



auri

Agricultural
Utilization
Research
Institute

GROWING MINNESOTA'S ECONOMY
one commodity and
one business at a time.

2013 Annual Report

The key to our future: Minnesota's agricultural roots

Minnesota's future may well be found in our agricultural roots. The state's commodities, from corn to livestock and soybeans to sunflowers, present countless opportunities to create new and improved products and processes that feed the world, improve health, sustain our natural resources for the next generations, and much, much more.

AURI's mission is to help small- and medium-sized businesses and entrepreneurs find those unique ways to improve Minnesota's economy, one agricultural commodity at a time. Through our range of idea-to-commercialization services and leadership in identifying future opportunities, AURI is helping Minnesota be a global leader in the area of agriculture and agricultural processing.

The stories and information presented in this report will show you just a few of the ways AURI staff, along with countless partners across the state, work together to improve our economy using our agricultural roots. We are helping to connect new and old, traditional and modern, rural and urban—in order to create a stronger, more vibrant future for Minnesota.

Sincerely,



Teresa Spaeth
AURI Executive Director

AURI Board of Directors for FY13

Julie Bleyhl
Minnesota Farmers Union

Art Brandli
Minnesota Wheat Research
& Promotion Council

Roger Chamberlain,
Secretary/Treasurer
Agribusiness

Rep. Andrew Falk
Minnesota House
Ag Committee

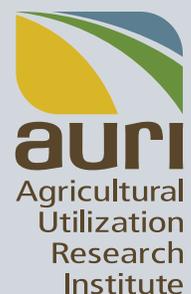
John Gilbertson
Minnesota Farm Bureau
Federation

John Goihl
Agribusiness

Ron Obermoller, Chair
Minnesota Soybean
Research & Promotion
Council

Richard Peterson, Vice Chair
Minnesota Corn Research &
Promotion Council

Sen. Matt Schmit
Minnesota State Senate





AURI's Mission

AURI was created and funded by the Minnesota legislature to foster long-term economic benefit through increased business and employment opportunities in Minnesota through:

- Research and development of innovative uses or value improvements for Minnesota agricultural commodities and products, including the identification and expansion of new and existing markets;
- Implementation of basic and applied research to support innovation, technology and growth of the agricultural industry; and
- The development of renewable energy and biobased opportunities from Minnesota agricultural commodities and coproducts.



GROWING MINNESOTA'S ECONOMY...

