

LEGISLATIVE REPORT



**Driving
innovation
in agriculture.**

20
19



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From the Executive Director

On behalf of the Agricultural Utilization Research Institute, I am pleased to share with you the operational results for Fiscal Year 2019 (FY19).

Overall, FY19 was a successful period for the organization, thanks to the dedication of the staff and board of directors, as well as the support of our many partners. The year marked an expansion in client resources, growth in leadership as we welcomed three new board members, including a new at-large director position and an increased awareness of the organization's capabilities in Minnesota and the Upper Midwest region.

I'm happy to report that AURI's dedicated project teams worked on 183 projects across the organization's four focus areas (food, coproducts, biobased products and renewable energy), with 84 new projects opened during the year and many additional hours of non-project consultation and support to Minnesota businesses. Food projects continue to comprise the largest segment of our overall services, with this area representing 61 percent of new projects and 58 percent of total projects serviced.

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 FY19 (June 30, 2019), AURI's work contributed to the creation and retention of more than 700 jobs across the state and nearly \$133 million in new capital investments. In addition, the work during the past five years resulted in \$261 million in new gross annual sales by clients and the use of an additional 323,000 tons of Minnesota grown commodities per year. Not only are these great numbers to report regarding AURI's contribution to the industry and economy, but also because they are proof of the entire organization's dedication to its mission and creating tangible business outcomes to benefit the food and ag industry.

That said, it is important to note that project work represents only one area of the many benefits AURI provides to the food and agriculture ecosystem. In addition to AURI's project work, the organization unveiled a new vision statement in FY19: **Empowering the commercialization of innovative value-added food and agricultural ideas.** This was an important step for the entire organization—having a shared vision provides an additional compass point for both leadership and staff as they navigate new and exciting opportunities in the value-added ag space.

To that end, AURI took specific and deliberate steps to achieve its organizational vision. For example, staff and leadership, together, engaged in ecosystem growth throughout the state, by playing an active role in a variety of high-profile events. Most notable among them were Food | Ag | Ideas Week, FEAST, and MN Cup. Throughout the year, AURI's team contributed to these events by providing competition judges, recommending speakers and thought leader topics, as well as being guest speakers and panelists. In fact, AURI was asked to collaborate over 40 times during FY19 by ecosystem organizations to further opportunities for the agricultural industry and state's economy.

At the same time, AURI stepped up its efforts to host new, exciting events that brought together some of the region's most innovative minds and most active contributors across the agriculture sector. One great example would be the first-ever Open Innovation Reverse Pitch event, which turned the traditional entrepreneurial innovation pitch model on its head by inviting leading food and ag companies to share challenges in need of solutions from entrepreneurs and innovators. Another example I like to cite is the Nexus of Food & Health event, which drew attention to the important role food plays in health and how food's functional properties can have a restorative effect.

In closing, FY19 was an exciting year for AURI. In the report that follows, you will learn more about the year's activities and accomplishments while gaining insight into the organization's operations and overriding goal of creating beneficial impact for the food and agricultural industry and state of Minnesota. Together they provide an easy to understand overview of AURI's concerted effort to further innovation across the agricultural industry and within the region.

Regards,

Shannon M. Schlecht
Executive Director

Board of Directors

20
19



Ron Obermoller — Chair
Minnesota Soybean Research
& Promotion Council



Carolyn Olson
Minnesota Farm Bureau



Kenneth Asp
Minnesota Wheat Research
& Promotion Council



Rep. Jeanne Poppe
Minnesota House of
Representatives



Sen. Rich Draheim
Minnesota Senate



John Schafer
Minnesota Beef Council



Jerry Hasnedl
Minnesota Farmers Union



Federico A. Tripodi
Director-At-Large



Larry Johnson
Agribusiness



Jon Veldhouse
Cargill

A Message from AURI's Board Chair

Dear friends and colleagues,

I am humbled to be addressing you as the Board Chair of the Agricultural Utilization Research Institute. On behalf of the entire organization, I want to thank you for choosing to actively support AURI's efforts to drive innovation throughout the state and region during FY19. I especially want to thank the Minnesota Legislature for its continued partnership in AURI's mission of fostering new opportunities in value-added agriculture.

As you read this year's report, you will see there's a lot worth celebrating—from the addition of a new at-large member of the board of directors to our client impact across the state, to greater participation in AURI convenings. Needless to say, AURI is more robust than ever in delivering impactful programs to serve the food and ag industry. I couldn't be more pleased with the board engagement and staff contributions to the value-added agriculture ecosystem, and I look forward to seeing what they can accomplish in the future.

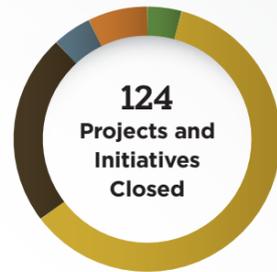
I hope after reading this report that you will join me in celebrating another successful year—the momentum that has built up will surely carry over into the future and be a foundation for future success.

