

Innovative Vision

2010 AURI Legislative Report



Growing Innovation in Rural Minnesota

As an innovative research institute, AURI provides unique resources and services to Minnesota. AURI's hands-on, scientific technical assistance, one-of-a-kind facilities, expert staff and a targeted network of resources are accessible to Minnesota companies seeking to add value to farm commodities and agricultural coproducts. This assistance is particularly valuable during difficult economic times.

Despite the challenges, new ag-based businesses providing jobs and economic activity are being developed. Existing companies are seeking to diversify their operations by utilizing new technologies or through the identification of additional revenue streams. AURI is there to help achieve the vision for a strong economy.

Innovation cannot occur without implementation. Great ideas have little value until they are put into practice. AURI's focus on applied research helps drive innovation by moving ideas to realization. Experienced and dedicated staff teamed with unique laboratory capabilities, makes AURI an asset to rural Minnesota.

AURI programs, services and mission supports innovation, entrepreneurship, enterprise development and local ownership among rural communities. Numerous economic models point to innovation, research and development and technology transfer as keys to economic recovery, even though they are often the first things abandoned when there is a downturn in the economy. Many are looking to innovation and entrepreneurship to bring back our economy. Unfortunately, most small to medium sized businesses have difficulty conducting research and development on their own during such challenging times.

AURI activity gives witness to the fact that despite the current economic conditions, new and existing ag-based businesses are innovating and building enterprises all while creating and retaining jobs and economic activity.

Created by the Minnesota state legislature as a nonprofit corporation, AURI provides a unique resource to the state's businesses, cooperatives, entrepreneurs and others. The support and assistance offered by AURI helps to further the development of ag-based opportunities that allow farmers and businesses to fully maximize the value chain. This involves the development of new agriculturally-based products as well as the creation of uses for processing leftovers that used to be considered waste. AURI has a strong focus on converting those coproducts into additional revenue streams. AURI also works with enterprises on process efficiencies and refining processes, factors that are also important during lean times.

AURI has been catalyzing opportunities for 20 years. Our experienced scientific and project development staff have assisted in the development of new industrial products, consumer goods and food products. We have discovered new uses for agri-processing waste and been a catalyst for the advancement of renewable energy in Minnesota. AURI has also established a statewide network of resources connecting rural and urban interests.

In the past two years alone, AURI has provided tens of thousands of hours of direct assistance to projects that have resulted in the creation and retention of numerous jobs and significant economic impact throughout the state.

The following pages include examples of innovations that have received AURI assistance in the past year and are making a positive impact on Minnesota as a result.

Product Innovation

Throughout our more than 20 year history, AURI has helped hundreds of Minnesota businesses in the development of new products. Whether the assistance is given to entrepreneurs or existing businesses, the results have been the creation of new value-added products, economic activity, enterprise development and job creation and retention. This product innovation has yielded new products on the shelf and new market opportunities for Minnesota-grown agricultural commodities.

Klein Foods, Marshall

Klein Foods is a food manufacturer specializing in whipped honey, confections, barbecue sauce and fruit preserves. Klein Foods markets products under the Walnut Grove Mercantile label.

AURI technical staff has provided assistance with new recipe formulation, nutritional analysis and ingredient sourcing. This has resulted in the creation of 3 jobs for the company, significant production cost savings and the opening of new markets with huge growth potential.



Eagle Biofuels, Plainview

Eagle Biofuels is a farm-based business providing consumers with a fuel alternative to petroleum products. Eagle Biofuels packages and delivers corn products and biomass blended fuels for home heating.

AURI provided technical and laboratory assistance to evaluate energy and ash content of multiple ag-based pellet fuel blends. AURI also helped connect Eagle Biofuels with other pellet fuel manufacturers and distributors in the state.



BitterSweet Bakery, Edina

AURI assisted BitterSweet Bakery of Eagan in the development of gluten-free bakery products to provide options for people who cannot consume gluten. This includes those who suffer from ailments such as celiac disease. The bakery produces dozens of bakery items including bars, breads, pizzas, cakes, muffins and more.

