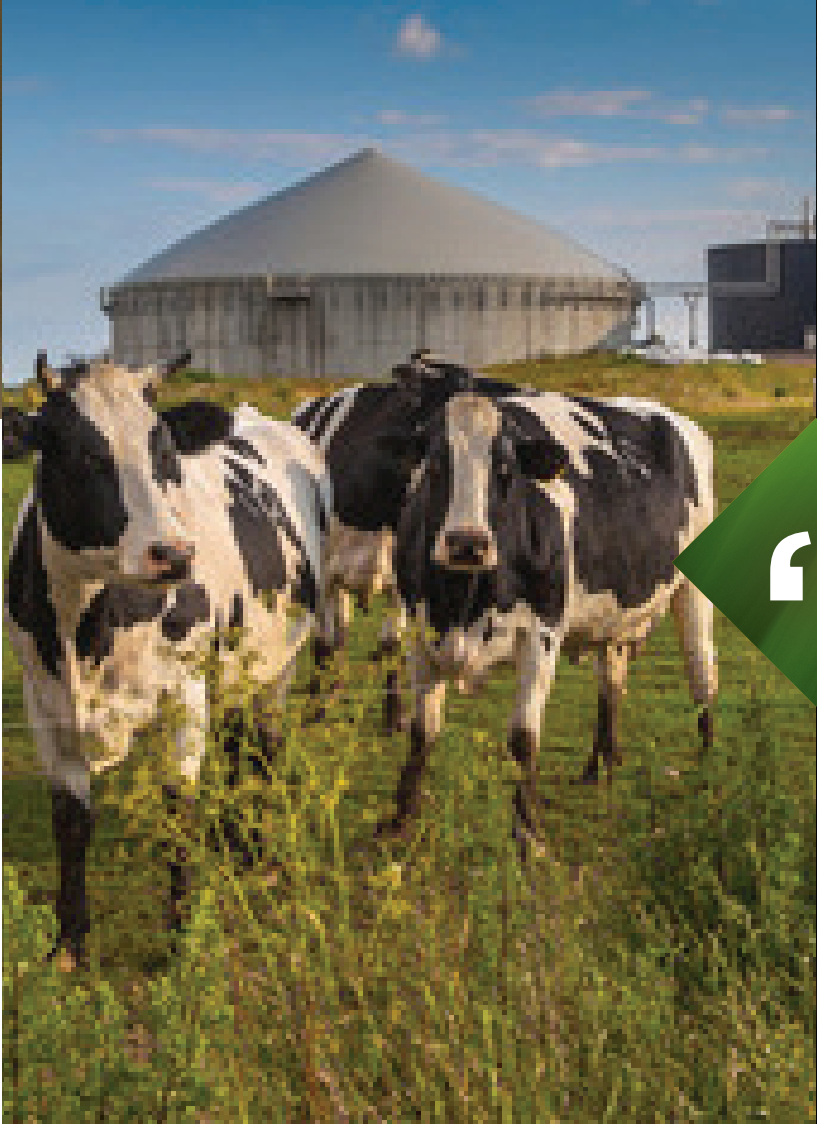
AURI supported multiple approaches in renewable energy and market development for renewable energy coproducts from feedstock commodities such as soybeans and corn. The Renewable Energy Team also worked with industry partners to assist Minnesota's biodiesel community by providing direct technical and project support.

Services offered by AURI included a comprehensive analysis of waste streams for agricultural operations to assess the potential for the combustion of biomass materials as an alternative to propane.

FY20's annual Minnesota Renewable Energy Roundtable was a day-long program celebrating National Bioenergy Day, hosted by AURI in partnership with Heating the Midwest and Koda Energy LLC. The event highlighted innovative projects showcasing benefits of renewable energy, specifically biomass, for thermal processes and how commercial space heating is achievable using biomass feedstocks. Key exhibitors included the Shakopee Mdewakanton Sioux Community, the Minnesota State Energy Center of Excellence and Clean Energy Economy Minnesota.