Ron Obermoller
Chair

At a Glance



61% Food
19% Coproducts
4% Renewable Energy
7% Biobased Product
9% Multi-Area



60% Food
23% Coproducts
4% Renewable Energy
6% Biobased Product
7% Multi-Area



58% Food
22% Coproducts
3% Renewable Energy
8% Biobased Product
9% Multi-Area



10 Food
1 Biobased Product
2 Multi-Area

Project and Initiative Hours by Focus Area



Fiscal Year 2019 Revenue

\$4,445,934

Fiscal Year 2019 Expenses

\$4,675,841

Data provided from AURI's Microsoft Dynamics GP Accounting System. All data based on State FY19 (July 1, 2018 to June 30, 2019)

Client Impact: July 2014 – June 2019



702

Estimated # of Jobs Created and Retained



\$133 Million

Estimated New Capital Invested



323,108

Estimated Tons of Commodities Utilized Per Year



\$261 Million

Estimated New Gross Annual Sales



818

Estimated # of Future Jobs Created and Retained



\$434.5 Million

Estimated Potential Future Capital Investment

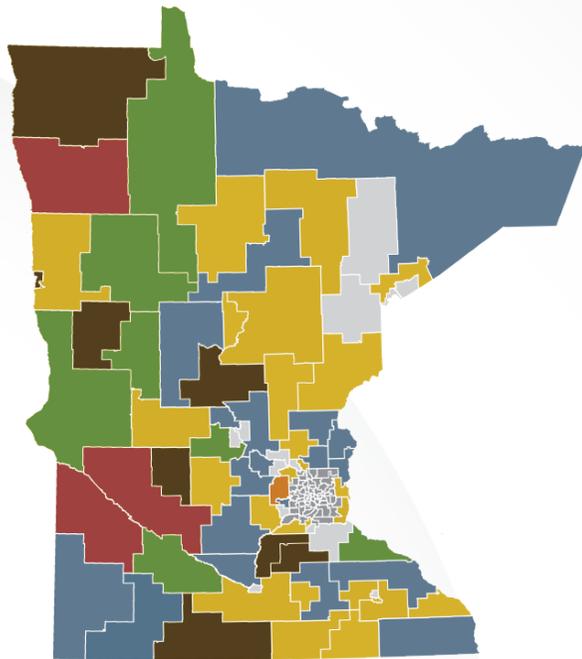
AURI Client Projects Worked On July 2009 – June 2019

AURI is proud to partner with producers, businesses and entrepreneurs throughout Minnesota. As the maps below show, AURI worked on client projects in most of Minnesota's 87 counties between July 1, 2009 and June 30, 2019. The impact of these collaborations, as noted on page 5, were significant to communities throughout the state. AURI also conducted several state-wide initiatives throughout the year.

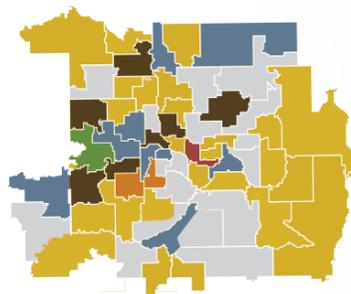
- 1 to 5 Projects
- 6 to 10 Projects
- 11 to 15 Projects
- 16 to 20 Projects
- 21 to 25 Projects
- 26+ Projects