AURI has provided nutritional analysis of the products, conducted sensory analysis of the products and assisted in establishing quality control. This enterprise has led to the creation of 5 full time and 5 part time jobs.



Turkey Valley Farms, Marshall

Turkey Valley Farms processes over 100 million pounds of Minnesota-grown turkeys a year. They operate a 110,000 square foot facility in Marshall where they process whole birds, bone-in breast, fresh and frozen turkey, tray-pack products and deboned breasts and thigh. The company produces about 50 different products with annual sales of more than \$60 million. They also employ about 300 people.



AURI has provided product development assistance, product testing and sensory analysis through the animal products laboratory in Marshall.

Process Innovation

Innovations in processing technology can lead to value-added opportunity. New technology that can be applied to agri-processing opens the door for entry into new markets. A basic tenet of AURI is the transfer of technology from research scale to real-world applications.

Biomass densification

AURI continues to see a growing demand for biomass based renewable energy. Based on this interest, finding a reliable source of biomass is a concern renewable energy projects are facing. Cellulosic ethanol, gasification, co-firing biomass sources and pellet fuel production all involve the collection, handling and storage of agricultural biomass. One of the largest obstacles facing biomass utilization is densification. Densification can aid in 1) reduced cost and improved ease of storage, 2) improvements in transportation efficiency, 3) decrease losses of biomass through the prevention of product deterioration due to the elements, 4) increased ease of handling if utilized as a biomass pellet fuel, 5) potential combustion efficiency increases, and 6) offers the ability to standardize feeding mechanisms for gasifier and other biomass based systems.



Information obtained from a densification study has been shared with numerous companies for decision making including Sunrise Agra Fuel, Prairie Agra Fuels, American Ag Energy and more. This information has potentially aided the start up of three MN pellet fuel manufacturers leading to the creation of at least 7 new jobs. This information was also used to assist in risk mitigation for a company considering a start up during unfavorable economic conditions.

North American Fertilizer, Olivia

Client sought AURI technical and pilot lab assistance to develop new methods for biomass based ash densification. AURI lab service was utilized in the development of pelleted blends of agricultural products to increase product density and handling characteristics for transport and energy use.

North American Fertilizer continues to grow and expand their operation sourcing and applying biomass-based ash as a fertilizer source for crop production. This project maintained jobs as well as created new job positions for transportation and application.

Microwave drying

AURI has identified a microwave drying technology that could result in significant cost savings for agricultural processors. Information on this technology has been shared with several companies who could benefit. One is presently evaluating the feasibility of installing the technology in their plant.

Small scale digester

AURI is assisting in the development and evaluation of technology needed for successful small-scale anaerobic digesters for manure management and bioenergy production. Most current technology is applicable for large herds of 700 cows or more. Minnesota dairies average just over 100 head. A digester installed on the Jer-Lindy farm near Brooten is operating utilizing manure from the 150 head dairy as well as added ag processing waste. Successfully engineering a functional system for smaller herds could allow average sized Minnesota dairies to become energy producers while answering many manure handling concerns.



Position Innovation

Not all innovation takes place through the development of a new product. Some innovative activity occurs when current products or commodities are looked at in a new way or are utilized in ways not previously considered. AURI works to help move Minnesota-grown commodities into new areas. This provides value-added opportunities for the farm goods but also can form the foundation for expanded business opportunities.

Alternative cutting and merchandising

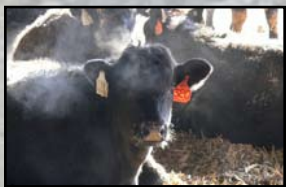
In early April, AURI will conduct meat cutting and merchandising workshops at the Meat Lab in Marshall. These workshops are designed to educate and update Minnesota's meat processors on changing consumer tastes and merchandising that presents new market opportunities. This includes training in consumer preferences for Latino markets as well as alternative cutting and merchandising of beef.