Finally, AURI's Renewable Energy Team began focusing on anaerobic digestion. AURI implemented a new industry thought leader initiative to support and foster the development of anaerobic digestion systems in the state. These systems allow agricultural processors and producers to divert organic waste sources away from landfills and convert it into renewable energy. The resulting biogas can replace fossil fuel derived natural gas when burned or added to an existing natural gas pipeline.

The new industry thought leader group aims to identify potential anaerobic digestion projects in the state and connect them with resources. A collaborative project resulting from efforts to date aims to create a digital project decision tool that will aid project teams, policy makers and others with a GIS based techno-economic tool for evaluating a catalogue of waste streams, economic data, physio-chemical data, supporting infrastructure and existing sites around the state. The project goal is to assist and accelerate the timeline for those working towards establishing new production sites and processing capacity for biogas.



“As early as 2007, AURI helped our company with anaerobic digester research. Since then, the people of AURI have always been there to help out as a source of manure management research. Their current focus on a broad spectrum of organic waste stream sources and emerging technologies will maximize the scope, utility and impact of anaerobic digestion systems in the state.”

Ray Davy
Agri-Waste Energy Operations, Inc.

2
**Total Projects
Worked On**



3
**Total Projects
Completed***

*No time was allocated to one of these projects, so it is not reflected in the Total Projects Worked On numbers.

COPRODUCTS

Creating new uses for agricultural residues and coproducts is a core service AURI provides the industry. In FY20, AURI's Coproducts Team worked with producers, clients, agricultural leaders and industries across Minnesota to identify new uses for coproducts that create value and revenue. The Coproducts Team worked on 26 projects and three initiatives in FY20, of which 22 were new endeavors.

At AURI's Waseca Pilot Lab, the Coproducts Team helped develop a new equine feed for client Mary Hartman, the owner of Fundamental Feed. The sainfoin-based product is a nutritional health supplement for horses. AURI's team assisted with complete feed formulation, densification trials and process requirements along with assistance identifying potential ingredient suppliers and toll-manufacturers. The team also worked with Hartman to certify the feed tag with the Minnesota Department of Agriculture.

Developing a feed for horses was a new venture for AURI's Coproducts Team. The project's success highlights the team's technical expertise, its ability to take on new challenges and AURI's ability to help entrepreneurs grow their business ideas through innovation and collaboration. The new feed is already drawing rave reviews from horse owners across the country.

Minnesota-based PURIS is North America's largest producer of pea protein. PURIS partnered with AURI to explore potential higher value uses for the coproduct resulting from the pea protein isolate production process. The wet mash remaining from the pea protein process is expensive to dry, which is critical to creating a useable coproduct.

AURI provided input on drying technologies and tested the mash to identify its nutrient and energy value, and conducted financial analysis of various drying requirements. By improving the drying process, Puris discovered new applications for the product in livestock feed. Ultimately, with the help of AURI, Puris can now reach new markets, increase revenue and reduce waste.

Throughout FY20, the AURI Coproducts Team added to the services and expertise it offers clients. AURI expanded its lab space at the Waseca Pilot Lab and installed a new fiber decorticator system. The new decorticator system is used to process agricultural fibers, like hemp and flax, to be used for textiles, building materials, clothing and other uses. AURI also installed a new fluid bed drying system that supports client projects to analyze the variables associated with drying grains and agricultural coproducts. This information helps businesses make smart financial decisions to maximize investment.

Funding for this new equipment came from a variety of donations and grants, including Compeer Financial and bonding dollars through the Minnesota Department of Agriculture.



“Minnesota needs AURI. I am an example of AURI’s Coproducts Team adapting their thinking to accommodate innovation that must continue if we are going to be able to thrive as the ground under our feet changes. Diversification expands cash crop possibilities. Diversification provides support for ecosystems that are threatened by a lack of food necessary because of monocropping. Diversification provides educational opportunities because we need to rethink, relearn and explore the use of old plants as possible sources of food and feed.”