Minnesota House Districts

Statewide

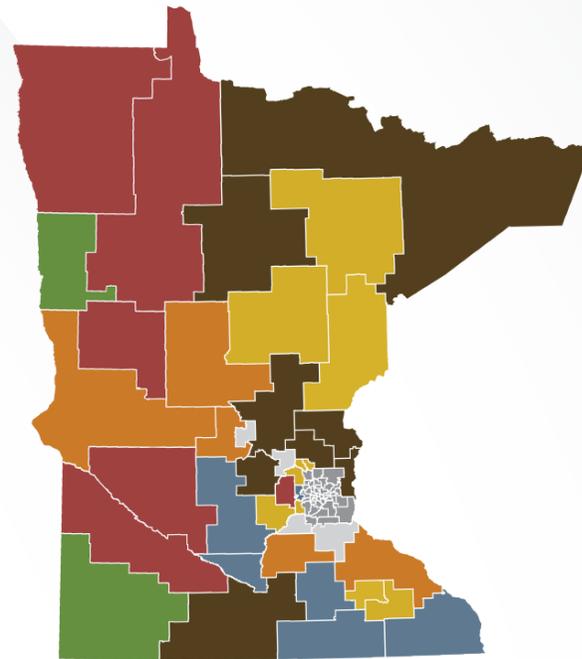


Metro

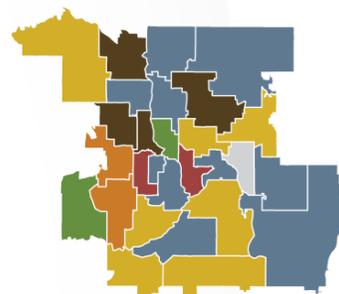


Minnesota Senate Districts

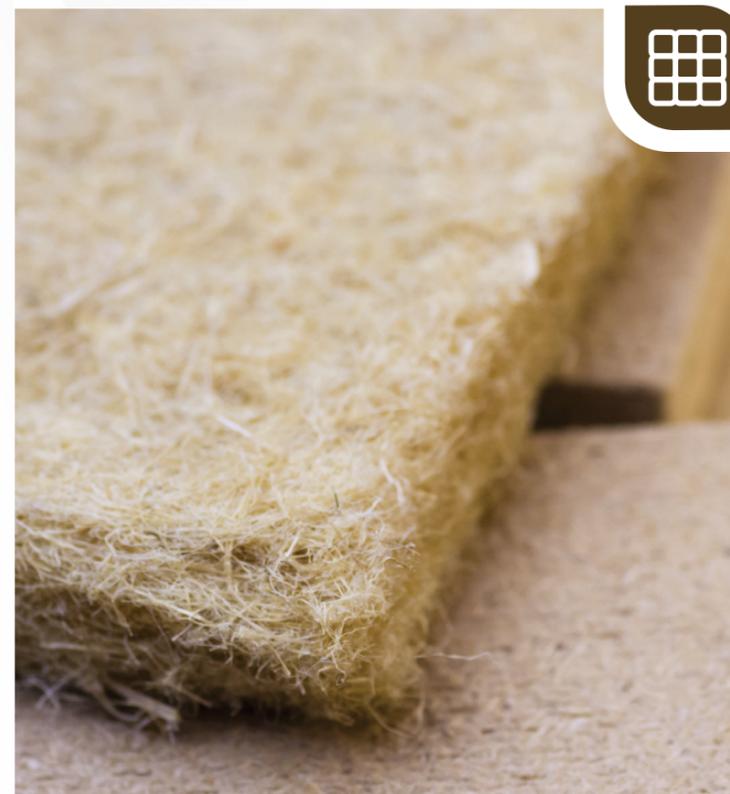
Statewide



Metro



Focus Areas





Food

Minnesota food entrepreneurs bring many new products to market each year. These entrepreneurs turn to AURI for guidance and technical assistance to help them grow and realize new business goals. In FY19, the Food Team partnered on projects throughout Minnesota. In total, AURI worked on 106 food projects and initiatives, of which nearly half were new.

AURI worked with the Maker to Market program, a food accelerator started by the Lakewinds Food Co-op and The Good Acre. Participating companies earn access to a commercial kitchen, business coaching on how to scale up for a retail launch and exclusive placement at retail locations.

Maker to Market perfectly aligns with AURI's core services and provides an opportunity for the Food Team to work with multiple businesses simultaneously. For example, AURI provided technical assistance to two companies, Wallflour Foods and Tasty Treats & Fancy Sweets, through this program. AURI's Food Team provided a full gamut of services, including advice on alternative sourcing of ingredients, preparation for using a commercial kitchen space, packaging and nutrition labels and food safety issues. Helping businesses ensure food safety and regulatory compliance for their jump into retail is invaluable.

Additionally, AURI worked extensively in the food industry with clients in greater Minnesota that were ready to expand and take the next step in their businesses.

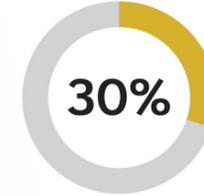
One example is the Food Team's work with Two Harbors, Minn.-based Ruth Vegetarian Gourmet. The company turned to AURI for assistance to meet the United States Department of Agriculture (USDA) accreditation requirements for inclusion in public school meal plans. Earning USDA accreditation for school meal plans is technical and expensive. In recent years, AURI has specifically added capabilities and expertise in this area to help guide clients through the process.

Another project example is Grand Ole Creamery, a well-known ice cream and pizza restaurant with three locations in the Twin Cities. The company wanted to expand into retail markets and turned to AURI to review its nutrition labeling needs.

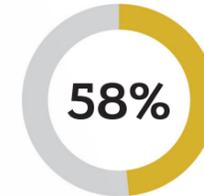
AURI provided input to Grand Ole Creamery on the technical aspects of the regulatory review conducted by the Minnesota Department of Agriculture. As a result, Grand Ole Creamery plans to expand its market presence and have nine ice cream flavors available in retail stores.



Total Projects and Initiatives



Percent of Total Project Hours



Percent of Total Projects and Initiatives



Events



“ AURI assisted with packaging decisions, gluten free guidelines and in drafting nutritional ingredient labels.

The Food Team was fabulous to work with. We met regularly to discuss the requirements needed for product labels. AURI was also available for questions regarding moving forward with gluten free items and providing the guidelines for that product. I really appreciated the assistance in getting my product on the grocery store shelves. AURI is a great resource!

Patricia Parks, Owner
Tasty Treats
and Fancy Sweets



Coproducts

Creating new uses for agricultural residues and coproducts is a fundamental service AURI provides its clients. In FY19, AURI's Coproducts Team worked in tandem with clients, agricultural leaders and industries across the state of Minnesota to identify new uses for coproducts that created value and revenue. The Coproducts Team worked on 33 projects and eight initiatives in FY19, of which 16 were new.