More and more consumers are reaching for locally produced products and an increased connection with those who produce it. This training will help hundreds of independent meat processors identify new opportunities for processing and merchandising meat products.

Alternative Feed Ingredients

Minnesota's livestock industry has faced challenging economic conditions in recent years as input costs have risen more rapidly than the prices they receive for their animals or milk. An emphasis that AURI has pursued is in the identification of alternative feed ingredients. These alternatives may reduce the cost producers pay or they may result in increased animal performance. Most of these alternatives are either



agricultural processing leftovers or are commodity ingredients processed in a novel way. AURI has participated in a number of collaborative projects aimed at utilizing lower cost ingredients to benefit the livestock industry. They include:

Glycerol. This biodiesel manufacturing coproduct is being tested in dairy calf and turkey diets. Glycerol could potentially replace up to 6% of the corn in pre- and post-weaned dairy heifers.

Low oligosaccharide soybean meal. Low-O meal is being evaluated as an ingredient in baby pig diets as well as for turkeys. Initial results have shown significant improvement in average daily gain because of improved digestability.

High bypass protein soybean meal. This specialty meal is processed in a way that allows for greater absorption by dairy cattle. This improved digestability results in increased milk production. Benchmark Ag of Cannon Falls is proceeding with plans to construct a facility to produce the specialized meal for dairy markets in Southeast Minnesota and parts of Wisconsin.

Coproduct Utilization

Hundreds of Minnesota agri-processors produce a wide range of leftovers that represent potential additional revenue streams. AURI has a focus on coproduct utilization, including a unique laboratory facility in Waseca designed to help produce value from these leftovers.

American Ag Energy of Alexandria is a newly formed company formed to pellet agricultural residues for use as a fuel, primarily for industrial applications such as gasification, co-firing and direct combustion. AURI provided technical and pilot lab assistance in the formulation of a low ash, high energy pellet fuel. This new company created 2 jobs and has plans for a pellet plant to be constructed by 2011.

Paradigm Innovation

Paradigm innovations occur when people change the way they think or recognize a new opportunity that hadn't been considered or acted upon before. AURI strives to "see around corners" and to make uncommon connections in an effort to move agriculture into areas not considered before. By shifting how agriculture is viewed, new opportunities emerge.

Minnesota's Renewable Energy Roundtable

Minnesota has established a leadership role in many aspects of renewable energy and boasts one of the largest and most sophisticated systems for renewable energy production and distribution in North America. Facilitated by AURI, the Renewable Energy Roundtable is a unique collaborative effort engaging higher education, agriculture, industry, economic development, community development, private business, policymakers and state government has led to the formation of a working group designed to address impediments and chart the course for continued leadership in the renewable energy industry in Minnesota.



The mission of the Roundtable is to take action on the immediate challenges and opportunities facing our state, region and nation using Minnesota's assets. The goal is twofold:

- Ensure that Minnesota is recognized as a leader in renewable energy knowledge, application and utilization
- Create an implementation platform for moving short and long-term strategic action forward

This effort has brought together more than 500 individuals representing over 140 organizations. The Roundtable provides more than just a discussion forum. Action plans are developed and carried out. Some of the outcomes that have occurred as a result of Roundtable efforts include:

- Development of communications portal
- Creation of Office of Energy Security
- Green Star Community designation
- Renewable energy curriculum development and customized workforce training
- Microenergy loan program

AURI Initiatives

In addition to working on proprietary projects with Minnesota businesses to develop new, value-added uses for agricultural products, AURI also is proactive in pursuing opportunities. Through cultivated relationships with dozens of stakeholders and a staff of seasoned professionals, AURI is able to identify emerging trends and opportunities that have the potential to utilize large amounts of commodities. These initiatives examine possible new uses or technology improvements that hold the potential for large-scale impact. Results from these initiatives are public information and are shared with all interested parties in an effort to prompt commercial development.