Mary Hartman
Owner, Fundamental Feed

29
Total Projects
Worked On



17
Total Projects
Completed



BIOBASED

AURI's Biobased Team works with clients and partners to develop new products that can replace petroleum-based ingredients in materials like plastics, packaging, building materials and chemicals. With each project and client, the Biobased Team demonstrates the value and benefit of investing in the growth of a sustainable economy while capturing the value of the state's agricultural crops and products. In FY20, the Biobased Team worked on six projects and four initiatives, of which three were new endeavors.

Scientists and staff provide technical and consulting services to clients and partners for product and process development, product evaluation, as well as sourcing materials, equipment and services. Through hands-on technical assistance such as sample analysis in its analytical laboratory, byproduct development in its pilot facility and firsthand-onsite assistance, the Biobased Team provides critical expertise and analysis to help grow the state's bioeconomy.

AURI connected the Lower Sioux Indian Community (LSIC) to a trusted third-party consultant, Christianson's and Associates, to conduct a hempcrete feasibility study. AURI directly supported this study not only by making the connection to the consultant, but by working closely with both groups and providing technical insight and data to build out the feasibility model. The Lower Sioux Indian Community in Redwood County, Minnesota is exploring the creation of a hemp growing and processing operation. They aim to use hemp to make a fiber glass insulation substitute suitable 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 compared to traditional alternatives. AURI provided technical assistance, process flow guidance and supported a financial feasibility study led by Christianson's and Associates on this exciting project. AURI's expertise and connections in the business community helped to positively impact the Lower Sioux Indian Community.

Another example of the Biobased Team's work is related to transportation and road maintenance costs. AURI, in partnership with the Minnesota Soybean Research & Promotion Council, arranged for SRF Consulting Group, a renowned Minneapolis-based consulting engineering firm in the transportation sector, to conduct a third-party validation study of the economic performance of an environmentally friendly USDA biobased certified road preservation product, called RePlay™. This product is made from biobased ingredients, including soybean oil. The results of the statistical analysis performed using multiple years of data from Hutchinson, Minnesota show that RePlay™ treatment on pavement reduces its deterioration rate at a rate four times lower than an untreated surface and as a result could increase the longevity of road surfaces by as much as seven years.

AURI's work to leverage funding resources and catalyze new public and private partnerships buoyed the project's success. The research model, started in Minnesota, is expanding throughout the Midwest in partnership with the United Soybean Board and is producing savings and value for taxpayers, local governments and soybean farmers.

AURI is part of an interdisciplinary, interinstitutional, public-private partnership focused on the development of a colloidal barrier product as an alternative to traditional plastic-based agricultural mulch. This biobased barrier product utilizing readily available Minnesota agricultural products and coproducts offers many environmental and financial benefits to the agricultural industry. Current plastic-based mulches are non-recyclable and labor intensive to remove while also creating concerns around soil health due to microplastics remaining in the soil.



“The Lower Sioux Indian Community initially engaged with AURI with an ‘idea’ to explore opportunities in hemp production. From initial meetings, our Pilot Project to grow hemp and produce homes insulated with hemp-lime materialized. AURI has been instrumental in helping us understand the technical aspects of farming and processing industrial hemp, as well as analyzing the feasibility and potential of value-added products and facilitating the engagement of potential suppliers and funders.”

Earl Pendleton
Lower Sioux Indian Community

10
Total Projects
Worked On



4
Total Projects
Completed



AURI CONNECTS

In FY20, AURI launched a new sub-brand, called: AURI Connects. Incorporating and replacing the previously established Innovation Networks Program, AURI Connects aims to actively engage the value chain on topics related to value-added agricultural opportunities and challenges.

The vision of the program is to improve the competitiveness of agricultural producers, businesses and entrepreneurs through the ongoing, purposeful connection of resources and partnerships along the value chain and to increase knowledge of opportunities, technologies and trends.

AURI Connects offered multiple options for engagement in FY20 including in person and virtual events, seminars, forums and networking sessions for the purpose of encouraging thoughtful and deliberate conversations and developing business relationships to accelerate economic impact for the state.