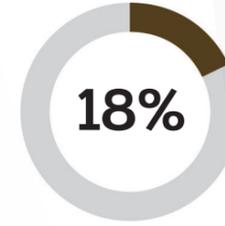
Due to increased demand and growth in the scope of projects, AURI needed increased lab space for its coproducts facilities. In response, AURI rented additional square footage to better serve the needs of AURI's growing client base. AURI also purchased additional lab equipment, including a fluid bed dryer and a decorticator. The fluid bed dryer aids in providing baseline and precise feedback on different drying processes. The decorticator separates fibers from hemp and other crop biomass for use in textiles, building materials and other products. AURI's new decorticator is a unique asset for Minnesota and the Midwest. The increased lab space will immediately help AURI's clients prove concepts and formulate new products.

The AURI Coproducts Team was proud to partner with the University of Minnesota's Forever Green Initiative to support the development of new cash cover crops. As part of the collaboration, AURI investigated new methods for seed cleaning of cash cover crops like pennycress, camelina, as well as perennial crops like Kernza™. AURI did significant pilot lab research to press and filter the oilseed cover crops. Scientists on the Coproducts Team also conducted research and analysis on the protein and nutritional content of Kernza™ to determine its potential uses as a food ingredient in baking.

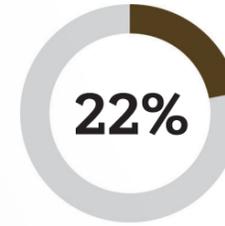
In FY19 AURI partnered on a project with the Minnesota Turkey Growers Association and the Minnesota rye grass producers. The goal of the project is to determine if rye grass can be used as poultry bedding. As part of the research, AURI monitored ammonia levels and overall bird health in a trial using rye grass bedding at the Ferndale Market in Cannon Falls. Minnesota is one of the largest producers of both turkeys and rye grass in the country and identifying new uses for rye grass coproducts throughout the agricultural economy is an exciting and important venture.



41
Total Projects and Initiatives



18%
Percent of Total Project Hours



22%
Percent of Total Projects and Initiatives



“
AURI was instrumental in providing technical and financial assistance as well as bringing the key people together to make the project move forward. I like to refer to AURI as the “ligament” that pulls the projects together! These types of projects would not see the light of day without AURI’s network and dedication. The overall impact for our business will be a steady home for our grass waste rather than a nuisance to our operations.

Brent Benike
General Manager; Northern Excellence Seed, LLC and Northern Farmers Co-op Exchange



Biobased Products

The Biobased Products Team works with clients and partners to develop new products that can replace petroleum-based ingredients in materials like plastics, packaging, building materials, chemicals and several other products.

With each client, the team of scientists and staff throughout the state demonstrate the value and benefit of investing in the growth of a sustainable economy utilizing the state's agricultural crops and products. In FY19, the Biobased Products Team worked on nine projects and six initiatives.

Additionally, clients rely on AURI's Biobased Team to leverage resources and technology while providing industry-leading expertise. AURI strives to meet clients' needs by making important contributions to product development and Minnesota's agricultural economy through hands-on technical assistance in the form of sample analysis in its analytical laboratory, byproduct development in its pilot facility and firsthand-onsite assistance.

AURI staff routinely assists client projects, which support the creation of intellectual property, trade secrets and other proprietary business information.

New Starch Solutions partnered with AURI's Biobased Team on the development of a new packaging material made from corn starch. The Plymouth, Minn. based company is a manufacturer and distributor of sustainable packaging products made from starch that are used in a variety of different markets and applications. Their products cushion shipments and often replace expanded polystyrene. Starch packing peanuts are an environmentally-friendly, reusable and cost-effective alternative to traditional packing foam.

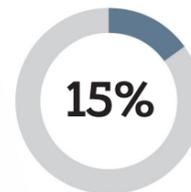
AURI worked with New Starch Solutions across multiple areas, including business development, sourcing and pelleting various materials. AURI also helped the company with grant applications to obtain additional funding.

AURI's Renewable Energy and Biobased Teams routinely collaborate on projects for the benefit of clients. One recent example is work to help establish Minnesota's emerging industrial hemp market. Interest in hemp is growing exponentially both in Minnesota and nationally with the passage of the 2018 Farm Bill that allows for the cultivation of the crop in the United States. AURI published a comprehensive hemp report, which provides an overview for the history and background of hemp around the globe and the United States. The document also gives an overview of the primary opportunities and challenges for hemp in the biobased and renewable energy sectors.

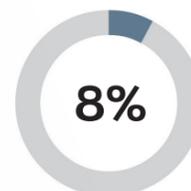
In FY19, AURI continued its work on a multi-year biobased road sealant project that focuses on soybeans. Analyzing the performance of biobased products for these applications can provide critical information for cities, counties and the state to unearth win-win opportunities and is an exciting opportunity for AURI and its value-added focus.