While these initiatives are not connected with a commercial partner, they are intended to highlight opportunities for creating additional revenue streams, identify areas of possible commercial development, foster job creation and stabilize the rural economy. Initiative examples include:

- Ethanol solubles as fertilizer
- Ash densification and nutrient availability evaluation
- Distillers dried grains flowability evaluation
- Agriculturally-based fuels evaluation and comparison

Renewable Energy Template

AURI has developed a renewable energy assessment template to provide a roadmap for finding and organizing renewable energy resources and energy use information to help foster renewable energy development projects across the state. This empowers local renewable energy groups to more cost effectively gather this information and will reduce the need for funding multiple biomass and energy use assessment requests.

Several organizations have utilized the template and completed regional renewable energy assessments across the state. The template is a tool to spur interest and action in renewable energy ventures, and it appears that is happening in many areas of the state.

Continuous Value

AURI has contact with hundreds of existing businesses, start-ups, entrepreneurs and cooperatives each year. These new projects create new jobs, economic activity and inspire community growth.

However, economic activity isn't limited to new businesses. Many clients that AURI has assisted in the past provide on-going activity and benefit. These projects provide jobs, boost the economy and utilize significant amounts of agricultural commodities and processing leftovers. Their contributions to job creation and retention should also be recognized and valued.

Some examples include:

Pet Care Systems

Pet Care Systems of Detroit Lakes produces wheat-based litter for cats and other small animals. The company utilizes about 18,000 to 20,000 acres worth of non-food grade wheat each year to make Swheat Scoop, which is a scoopable and flushable alternative litter. Swheat Scoop is available in more than 30,000 stores nationwide and several foreign countries. They also produce Swheat Stall, an ag-based bedding for horses. Pet Care Systems employs 8 full time workers and several part-time staff.

Swheat Scoop is a patented product that was developed at AURI's coproduct utilization lab in Waseca. AURI provided technical assistance in the development of both the cat litter and horse bedding. This includes product formulation and process development both at AURI's Waseca pilot lab and at Pet Care Systems' facility. AURI continues to provide assistance to Pet Care Systems as new ideas and new formulations are evaluated and developed.



Mississippi Topsoils

Mississippi Topsoils of Cold Spring uses high-tech containerized composting technology to convert poultry processing waste and arbor trimmings into premium bagged compost. Located next to the Gold 'n Plump chicken processing facility, Mississippi Topsoils provides an outlet for some of the waste streams generated at the plant. Using a computerized system to provide optimal composting conditions, the waste is converted to premium compost which is bagged and sold at more than 40 outlets around the state.

AURI provided process assistance and business development help for this company when it was starting up. More than 10 years later, Mississippi Topsoils continues to provide jobs and a value-added outlet for waste streams, benefitting one of Minnesota's largest agri-processors.

USA Solutions

USA Solutions of St. Joseph produces Compost-A-Mat animal mats for use in hog farrowing barns and nurseries as well as for pet use. Made from corn stalks and wood fiber, USA Solutions produces thousands of the biodegradable mats each month. AURI has provided technical assistance and performance testing on numerous product formulations and continues to do so. USA Solutions has provided new jobs within the company as well as additional work for two northern Minnesota plants that manufacture the mats.



Farmers Union Industries

Farmers Union Industries of Redwood Falls is involved in multiple value-added enterprises including biodiesel production, coproduct utilization and animal nutrition. AURI has provided technical and quality assurance assistance to the biodiesel manufacturing as well as help in the utilization of coproducts developed during the process.

