Resources for innovation

Analytical Chemistry Lab (Marshall, MN)
The focus of the analytical laboratory is to provide quality analytical and compositional data to promote value-added products from Minnesota agriculture commodities and coproducts. The analytical laboratory evaluates many sample types including foods, meats, coproducts and renewable fuels. Capabilities include:

- Chromatography
- Spectroscopy
- Wet chemical analysis
- Physical characterization

Bioproducts Lab (Marshall, MN)
This facility is focused on one to 10 kilograms scale processing of agriculture commodities and coproducts. Processes are developed and demonstrated for producing increased value materials by fractionation, chemical conversion and purification. Capabilities include:

- Chemical processing of straw, stover and other biomass materials
- Extraction and characterization of oils and high-value components from oilseed meal and other feedstocks
- Transesterification and esterification reactions for demonstration of biodiesel processing
- Small-scale fermentation and digestion processes for production of fuels
- Distillation and evaporation for process development

Microbiology Lab (Crookston, MN)
AURI’s microbiology lab is used for the research and analysis of industrial products. This facility is used to support projects that have the potential to introduce agricultural commodities as ingredients for industrial products. Capabilities include:

- Microbiological analysis
- Gas analysis

Coproducts Utilization Pilot Lab (Waseca, MN)
This facility is the only value-added lab of its kind in the Midwest. It is used for the development of new uses for plant and animal coproducts that present environmental and economic opportunities. Capabilities include:

- Grinding
- Milling
- Size reduction
- Blending
- Pelleting
- Drying
- Product characterization
- Particle size analysis

There is a growing opportunity for Minnesota businesses to use biobased products to replace petroleum-based ingredients in materials such as plastics, films, building materials, lubricants, sealants and more.
Bio-Plastic Solutions

Idea:
Develop eco-friendly building materials, including window trim interiors and office furniture, that use ag fibers such as wheat straw fiber and polymers to improve the products.

AURI's role:
AURI connected Bio-Plastic Solutions to North Dakota State University researchers that led to a network of resources including the University of Minnesota, Southern Minnesota Initiative Foundation and Minnesota manufacturers. They also assisted with product development focused on improving product performance.

Outcomes:
Bio-Plastic Solutions makes BioBest® parts for doors, windows, wall trim, office furniture and medical devices that contain more than 80 percent biobased carbon. They continue to research ways to make products stronger and more efficient.

EarthClean

Idea:
EarthClean needed certification by the USDA Forest Service in order to use their corn-based fire suppressant TetraKO to fight forest fires. The company also wants to develop a liquid version.

AURI's role:
AURI scientists worked with EarthClean on product development and testing.

Outcomes:
With testing and product development help from several of the AURI's scientists, EarthClean had commercial quantities of TetraKO beginning in 2012. Based on its success in the interceding years, EarthClean’s product is now part of the Forest Service’s Qualified Products List.

What is the Agricultural Utilization Research Institute?
AURI was created by the Minnesota legislature to foster long-term economic benefit for the state through value-added agricultural products. Its work encompasses the research and development of Minnesota agricultural commodities and products. AURI also supports product innovations or enhancements, helping entrepreneurs identify and expand new and existing markets.

Services that nurture growth

Applied Research
Through practical, applied research AURI identifies emerging opportunities to add value to agriculture products. This information is publicly available in order to help entrepreneurs and businesses generate ideas for new products and processes. More information and reports are available at: auri.org/focus-areas/biobased-products

Hands-on Scientific Assistance
Scientists are available to provide consulting and technical services in the areas of:
- Product and process development
- Product evaluation and testing
- Sourcing materials, equipment and services

Innovation Networks
When deciding the feasibility of a new product or process, it is critical to have access to industry experts and a science-based network of people. With a broad range of networks, AURI can help assemble the right people at the right time to help bring new products and processes to market.

Funding partners:
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Bio-Based Materials: Minnesota’s Opportunity & Challenge, a study sponsored by AURI and the Minnesota Soybean Research and Promotion Council outlines Minnesota’s fundamental strengths in agriculture, biofuels and innovation, and what is necessary in order to capitalize on market potential.

The Emerging Biobased Economy, a study commissioned by AURI, the Minnesota Department of Agriculture and Minnesota Corn Growers. Conducted by Informa Economics, Inc., the study looked at trends in ethanol, biodiesel and other bioproducts.