Total Projects and Initiatives



Percent of Total Project Hours



Percent of Total Projects and Initiatives



Event



“ Working with AURI is an important part of how the Minnesota Soybean Research & Promotion Council helps bring soy-based products to market. Most recently, we've seen increased awareness and acceptance of RePlay Agricultural Oil and Preservation Agent for asphalt surfaces. The research AURI has provided to prove this product not only works, but can save cities and states money on road maintenance is invaluable and makes them a go-to partner in the ag community.

Mike Youngerberg
Senior Director of Product Development & Commercialization;
Minnesota Soy Research and Promotion Council



Renewable Energy

Production of renewable energy from agricultural products is an important segment of the state's agricultural sector. Clients seek AURI's assistance to develop and improve innovative uses of agricultural products in fuels for transportation, heat and electricity. In FY19, the Renewable Energy Team worked on a variety of projects and initiatives in the renewable energy sector. In total, the team worked on five unique projects and initiatives. Of those, three were newly initiated.

Red Wing, Minn.-based Epitome Energy, is working to build a \$200+ million soybean crush and biodiesel production facility in Crookston, Minn. The project is a "top priority" for Minnesota agriculture, according to Minnesota's Agriculture Commissioner Thom Petersen. When it opens, the facility will process 42 million bushels annually, creating significant economic impact.

Soybean farmers in Minnesota and North Dakota are eager to see the project become a reality. More than 1.8 million acres of soybeans are planted annually in the ten counties surrounding Crookston.

AURI's Renewable Energy Team is proud to work on new concepts that add value to Minnesota's ag commodities. AURI assisted Epitome Energy with business development and networking, and will continue to support the project.

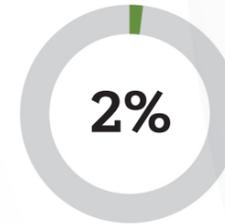
The soybean facility could drive many economic benefits for the area. A study conducted by the University of Minnesota found the plant will generate \$322.8 million in new economic activity and support 330 new jobs. The plant will directly provide 80 to 100 jobs and have an estimated payroll and benefits of more than \$5 million.

Throughout FY19, AURI's Biobased and Renewable Energy Team supported and assisted the relaunch of the Midwest Biomass Exchange website. This free, online resource is a marketplace designed to connect buyers and sellers of woody and agricultural biomass for heating fuel and power generation.

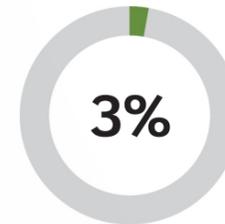
The website helps buyers and sellers connect, while increasing the visibility of biomass fuel suppliers, and enhancing the availability of information about potential sources of biomass. In doing so, this project helps those considering biomass-fired heat or energy systems to better understand the network of fuel providers across Minnesota and the region.



Total Projects and Initiatives



Percent of Total Project Hours



Percent of Total Projects and Initiatives

“

AURI helped us tremendously by making key connections in the value-added ag sector and by supporting the project with expertise in the soybean sector. The strategic input provided was invaluable.

Dennis Egan, Owner
Epitome Energy



Innovation Network Program

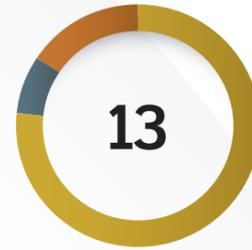
Throughout FY19, the Innovation Network Program (INP) actively engaged stakeholders, commodity groups, thought leaders, business and industry, to accomplish AURI's mission.

The purpose of the INP is to increase innovation opportunities and expand networks for Minnesota businesses and entrepreneurs through the focused connection of resources and partners along the value chain.

The INP group accomplished this by convening events, seminars, forums and networking sessions for the purpose of encouraging thoughtful and deliberate conversations to create economic impact for the state.

Attendance at activities in FY19 increased 45 percent over the previous year, and nearly doubled the number of new attendees over FY18.

Overall, the INP hosted 13 successful events and many beneficial relationships were developed and expanded due to these activities.

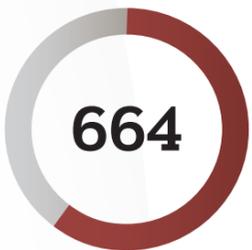


Total INP Events

- 10 Food
- 1 Biobased Product
- 2 Multi-Area



Total Attendees



New Attendees

Fiscal Year Financial Statement

2019	REVENUE	
	\$3,793,000	State Appropriation
	\$235,477	Fee-For-Service
	\$117,655	Federal Grants
	\$103,141	Interest/Investment Income
	\$99,790	Collaborations & Partnerships
	\$32,289	Sponsorships
	\$25,552	Project Fees
	\$20,082	Registrations
	\$13,055	Royalties
	\$5,893	Miscellaneous
	\$4,445,934	TOTAL REVENUE
	EXPENSES	
	\$806,456	Operations
	\$569,907	Institutional Advancement
	\$905,820	Program Support
	\$2,393,658	Programs and Services
	\$4,675,841	TOTAL EXPENSES

Statement of Activities

In FY19, AURI generated \$4,445,934 in revenue and expended \$4,675,841, showing a deficit of (\$229,907) at year-end.