Appendix A

Projects receiving assistance in FY 2009

| <u>Project number</u> | <u>Project Title</u> | <u>Hours Expended</u> | | | |
|-----------------------|--|-----------------------|----------|--|-------|
| 2003095T | Ag Fiber Carriers | 14.00 | 2007078T | Confection Recipe Development | 20.50 |
| 2006085T | Hydro Seeding Compost | 20.00 | 2007090T | Sauce and Breeding Formulation | 18.50 |
| 2007038T | Blended Bio Fuel | 15.50 | 2008033T | Baked Chip Development | 15.00 |
| 2007069T | Pellet Binder Performance Evaluation | 7.50 | 2008042T | Flaxseed Cracker Formulation | 94.50 |
| 2007070T | Molasses Fertilizer Development | 43.00 | 2008062T | Organic Frozen Baby Food | 36.50 |
| 2008025T | Densification of Prairie Grasses | 72.50 | 2008064T | Healthy Granola Bars | 16.00 |
| 2008029T | Screening Densification | 104.00 | 2008065T | Vegetable and Fruit Salsa Development | 62.00 |
| 2008044T | Wheat Blend Evaluation for Bedding | 7.00 | 2008066T | Allergen Free Meals | 26.70 |
| 2008063T | Flat Die Pellet Mill Evaluation | 189.50 | 2008080T | Chocolate Truffle Formulation | 10.00 |
| 2008072T | Biomass Pellet Fuel Refinement | 12.50 | 2008098T | BBQ Sauce Development | 10.00 |
| 2008073T | Corn Processing for Fractionations | 23.50 | 2009006T | Gluten-free Mixes | 16.00 |
| 2009003T | Ag Fiber Carrier Development | 237.50 | 2009008T | Frozen Dough Bakery Items | 12.00 |
| 2009004T | Moisture Effects on Biomass | 28.00 | 2009012T | Gluten-Free Product Labeling | 9.75 |
| 2009026T | Small Scale Pellet Product | 54.50 | 2009016T | Gourmet Pizza Formulation | 6.00 |
| 2009047T | Oat Fiber Densification | 129.50 | 2009021T | Pizza Nutritional Labeling | 11.50 |
| 2009048T | Animal Mat Sorbency Evaluation | 35.50 | 2009030T | Premium BBQ Sauces | 26.00 |
| 2009063T | Animal Litter Formulation Evaluation | 61.50 | 2009031T | Hot Sauce for Seafood | 9.00 |
| 2009074T | Crop Residue Densification | 50.50 | 2009032T | Dumpling Mix | 5.00 |
| 2009077T | Corn Stover Torrifaction | 88.50 | 2009036T | Sausage Seasoning Development | 6.00 |
| AIC057T | Innovative Drying Evaluation | 95.50 | 2009037T | Vegan Honey Substitute | 17.00 |
| AIC086T | Biomass Densification | 83.50 | 2009044T | Dog Treat Development | 15.50 |
| AIC090T | Solid Fuel Energy Evaluation | 34.50 | 2009046T | Gourmet Sauces Formulation | 14.00 |
| AIC098T | Low Carbon Fuel | 8.50 | 2009052T | Snack Bar Formulation | 10.00 |
| 2008067T | Poultry Product Taste Panel | 115.50 | 2009057T | Barley Bran Applications | 72.75 |
| 2008081T | Food Product Process Development | 70.50 | 2009058T | Sweet and Spicy Sauce | 16.00 |
| 2008090T | Beef Product Nutritional Analysis | 46.50 | 2009064T | Baking Mix Nutritional Information | 6.00 |
| 2009001T | Hazard Analysis Critical Control Point | 77.50 | 2009066T | Healthy Salad Dressing Formulation | 5.50 |
| 2009007T | Turkey Sandwich Recipe Development | 187.75 | 2009071T | Confection Development | 7.00 |
| 2009010T | Ethnic Meat Development | 79.00 | 2009073T | Poultry Product Nutritional Analysis | 11.00 |
| 2009019T | Beef Product Nutritional Information | 38.00 | 2009078T | Sweet Hot Mustard Development | 9.50 |
| 2009027T | Value-Added Beef Cuts | 47.75 | 2007012T | Wheat and Barley Nutraceutical Opportunities | 15.50 |
| 2009038T | Specialty Pork Product Development | 91.50 | 2007033T | Crude Glycerin Utilization | 33.00 |
| 2009042T | Meat Product Development | 114.50 | 2008007T | Biodiesel Standards | 21.00 |
| 2009043T | Alternative Cutting/Steak | 6.75 | 2008052T | Novel Biodiesel Process Assistance | 8.00 |
| 2009043T | Unique Meat Product Development | 14.75 | 2008069T | AOCS Testing | 86.00 |
| | | | 2008082T | Oligosaccharide Free Soybean Meal | 30.00 |
| | | | 2008095T | Continuous Ethanol Extraction | 99.50 |
| | | | 2009053T | Soy-based Pillar Candles | 19.00 |