...ONE COMMODITY AT A TIME

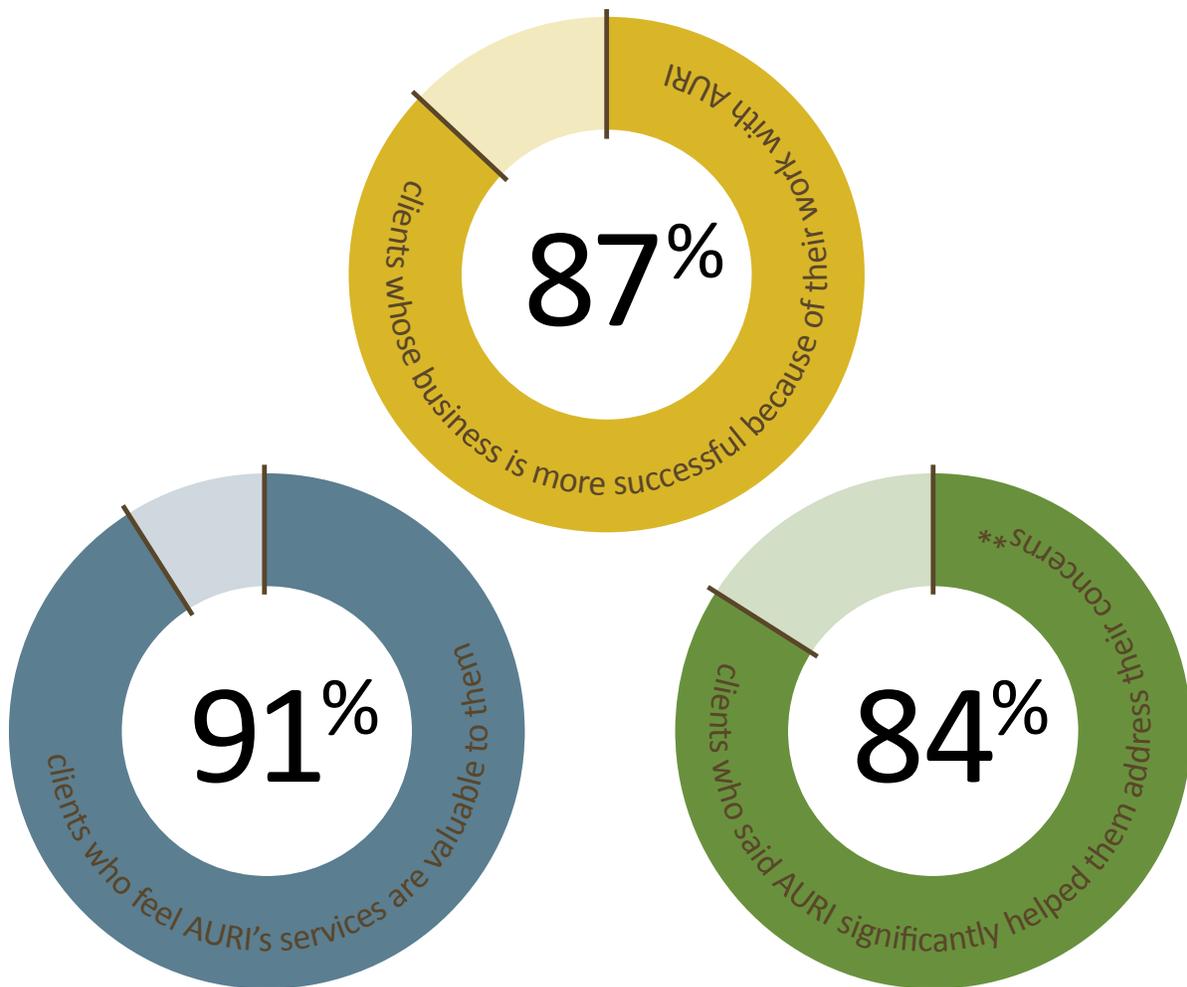
\$414,055,000

of capital investment
in new plants or equipment

281,320 tons

of commodities used in
new products or processes*

...ONE BUSINESS AT A TIME



*From an eight-year survey of clients with a 16% response rate of AURI's client base. It is likely these results would have been improved with higher response rates.

**For fiscal year 2012-13.

Wild Rice: *Health benefits create growth potential*

Idea to reality: Wild rice, the high-protein, high-energy cereal grain long revered by native peoples as a sacred and life-giving food, may be a significant source of beneficial compounds that could grow the commodity's consumer base.

AURI's role: AURI commissioned a literature review to explore the research done thus far on wild rice's nutritional benefits and therefore identify future possible research and projects that may lead to commercialization.

Outcomes: The findings in this review could lead to further research and commercialization, spurring interest in developing new products to take to market. AURI continues to work with the Minnesota Cultivated Wild Rice Council, food processing companies and others to bring these ideas to the market.

Partners: Minnesota Wild Rice Council and the University of Minnesota.



Soybeans: *Klean & Green*



Idea to reality: A Minnesota family company wanted to use recycled vegetable oil and glycerin from their small biodiesel plant to make green cleaning products. They needed help with glycerin purification and product formulation and testing.

AURI's role: AURI scientists helped purify the crude glycerin and perfect the product recipes and manufacturing process for Klean Soap.

Outcomes: Klean Soap now makes five all-natural cleaning products, which are being tested at the Minneapolis-St. Paul Airport. The company is also seeking green certification and setting up a distribution network.

Turkey: *Turkeytastic*

Idea to reality: The Minnesota Turkey Growers wanted to create a flavorful turkey sandwich that would be popular with consumers, as well as identify the nutrition facts for various turkey recipes.

AURI's role: AURI scientists provided product development and nutritional analysis services.

Outcomes: Turkey To Go, owned by the Minnesota Turkey Growers, won the "Best Food or Beverage" award at the Minnesota State Fair; they also have many recipes available at the state fair and on their website.

Partners: Minnesota Turkey Growers



Dairy: *New milk meter*

Idea to reality: Dairy processors needed a faster, cheaper way to determine the lactose content of milk.



AURI's role: AURI partnered with the Midwest Dairy Foods Research Center to develop a rapid lactose test using an inexpensive blood glucose meter.

Outcomes: The new test procedure will save dairy manufacturers time and money and will improve product quality and processing efficiency. It is now being used in commercial plants.

Partners: Midwest Dairy Foods Research Center, Midwest Dairy Association



Corn and Swine: Swine liquid feed trials

Idea to reality: U.S. hog producers use large amounts of dried distillers grains with solubles (DDGS) in swine rations. There's interest in using liquid swine feeding systems, which would enable farmers to feed less-expensive wet or

liquid ethanol coproducts. Farmers needed to know if feeding liquid ethanol coproducts would affect pigs' growth or meat quality.

AURI's role: AURI sponsored feeding trials at the University of Minnesota Southern Research and Outreach Center in Waseca, Minn., which compared the performance of pigs fed liquid and those fed dry diets containing ethanol coproducts.