AURI ended the fiscal year within five percent of breaking-even on its statement of activities (income statement) and had to utilize a portion of its reserve account to off-set the deficit spend for FY19. This was needed to maintain critical programs and secure longer term asset needs.

Overall, AURI's short-term financial outlook is positive. The organization is steadily increasing revenue levels in fee-for-service, project fees, sponsorships and Federal funds to leverage State dollars and maximize their impact. Long-term, increasing revenue from additional funding streams and maintaining positive stakeholder and client relationships is key to AURI's financial health and success.

Stakeholder Analysis

Every two years, AURI conducts an in-depth stakeholder analysis to gain a deeper understanding of the food and agriculture landscape within the state of Minnesota. The process begins with AURI staff conducting dozens of face-to-face interviews with representatives from commodity groups, food organizations and agricultural industry leaders. During the interviews, participants are asked a range of questions to provide direction to AURI's work. The research provides an opportunity to identify stakeholder priorities and industry sentiments while finding areas of strategic synergy and opportunity.

Over the course of the interviews, a number of similarities and common themes rose to the surface, indicating a certain level of mutual experiences across the sector. Below, you will find six of the most common themes discovered through the stakeholder analysis process as well as insight into how AURI plans to address these themes for the benefit of Minnesota agriculture.

- 1 The agriculture ecosystem is becoming more diverse, complex and ambiguous, requiring networking, cross-collaboration and marketing expertise.** With many new entrants into Minnesota's agriculture landscape and new value chains developing, there is an ever-increasing need for collaborative partners to maintain focus on an organization's core priorities. Organizations find it challenging to be everything to everyone. Instead, as the ecosystem expands and becomes more complex, organizations will likely narrow their focus and collaborate with others for perspectives and business opportunities.

To address this theme, AURI plans to amplify messaging and communication to build awareness of AURI's activities, especially as it relates to meeting direct stakeholder needs. This includes convening networking events with educational components, addressing the increasing complexity of ecosystems and supply chains while also helping develop connections between interested parties.
- 2 Stakeholders work toward fair and competitive promotional practices and social responsibility.** A majority of respondents referred to an interest in local sourcing and truth in labeling. These organizations also indicated a desire for greater environmental stewardship and fair international trade policies. What this means is organizations are approaching strategies from a more transparent and holistic position. This is important to recognize because it denotes a realization of consumer-based trends having a greater influence on the value-chain, to which producers must react.

In this case, AURI will undertake various steps to enable stakeholders to achieve their desired outcome. First, AURI will build programming and services intended to increase awareness and inclusion of locally-sourced ingredients, while at the same time continuing to support and build new and emerging industry opportunities and products.

- 3 One-third of stakeholders report ongoing concerns about uncontrollable obstacles.** AURI staff received numerous comments throughout this research project regarding frustrations with current down cycles, low commodity prices, limited equity and challenging farm transfers. Interviewers found that respondents felt these were all issues outside their control, which contributed to a high level of financial and emotional anxiety.

The most effective way AURI can address this theme is by continuing to pursue its mission—specifically through the development of value-added agricultural products – to help mitigate commodity risk. A good example of this is the organization's efforts to evaluate protein opportunities such as concentrates and isolates made from established and emerging Minnesota crops. In taking these steps, AURI can help create additional revenue and market opportunities for producers.

- 4 Two-thirds of stakeholders suggest the long-view appears optimistic.** Despite their current frustrations, the majority of respondents indicated they have more optimism for the future.

In support of these sentiments, AURI will continue its work of developing new markets for the region's commodities and developing additional value chains. Specifically, the organization will catalyze commercialization opportunities for Minnesota-grown/raised agricultural products. At the same time, AURI will continue to explore opportunities for biobased products from fibers, resins, oils, etc.

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

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

- 6 AURI brings impactful value to the ecosystem by building networks, fostering strong relationships and collaborations and supplying timely scientific information.** This was very encouraging to see, as it shows AURI is a valuable resource for Minnesota and the Upper Midwest Region. What's more, the organization is known for its many offerings and available resources, rather than any single element. This indicates a high need for AURI's current capabilities, as well as the potential need to add more.

AURI plans to continue adding value to food and agricultural ecosystems in the future by staying committed to the organization's mission. In doing so, AURI's staff will play a significant role in supporting the ecosystem by providing expertise, expanding networks and developing new products and processes that benefit the entire value chain.



Looking Forward

As AURI looks forward to the future, there are so many shining opportunities.

AURI staff and leadership pride themselves on looking forward and keeping an eye on the horizon for new ideas that could lead to the development of the next significant value-added product or process for Minnesota agriculture.

In terms of innovation, looking forward means AURI not only continues to respond to the current needs of Minnesota's food and agriculture ecosystem members but also proactively seeks out opportunities. Thanks to AURI's systematic approach in evaluating and executing new projects, the organization is increasingly nimble and proactive when serving clients and industry throughout the region.

In the coming year, AURI will undertake several actions to further its mission and support the food and agriculture sectors throughout Minnesota and the Upper Midwest.