| | | | | | |
|----------|---|--------|----------|--|----------|
| AIC049T | Microturbine Durability Test | 17.00 | 2008061T | Compost Bed Using Blend Media | 41.00 |
| AIC059T | Biodiesel Check Sample | 102.00 | 2008075T | Industry Idea Exploratorion | 171.50 |
| AIC060T | Biodiesel Taskforce | 44.50 | 2008076T | Intelligent Ingredients | 59.75 |
| AIC074T | Glycerine Refining | 5.25 | 2008077T | Organic Feeds | 29.00 |
| AIC075T | Biodiesel Properties Evaluation | 9.00 | 2008089T | Dairy Processing Technology | 25.00 |
| AIC084T | Integrated Biorefinery | 48.00 | 2008094T | Dairy By-Product Utilization | 29.00 |
| AIC094T | Stover Collection | 24.50 | 2009017T | Cheese Processing | 22.00 |
| 2004064T | Berkshire Marketing | 23.50 | 2009033T | Omega 3 Testing | 23.00 |
| 2005080T | Peak Power Offset Using Biodiesel | 57.00 | 2009034T | Dairy Omega 3 & CLA Assessment | 15.00 |
| 2006006T | Value Added Ag Impact Study | 9.50 | 2009035T | Omega 3 & CLA Evaluation | 15.50 |
| 2006049T | Distillers Dried Grains Utilization | 13.00 | 2009041T | Ethnic Meats Workshop | 10.25 |
| 2007076T | Soybean Expeller Processing | 184.00 | 2009050T | On Farm Dairy Processing | 17.00 |
| 2007082T | Energy Co-Generation | 5.00 | 2009059T | Digester GenSet Technology Development | 55.00 |
| 2008026T | Technology Evaluation | 34.50 | AIC042T | Manganese Oxide and Distillers Grains | 14.00 |
| 2008035T | Local Foods Marketing-II | 178.75 | AIC052T | Treated Municipal Wastewater in Ag Process | 103.50 |
| 2008036T | Peak Power Cost Containment | 19.00 | AIC056T | Small Scale Ethanol Evaluation | 83.50 |
| 2008037T | Dairy Market Development | 18.50 | AIC078T | Manure Digestion System | 29.00 |
| 2008071T | Lamb Compost Utilization | 17.50 | AIC083T | Distillers Grains Sulfur | 26.50 |
| 2008079T | Assess Biobased Opportunities | 16.00 | AIC087T | Dairy Manure Utilization | 78.50 |
| 2008085T | Rural Prosperity Summits | 441.75 | AIC089T | ASTM Biodiesel Testing | 42.50 |
| 2008087T | Oligosaccharides in Swine Evaluation | 53.00 | 2009067T | Biomass Binder Evaluation | 37.00 |
| 2008088T | Value Added to MN Economy | 18.00 | AIC091T | Solid Biomass Fuel Test | 5.50 |
| 2008091T | Development of Colored Corn Products | 110.50 | AIC097T | Post Digester Drying Technology | 25.50 |
| 2009022T | Novel Beef Processing Technology | 8.00 | 2009061T | AgriPreneurship Program Assistance | 25.25 |
| 2009025T | Learing & Leading Workshop | 69.00 | 2009081T | Food Product Sector Opportunities | 15.00 |
| 2009084T | Local Foods Marketing | 5.00 | AIC081T | Assessment of Low Oil DDGS | 22.25 |
| AIC026T | Utilizing Low Oil DDGS | 28.00 | 2008008T | Hazard Analysis Critical Control Point | 49.50 |
| AIC044T | Glycerol as Replacement Feed Ingredient | 119.50 | 2008E | Energy Discovery 2008 | 307.00 |
| AIC045T | Assess DDGS in Beef Cattle | 62.00 | 2008T | Discovery 2008 | 2,272.75 |
| AIC046T | Emerging Technologies Identification | 71.50 | 2007087T | Dairy Digester Evaluation | 22.00 |
| AIC050T | Soy By-Pass Protein | 27.00 | 2008038T | Crop Protection Technology | 439.25 |
| AIC054T | Biofuel Industry Needs II | 7.00 | 2008051T | Ag Energy Development | 185.50 |
| AIC055T | Assess Corn Solubles in Swine Diet | 48.50 | 2008059T | Bean Processing Technology | 20.00 |
| AIC064T | Feeding Wet Cakes | 10.50 | 2008083T | Renewable Energy Roundtable | 7.00 |
| AIC085T | Improved Biodiesel Emissions | 5.00 | 2008084T | Biobased Ammonia Development | 63.50 |
| 2007052T | Sustainable Switchgrass | 30.00 | AIC031T | Biomass Densification Assessment | 64.50 |
| 2008074T | Novel Bacteria for Anaerobic Digestion | 204.00 | AIC034T | County Gasification Evaluation | 10.00 |
| 2008086T | Alternative Ag Product Development | 19.00 | AIC037T | Dairy Coproduct Utilization | 65.50 |
| AIC062T | Sustainable Switchgrass | 115.50 | AIC038T | Grass Screening Gasification | 43.50 |
| AIC076T | Biomass Fertilizer Cost Analysis | 20.00 | AIC039T | Cellulosic Ethanol Assessment | 29.00 |
| AIC077T | Cellulose to Liquid Fuels | 128.00 | AIC040T | Biomass Gasification | 320.00 |