Programming continued throughout the earliest stages of the COVID-19 pandemic through the new AURI Connects: Webinar Wednesday program. Since May 2020, monthly hour-long webinars have explored different aspects of the food and ag sectors in Minnesota – from resources for food entrepreneurs to innovations in coproducts and biobased energy. The public and industry can access every webinar through a recording on AURI's website. Additional key events focused on culturally specific content to expand outreach into new communities. The Food Industry Thought Leaders' spring meeting focused on culturally significant foods with a presentation by the North American Traditional Indigenous Food Systems' founder The Sioux Chef.

Through a collaboration with the University of Minnesota Extension and the Minnesota Department of Agriculture, Minnesota's halal and kosher meat markets were the topic of the second AURI Connects: Webinar Wednesday presentation. The event highlighted the opportunities and challenges for producers along the supply chain to meet these communities' needs with locally sourced meat.

Attendance at events in FY20 was lower than FY19 due to the postponement or cancellation of events because of COVID-19, such as AURI's cornerstone New Uses Forum event that was to occur in April.

Despite the situational impact of the pandemic, AURI Connects' events still reached 229 new attendees in FY20.

Additionally, AURI conducted more collaborative sessions in partnership with entities such as Grow North and the Minnesota Department of Agriculture that focused on events aimed at breaking through barriers in the food ecosystem.

Overall, AURI Connects hosted 14 successful events and helped form many beneficial relationships that are expected to foster new food and ag innovation activity across Minnesota.



610

**Total Participants at
AURI Industry Events**

**New Participants at
AURI Industry Events**

229



Fiscal Year 2020 Financial Statement

Revenue

State Appropriation	\$3,893,000
Fee-For-Service	\$357,179
Private Grants	\$283,500
Collaborations & Partnerships Grants	\$182,433
Interest/Investment Income	\$111,898
Federal Grants	\$96,920
Project Fees	\$39,482
Royalties	\$36,671
Sponsorships	\$23,000
Donations	\$10,925
Registrations	\$6,350
Miscellaneous	\$1,400
Total	\$5,042,758

Expenses

Programs & Services	\$2,458,981
Program Support	\$924,486
Operations	\$702,545
Institutional Advancement	\$623,489
Total	\$4,709,501

Net Income (Loss) **\$333,257**



STATEMENT OF ACTIVITIES

AURI was able to reduce its expenditures during this challenging fiscal year, resulting in a net gain of \$333,257. However, most of the gains, which included \$270,000 in bonding dollars, were used to upgrade facilities and equipment. While AURI also fell slightly short of its budgeted revenue targets, the reduction in expenses more than offset the revenue reduction. In fiscal year 2020, AURI generated \$5,042,758 in revenue and expended \$4,709,501.

Overall, AURI's short-term financial outlook remains positive, even with the uncertainty of the COVID-19 pandemic. AURI continues to have a robust project portfolio and had several noteworthy accomplishments during fiscal year 2020, including; \$270,000 of bonding funds from the State of Minnesota used to add a food sensory laboratory at our Marshall location and equipment upgrades at our Waseca location, continued year-over-year increase to revenues generated from fee-for-service work, a successful federal grant award commitment from the USDA Rural Cooperative Development program of \$200,000, and partnership project efforts with the Minnesota Soybean Research & Promotion Council, Minnesota Department of Agriculture and Minnesota Association of Wheat Growers to name a few. Long-term, AURI will continue to leverage its State dollars by seeking revenue from a wide array of sources to maximize its impact for Minnesota agriculture. As we head into 2021, AURI will continue to provide the exceptional service it is known for and looks forward to another successful year of bringing benefit to Minnesota's agricultural industry.

LOOKING FORWARD

Looking to the future, AURI will continue its efforts to catalyze and support innovation throughout Minnesota. In the next fiscal year, the organization will accomplish this through its various client-focused projects and public initiatives, such as AURI's Ag Innovation Partnership Program and the new Fields of Innovation platform, which focuses on commercializing new technologies in emerging crops and traits throughout the state.