Outcomes: Feeding ethanol coproducts in liquid diets did not reduce swine growth or meat quality. The research will help hog producers make informed decisions on the use of liquid ethanol coproducts. It will also help the ethanol industry expand markets for wet products, thereby cutting energy use and feed drying costs.

Partners: University of Minnesota Southern Research and Outreach Center, Minnesota Corn Research & Promotion Council, Minnesota Pork Board, and Guardian Energy, Janesville, Minn.

Livestock: Rivard's Quality Seeds

Idea to reality: Rivard's Seeds no longer had enough post-harvest leftovers (coproducts) to support pelleting at their plant and needed to find a way to stay in business.

AURI's role: AURI helped connect Rivard's with another business that had product for them to pellet.

Outcomes: Rivard's retained five jobs, sold the business to D&D Commodities, Ltd. and remains profitable with an eye to the continued growth opportunities.



Wheat and Barley:

Adding value

Idea to reality: The Minnesota Association of Wheat Growers and the Minnesota Barley Growers Association wanted to identify new or alternative uses for wheat and barley.

AURI's role: AURI revisited the 2002 National Association of Wheat Growers New and Improved Wheat Uses Audit, expanded that work, and identified the best potential new and value-added uses for Minnesota wheat and barley.

Outcomes: AURI staff is sharing the report findings through various media, with wheat and barley growers, industry, and the National Association of Wheat Growers in order to increase knowledge about these possible new uses and lead to new products and processes that add value to these commodities.



Partners: Minnesota Association of Wheat Growers, Minnesota Barley Growers Association, Neil Doty of N.C. Doty & Associates, and Praxis Strategy Group.

Sunflowers: *Smude Oil*

Idea to reality: After the hot, dry summer of 2007 took a toll on Tom Smude's corn and soybean crops, he learned that hardy sunflower plants could thrive in such adverse conditions, and he began to explore the idea of producing sunflower oil. Now, Smude's Oil creates cold-pressed and filtered sunflower oil, available in a variety of flavors.

AURI's role: Nutritional analysis, product development, troubleshooting and innovation networking.

Outcomes: Today, Smude's is on shelves in major grocery chains, has a loyal customer base, is expanding its offerings to include granola and employs four part-time staff.

Partners: Smude Oil received a value-added producer grant from the USDA and also received assistance from the Community Development of Morrison County and the Small Business Development Center in Brainerd.



THE MINNESOTA RENEWABLE ENERGY ROUNDTABLE: Agricultural commodities create economic, environmentally-friendly options

Since its inception in 2006, the Minnesota Renewable Energy Roundtable has been bringing together people from across the renewable energy industry to make Minnesota a national and global renewable energy leader. Networking and relationships are essential to the roundtable, which is led by a planning team of representatives from the Minnesota Department of Agriculture, Minnesota Department of Commerce, University of Minnesota, the Minnesota State Colleges and Universities System, and AURI.



After its initial success, the state legislature adopted the idea into state statute in 2007. Today, the roundtable continues to foster innovation by bringing people and ideas together to use Minnesota's agricultural commodities to create renewable energy options that are good for the economy and the planet.

Here are some of the ways the roundtable has been meeting its mission in the last year:

- **Identification of renewable energy workforce needs:** One of the roundtable meetings in 2013 brought together leaders from higher education, economic development, and industry to discuss education and workforce trends, challenges, and innovative programs. Over the years, roundtable participants have helped provide information to develop new courses in the Minnesota State Colleges and Universities System and conducted a workforce gap analysis and asset inventory.
- **Utilization of coproducts:** Research and development in the use of coproducts have led to expanded use of DDGS, glycerin, and other byproducts of agricultural processing. A 2013 study and roundtable presentation looked to determine Minnesota corn producers interest in selling corn stover biomass, their knowledge of issues surrounding biomass harvest, factors that are likely to influence their opinions of biomass harvesting, and what further information producers need.
- **Biodiesel and ethanol:** Many roundtable participants have a continued hand in getting biodiesel and ethanol into the transportation infrastructure and supply chain, addressing challenges and growing opportunities for use of these fuels. Roundtable participants are working together to continue to advance renewable fuels and technology during this time of lower fossil fuels costs.
- **Utilization of biomass:** AURI has been serving as an informal liaison between the roundtable and Heating the Midwest—a six-state consortium that wants biomass to heat up the nation's heartland. AURI staff serve on a biomass action team focused on demographics, benefits and consequences, biomass combustion technology and policy.
- **Energy efficiency in processing plants:** Information shared through the roundtable is helping processing plants in the Midwest increase their energy efficiency.





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