Appendix B

Projects Funded During FY 2009

| | | |
|----------|---|----------|
| AIC041T | Ash Densification | 90.50 |
| AIC043T | Corn Cob Collection | 58.00 |
| AIC047T | Coproduct Process Feasibility | 7.00 |
| AIC058T | Fiber Gasification Opportunity | 84.75 |
| AIC069T | Algae Feasibility | 98.50 |
| AIC095T | Thermophilic Stillage Digestion | 37.00 |
| 2008003T | Potato Culls Utilization | 86.00 |
| 2008004T | Ag Forestry Collaboration | 153.50 |
| 2008068T | County Biobased Procurement | 88.50 |
| 2008070T | Ag Coproducts for Landscaping Applications | 33.50 |
| 2008078T | Women's Environmental Institute | 78.00 |
| 2009020T | Wild Rice Market Opportunity | 18.00 |
| 2009023T | Chemical Analysis of Rice Hulls | 63.50 |
| 2009060T | Ag Biomass Pellet Fuel Formulation | 60.50 |
| 2009062T | Potato Flaking Technology | 72.00 |
| 2009068T | Aquaculture Product Utilization | 18.00 |
| 2009069T | Alternative Energy Development | 6.50 |
| 2009087T | Ag Fiber Utilization | 8.50 |
| AIC051T | Energy Resource Evaluation | 146.00 |
| AIC053 | Renewable Energy Resource Template | 187.50 |
| AIC068T | Collaborative Opportunities in Forestry | 18.00 |
| AIC093T | Coproduct Utilization for Dust Suppression | 59.50 |
| 2007088T | Biodeisel Technical Assistance | 11.25 |
| 2008047T | On-Farm Oil Press and Biodiesel Development | 56.00 |
| 2009015T | Biofilters for Drainage Water | 54.25 |
| 2009040T | Shelf Stable Smoked Fish | 32.75 |
| AIC073T | Standardization of Pellet Fuel Test | 41.50 |
| 2009D | DOE Time | 6.00 |
| 2009E | Discovery 2009 | 627.25 |
| 2009T | Discovery 2009 | 5,851.50 |
| 2008023T | Renewable Roundtable | 13.00 |