First, thanks to the valuable insight gained from stakeholder discussions and analysis conducted during FY19, AURI is in a unique position to capitalize on identified partner needs. Specifically, during the next 12 months, AURI will undertake the following action steps to support the ecosystem:

- Build upon AURI's value chain expertise for the benefit of new and emerging crops and industry sectors.
- Build programming and services to increase the use of locally-sourced ingredients.
- Catalyze the understanding and commercialization of functional properties found in Minnesota's agricultural crops and products.
- Expand the Open Innovation—Reverse Pitch platform to include additional ecosystem members, including small to medium-sized agribusinesses and producer organizations.
- Develop opportunities for AURI collaborations with students and youth to illustrate the broad potential in agricultural careers.
- Further explore opportunities for biobased products from fibers, resins, oils, etc.
- Optimize AURI's facilities, equipment and technical expertise to address ongoing industry needs, including pilot-scale commercial runs for marketing research.
- Amplify communications outreach to build awareness of AURI's activities and resources, especially as it relates to meeting producer and client needs.

In addition to the strategic activities listed, AURI plans to explore and support a number of identified interest areas as follows:

Exploring Traditional and Alternative Protein Sources

With protein ingredients continuing to increase in prominence due to a rise in consumer demand, AURI will explore new opportunities for traditional and alternative sources. Staff will focus its efforts on convening and participating in events that further protein innovation in all areas, the Protein Highway program, conduct a meat and livestock industry needs assessment, provide guidance to the Plant Protein Innovation Center and conduct studies in new protein sources for uses in food products. The ultimate goal is to help identify opportunities for clients and stakeholders to address consumer demand.

This work will provide direct support to small and medium-sized Minnesota businesses in both the traditional and alternative protein industries.

Creating Tools to Support an Environment for Scalable Food Businesses

In the coming year, AURI will take steps to build resources for the Minnesota-wide food innovation ecosystem. By the time you read this, work will have already started on multiple new resources supporting this goal. First, in follow up to our Pricing and Go-to-Market Guide, AURI will release a food product packaging guide and a dedicated resource for guidance on shelf-life properties. After that, AURI will also endeavor to map out the food loss and waste value chains for six Minnesota agricultural products from farm to end of retail. The result will be the identification of new processing and production solutions to both add value to and decrease food waste streams, as well as spur new sustainable packaging options and system solutions to achieve the same result.

AURI will focus its efforts on empowering small-scale entrepreneurs by continuing its partnership with the Minnesota Department of Agriculture on a multi-phase public initiative exploring the lack of right-size processing capacity and access to affordable manufacturing options in Minnesota for ready-to-scale food and beverage businesses. The initiative identifies strategies to encourage development of a more robust manufacturing infrastructure.

Developing Minnesota's Industrial Hemp Production and Processing Industry

Minnesota currently operates a pilot program under the 2014 U.S. Farm Bill, allowing for the study of growth, cultivation and marketing of industrial hemp. AURI's staff has seen great interest in this new crop and will investigate the use of hemp in biobased products, the potential use of cannabidiols and opportunities for the meal, oil and fiber for livestock feed, food ingredients, and fiber products. To this end, AURI will release a public domain report in FY20 illustrating the value chain segments, developed with information obtained through several interviews with key leaders and stakeholders in the hemp industry.

State Fiscal Year 2019 Active Projects and Progress Report

Project Name	% Complete
MULTI	
2018 Tech Assistance	100%
2019 Tech Assistance	77%
Soybean Grant Application Review	100%
Sunflower Protein	100%
Technical Advisory Program	100%
Forever Green Initiative 2018	100%
New Uses-Value Chain Development	76%
Forever Green Initiative 2019	100%
New Uses Forum 2019	100%
Commodity Group Technical Advisory Program	90%
MINI MBA (AIP)	100%
Winter Camelina (SARE)	100%
MN Cup Judging	100%
Open Innovation	100%
Technical Support PPIC	19%
Hops/CBD Processing Research	13%
BIOBASED PRODUCTS	
BioMulch Development	100%
Organic Corn Processing	100%
Bioenergy Development	44%
Hempcrete	100%
Corn Based Packaging	58%
Livestock Feed Development	100%
Fermentation Development	64%
Hemp Rope	28%
BioPreferred Label	100%
Soy-Based Road Treatment Due Diligence In-State	100%
Biobased Crops	100%
BioMulch Technical Assessment	33%
Soy-Based Road Treatment Due Diligence Regional	20%
Soy-Based Road Treatment Information Dissemination	42%
BioMulch Market Assessment	23%
COPRODUCTS	
Forage/Hay - Aquaculture Potential	100%
Specialty Litter Fertilizer	100%
Corn Cob Prebiotic Product	100%
Starch Additive Trials	100%
Butanol Process-Aquaculture	100%
Ag Based Litter Development	100%
Filtration Assessment	95%
Horticultural Compost Project	100%
Soil Amendment Development	100%
Organic Fertilizer Development	100%