For example, in the coming months, AURI will release a new web-based guide for food entrepreneurs looking to build or enhance their digital marketing and e-commerce efforts. This has the potential to give food sector businesses more time to focus on product development by reducing the time needed to learn new marketing and e-commerce skills. Another example is a new resource for publicly highlighting the challenges and opportunities of building an aquaculture industry in Minnesota. With greater desire for protein in our diets, aquaculture could be another innovative opportunity for local protein production in creating additional, affordable protein options to consumers.

In more general terms, AURI will focus its efforts in Fiscal Year 2021 (FY21) and beyond on the following four areas:

The Future of Protein

The coming months and years are sure to be a time of development and evolution for all things related to protein. It is nearly impossible to open a magazine or watch the news without seeing a story related to either traditional or novel (plant) protein sources.

AURI recently conducted a market assessment of traditional livestock proteins to see how the organization can better serve the sector – especially in the wake of the COVID-19 pandemic and an increased desire for greater resiliency in the meat processing sector. FY21 will see AURI put that information to use in support of livestock producers, businesses and entrepreneurs to create an economic boost for Minnesota.

AURI also sees a broadening interest in plant proteins among consumers, which is driving more innovation in production sources, options and techniques. In response to consumer-driven demand, AURI will continue to support several initiatives devoted to Minnesota's plant protein sector, including collaborating with the University of Minnesota's Plant Protein Innovation Center and the new Ag Innovation Campus in Crookston.

New Crop Market Opportunities

We know that producers cannot become complacent and ignore market trends. They constantly explore new economically viable crops and qualities to diversify operations and capitalize on new opportunities. Not looking forward stagnates innovation and increases market risk. AURI aims to help mitigate new crop risk and help bring diversification options to producers through its initiative efforts.

Previously, AURI undertook efforts to increase support for plant proteins by conducting work in Minnesota's industrial hemp industry as well as Forever Green crops, like camelina, alfalfa and Kernza® Perennial Grain. AURI also worked with the University of Minnesota to create protein profiles for multiple traditional crops grown in Minnesota to provide greater awareness of their importance to meeting consumer desire for increased protein.

In FY21, AURI will continue these efforts while implementing several new initiatives to support the continued growth of the plant protein sector. One of these efforts is the launch of AURI's Fields of Innovation platform.

Comprised of digital resources and a monthly webinar series, the Fields of Innovation platform strives to highlight new and emerging crops, specific traits in established crops, and supply chain opportunities for bringing new crops to market. In doing so, this new platform will help educate producers on their benefits and increase public awareness of new protein options.

Through these efforts AURI will play a valuable role in heading off market challenges and moving market opportunities forward.

Biobased Products

Since its inception, AURI has conducted research and project work on developing new, biobased products designed to replace petroleum-based items, like plastics and fuels. Utilizing renewable feedstocks from agriculture is a commonsense approach to meeting consumer demands that are increasingly focused on environmental impacts.

In the coming fiscal year, AURI plans to address these consumer demands by assisting in the creation of new biobased materials and energy sources.

A great example of this is AURI's future participation in the development of the Ag Innovation Campus, which will include a mechanical crush plant for oilseed crops. The ability for AURI to easily obtain meal and oils from multiple crops via this crush line will accelerate innovative biobased opportunities. Another example is AURI's continued research to utilize biobased materials produced in Minnesota for replacing plastic sheeting used in high-value fruit and vegetable production to help with areas such as weed mitigation, moisture retention and soil temperature – which ultimately increase yields.

Collaborations and Partnerships

As markets and supply chains grow increasingly complex, AURI understands the importance of collaboration and the development of strategic partnerships throughout the ag sector. The benefits of increasing the connectivity between organizations at various levels of the supply chain include new efficiencies and reduced costs, mitigation of risk, and better meeting market needs.

To that end, AURI will continue to invest in resources that create larger networks and increase connections across the supply chain. The AURI Connects program will play a large role in this convening effort. By hosting various types of events, such as the Webinar Wednesday monthly program or the New Uses Forum multi-day event, AURI will serve as an important point of convergence for innovators, producers, researchers, educational institutions and agribusinesses.