Total Staff Hours Dedicated to Projects: 18,727.70

| <u>Project #</u> | <u>Project Title</u> | <u>Funds</u> |
|------------------|------------------------------------|--------------|
| 2005-080 | Biodiesel - Peak Power Costs | \$6,848.26 |
| 2006-049 | Distillers Dried Grains | \$30,950.00 |
| 2006-085 | Seeding Compost | \$6,256.06 |
| 2007-013 | Commercial Kitchens | \$11,000.00 |
| 2007-050 | Local Foods | \$5,000.00 |
| 2008-023 | Renewable Energy Roundtable | \$2,447.02 |
| 2008-028 | Renewable Energy Roundtable | \$5,268.25 |
| 2008-035 | Local Foods - Phase 2 | \$37,835.20 |
| 2008-036 | Biomass - Peak Operating Cost | \$25,000.00 |
| 2008-067 | Taste Panel - Turkey Valley Farms | \$2,961.61 |
| 2008-068 | Biobased Procurement | \$4,900.00 |
| 2008-082 | Oligosacharide Free Meal | \$8,591.44 |
| 2008-083 | Renewable Energy Roundtable | \$23,333.29 |
| 2008-084 | Trico Ag Services | \$20,000.00 |
| 2008-087 | Oligosacharides - Swine | \$11,750.00 |
| 2008-089 | First District Association | \$100,000.00 |
| 2008-091 | Red Corn | \$44,258.00 |
| 2009-010 | Ethnic Meats | \$814.39 |
| 2009-011 | Client Survey | \$1,266.00 |
| 2009-027 | Beef Cuts | \$1,689.38 |
| AIC-026 | Utilizing Low Oil DDGs | \$5,925.96 |
| AIC-031 | Desification Assessment | \$39,000.00 |
| AIC-034 | Stevens Count Gasification | \$12,825.00 |
| AIC-037 | Bongard's Creameries | \$17,142.86 |
| AIC-038 | Grass Screen Gasification | \$32,704.80 |
| AIC-039 | Cellulosic Ethanol | \$100,000.00 |
| AIC-041 | Ash Densification | \$3,100.00 |
| AIC-042 | Maganese Oxide & Distillers Grains | \$1,130.81 |
| AIC-043 | Corn Cob Collection | \$2,341.91 |
| AIC-046 | Value Added Agriculture | \$66,667.00 |
| AIC-047 | Ottertail Ag Feasibility | \$31,000.00 |
| AIC-049 | Microturbine Durability | \$7,875.98 |
| AIC-050 | Bioenergy - Benchmark | \$10,666.66 |
| AIC-051 | Aitkin Area Producers | \$26,350.00 |
| AIC-053 | Renewable Energy Template | \$40,000.00 |
| AIC-054 | Biofuel Industry Needs | \$11,750.00 |
| AIC-056 | Small Ethanol Plants - Feasibility | \$50,000.00 |
| AIC-062 | Sustainable Switchgrass | \$3,000.00 |
| AIC-067 | Renewable Energy Roundtable | \$11,074.57 |
| AIC-084 | Integrated Biorefinery | \$1,927.30 |

TOTAL

\$824,651.75

AURI Mission

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

- The identification and expansion of existing markets for new or existing commodities, ingredients and products;
- The development of new uses or value improvements for Minnesota agricultural commodities; and
- The development of renewable energy opportunities from Minnesota agricultural commodities and co-products.

AURI Vision

AURI is respected as the leading resource for catalyzing innovation in value-added agriculture that creates economic vitality for Minnesota

AURI Function

AURI provides scientific technical expertise, feasibility and targeted network coordination to add value and long-term economic vitality to Minnesota agriculture and communities.