Coproduct Fertilizer Development	100%
Organic Sugar Beet Processing	100%
Poultry Feeding Trials	85%
Lupulin Separation	100%
Rumen Bypass Protein Product	100%
Grass Screenings Additional Uses	100%
Equine Feed Assistance	26%
Organic Alfalfa Densification	100%
Waste to Pet Food	100%
Livestock Feed Additive	100%
Fermentation Feed Additive	75%
Animal Litter Development	99%
Feed Pellet Development	100%
Spent Coffee Assessment	100%
Grilling Pellet Blend Development	100%
Organic/Non-GMO SBM Processing	100%
Residue Evaluation	100%
Lab Column Field Denitrification	32%
Protein Extraction Development	100%
Re-envisioning Alfalfa Use	1%
CBD Coproduct Evaluation	41%
Co-op Aggregation of Soybeans	100%
Evaluation of Litter Formulas	96%
Sustainable Corn Stover	100%
Hemp Extract Process	21%
Pet Product Development	100%
Sugarbeet Product Assistance	52%
Midwest Biomass Exchange	76%
Heating the Midwest	100%
Alfalfa Protein Initiative	100%
Industrial Hemp Seed Analysis	100%
FOOD	
Meat Shelf Stability	40%
Jerky Development	15%
Pickle Dip Development	100%
Co-Manufacturing Co-op Assessment	1%
Rice and Beans Labels	8%
Vegan Pizza	40%
Frosting Testing	35%
Granola	100%
Sauce Development	100%
Flax Snack	100%
Peanut Brittle Nutrition	100%
Hemp Seed Food Grade Testing	29%
Nut Substitutes/Scale-up	100%
Cold Press Oils	35%
Purely Seed	100%
Asparagus Formation	30%
Fruit and Vegetable Jam	58%

Meat Granola Bar	54%
Plant Based Yogurt	78%
Granola Nutrition Labels	79%
Non-Alcoholic Beer Development	100%
Chickpea Butter	16%
Lactation Cookies	100%
Fruit Filled Frozen Pudding	100%
Gourmet Popcorn	100%
Pickle and Switchel Development	100%
Mushroom Jerky	100%
Central Minnesota Meat Processing Study	100%
Frozen Treat Development	48%
Soft Cookie Shelf Life	100%
Kombucha Scale Up/Development	100%
Pickled Products	16%
Spread Development/Labeling Guide	100%
Kombucha Development	51%
Hemp Powder-Oil Processing	45%
Southern Dessert Labels	53%
BBQ Shelf Life	93%
Food Co-op Development	100%
Granola Bars Development	100%
Elderberry Syrup Development	6%
Elderberry Co-op	100%
Elderberry Dehydration	100%
Nordic Sprinkle-Topping	100%
Brazilian Candies	100%
Turkey Jerky Development	95%
Turkey Product Label Development	100%
Chocolate Labels	25%
Spent Brewer Grains	57%
Grant Development Service	100%
Graham-Style Crackers	100%
Beverage/Brew Processing	100%
Egg Rolls	23%
Lactose-Free Ice Cream	88%
Pumpkin Pesto	17%
Grain-Free Bread	100%
Lactation Snack Bar	100%
Handheld Pie Development	100%
Co-op Feasibility Assessment	100%
Ice Cream Sauces	100%
Mini Pasties	100%
Wine Syrup Development	58%
Vegetarian Meals for School	34%
Sweet and Savory Pie Technical Assistance	2%
Popcorn Product Development	71%
Spods	100%

Meat Product Shelf Stability	53%
Heart Chocolate Bar	13%
Ice Cream Nutritional Labels	32%
Shrimp Analytical Work	14%
Meat Locker Development	78%
Heart Health Bars	93%
Chickpea Food Processing	100%
Micro-Malting Pilot Facility	100%
Belgian Waffles Development	19%
Organic Mayo	100%
Aronia Berry Development	100%
Cocktail Mixer	100%
Sourdough Fermentation	15%
High Oleic Cooking Demo	100%
Soy Nutrition Institute 2018	100%
Good Acre School Lunch/Networking	100%
Meat Product Innovation	68%
2018 Summer Seminar	100%
Craft Distilling Event	22%
Food Ag Ideas Week 2018	100%
School Lunch Expanded Market	100%
Soy Nutrition Institute 2019	42%
Halal and Kosher Meats	45%
Co-Manufacturing Assessment	13%
University Foodservice Pilot	74%
Value-Added Dairy Workshops	100%
Kernza Applications	7%
Protein Assessment of Minnesota Commodities	100%
Food Business Roadmap	100%
UMN Food Safety Collaboration	70%
Food and Health Event 2018	100%
Food Safety Networking	100%
Food Industry Thought Leaders	100%
Food Processing Waste Thought Leaders	1%
Food Packaging Guide (AIP)	100%
Local Ingredient Sourcing	52%
Agri Wheat/Sourdough Analysis	12%
African Beer	22%
Hazelnut Coop	100%
Sourdough Bread Development	24%
Beef Processing	5%
RENEWABLE ENERGY	
Black Carbon Analysis	100%
Soy Processing Study	100%
Ethanol Expansion Feasibility	100%
Vegetable Coproduct for Pellet Fuel	100%
FY19 MNRER	100%

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