AURI always looks to forge new partnerships with other organizations throughout the state to advance opportunities around its mission. An important example of this is the FY21 initiative to determine the impact of the COVID-19 pandemic on Minnesota's food and ag supply chain. By working with groups like AgriGrowth, the Minnesota Department of Agriculture, GreenSeam and the University of Minnesota, ag stakeholders can better understand the supply chain effects of COVID, the resulting pain points and what new services, resources and supportive actions could potentially improve supply chain resiliency for Minnesota's food and ag businesses.

In closing, AURI sees a bright future for Minnesota's ag and food sectors. We look forward to playing a leading role in the development and commercialization of new innovations that will positively impact the state's producers, businesses, agricultural industry and overall economy.

State Fiscal Year 2020 Active Projects and Progress Report

PROJECT NAME

% COMPLETE

MULTI	
Coproduct Gasification	5%
Midwest Biomass Exchange	21%
Winter Camelina (SARE)	5%
New Uses - Value Chain Development	100%
Forever Green Initiative	100%
Hemp Extraction Process	100%
FY19 Technical Support - Plant Protein Innovation Center	100%
CBD Coproduct Evaluation	100%
Cold Press Oils	34%
Hops / CBD Processing Research	100%
Spent Brewer Grains	100%
AURI Food Processing Waste Industry Thought Leaders	100%
CBD Drying / Curing	100%
AURI 2019 Ag Innovation Showcase	100%
FY19 AURI Forever Green Initiative	100%
AURI New Uses Forum 2020	100%
AURI MBOLD and Open Innovation	79%
AURI Food Waste Mapping	80%
Leaf Protein Concentrate	29%
FY20 Technical Support - Plant Protein Innovation Center	23%
AURI Soy Nutrition Institute 2020	36%
AURI Upcycled Food Association	1%
AURI Webinar Wednesday Program	19%
AURI Pandemic Industry Survey	24%
Sugar beet Product Assistance	100%
FY19 Soybean Technical Advisory Program	100%
AURI Kernza Applications	100%
MDA 2019 Technical Assistance	100%
FY20 Soybean Technical Advisory Program	71%
AURI Industry Trends Roundtable	100%
Feasibility Study Assistance	67%
Biobased Plastics Solvent	58%
Central Lakes College - Camelina	19%
Hemp Feasibility	9%
Stearns County SWCD Kernza	26%
Corn Litter Brand Evaluation	100%
Food Industry Trends	100%
2020 Technical Assistance	30%
Litter Blend Evaluation and Development	99%
Fields of Innovation Event	10%
Pennycress IPREFER	3%

Corn Varietal Testing	100%
Grant Development Services	100%
Buckwheat Protein Isolate	3%
Cultivated Wild Rice Quality / Processing	20%
Indoor Aquaculture Production	13%
BIOBASED PRODUCTS	
Fermentation Development - Sanos	100%
Corn Based Packaging	100%
Fermentation Development	25%
BioMulch Application Development	28%
FY19 Soy Based Asphalt Sealant Due Diligence	100%
Field Pea Characterization	56%
AURI BioMulch Research	56%
Hemp Rope	100%
FY20 USB Asphalt Sealant Due Diligence	25%
FY20 Soy-Based Road Treatment	61%
COPRODUCTS	
Lab Column Field Denitrifying Bioreactor	9%
Animal Litter Development	100%
Equine Feed Assistance	63%
Fermentation Feed Additive	100%
Material Value Recovery - Egg	82%
Smoker Fuel Scale-up	100%
Lupulin Separation	100%
AURI Rye Grass Barn Trial	97%
Effect of Heat on Probiotics	33%
Coproduct Based Litter	83%
Probiotics to Feed	100%
Analytical Feed Analysis	100%
Distillers Grains Assessment	100%
Pea Processing Coproducts	100%
Spent CBD Biomass Pellet	80%
Poultry Feeding Trials	100%
U of M Regents - Alfalfa Use	28%
Filtration Assessment	100%
Fat Shell Digestion	100%
Improved Hemp Extraction	100%
Wheat Utilization in Swine Diets	100%
Lysine Supplement For Export	100%
Wax Emulsion Evaluation	100%
High Oleic Soybean Evaluation	100%
Pea Processing Coproducts	60%
Polymer Validation	100%
Sugar beet / Lime Production Development	28%
Groated Oats Processing	40%
Coproduct Heating Assessment	58%

FOOD	
Heritage Grain Sourdough Bread	19%
Veggie-Vegan Pizza	19%
Turkey Jerky	100%
AURI Sourdough Fermentation	3%
Meat Locker Development	29%
Kombucha Development	8%
Non-Alcoholic Beer	100%
Heart Chocolate Bar	100%
UMN Food Safety Collaboration	100%
AURI Meat Product Innovation	3%
Plant Based Yogurt	100%
Larta GAIN Event	100%
AURI Craft Distilling Event	100%
Hemp Powder / Oil Processing	100%
Pickled Products	100%
Food Industry Thought Leaders FY19	100%
Egg Rolls	100%
AURI Local Ingredient Sourcing	40%
Chocolate Labels	9%
Lactose Free Ice Cream	6%
BBQ Shelf Life	100%
Meat Granola Bar	29%
Soy Nutrition Institute 2019	100%
Meat Shelf Stability	100%
Halal and Kosher Meats	100%
African Beer	100%
Southern Dessert Labels	100%
AGRI Wheat / Sourdough Analysis	37%
Ice Cream Nutritional Labels	100%
Lactation Snack Bar Development	100%
Shrimp Analytical Work	33%
Co-manufacturing Assessment	58%
Elderberry Syrup Development	100%
Chickpea Butter Technical Services	100%
Vegetarian Meals for School	100%
Sweet and Savory Pie Technical Assistance	100%
Apple Crisp Development	100%
Belgian Waffles Development	100%
Mushroom Pâté	100%
Kombucha Shelf Life	4%
AURI CBD THC Level Field Testing	100%
Nut Butter Labels	87%
Meat Science Analysis	100%
AURI Food Industry Thought Leaders FY20	100%
Ready to Eat Eggs	34%

AURI Cultivated Wild Rice	15%
Food Shelf Life Guide	76%
Garlic Spread	100%
Vaked-Gluten Free Baked Goods	100%
African Hot Sauce	58%
Lactation Snack Bar Reformulation	67%
Goat Milk Caramel	27%
Teff Recipe Formulation	42%
Non-Alcoholic Beer Reformulation	100%
Savory Pies	31%
Nut-Gluten Free Granola	5%
Roasted Hemp Seeds	76%
Snack Project Assistance	100%
Jam Process Authority	100%
Ready to Drink Cocktails Nutrition	100%
Ice Cream Nutrition Labels	100%
Live Wide Open Summit	8%
Chickpea Dry Mixes	48%
Fermented Goat Whey Beverage	14%
Tamarind and Date Sauce	50%
Eritrean Beer Formulation #2	36%
BBQ Sauce Labels	2%
Scaling Hot Sauces	27%
Cricket Protein Bar Scale-up	55%
Shrub Beverage Nutrition	79%
Pho Sauce	3%
Non-Alcoholic Beer Reformulation	83%
University Foodservice Pilot	100%
Shrimp Production Gallery	3%
Sustainable Fresh Beef Packaging	35%
Beef Processing	100%
Alternative Meat Processing	100%
Austin Co-manufacturing Co-op Assessment	100%
Meadery Co-op Feasibility	100%
Butter Processing Expansion	28%
Barley Malt Processing Development	8%
Shrimp Salinity and Meat Texture	7%
Carrot Processing Feasibility	8%
Soy Food Grade Expansion Project	27%
Central Lakes Co-op Assessment	55%
Smash the Senses Event	10%
Hog Co-op Value Chain Development	29%
RENEWABLE ENERGY	
AURI MNRR Collaborative Bioenergy Day	100%
AURI MNRR 2020	100%

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