

# Agricultural Utilization Research Institute

*2006 Legislative Report*



## **I. Overview**

This report is intended to provide a summary of activities and organizational initiatives that have taken place at the Agricultural Utilization Research Institute (AURI) over the past year. AURI is the development catalyst for value added agriculture, providing scientific technical assistance and vital network connections between producers, manufacturers, agencies, universities and economic developers across Greater Minnesota. Current programs are geared to meet this mission with an emphasis on creating partnerships and eliminating duplication of services.

### **A. Operating Environment**

The 2005 operating year was very rewarding for AURI. The Minnesota Center for Producer-Owned Energy became fully operational with over twenty projects in renewable energy across the state. In addition to the work in renewable energy, staff of AURI provided scientific technical and network development assistance to over 200 established projects for a total of over 17,500 hours of direct assistance to value-added ventures throughout Minnesota. With less than 20 full-time employees, AURI has met some of its most difficult service challenges.

Operations and organizational development were a primary focus over the past year. The Executive Director posed, and staff met, the following objectives for the year:

- AURI will find what it is best at;
- AURI will find what needs to be done;
- AURI will find what is the most rewarding way to add value to agriculture and commodities;
- AURI will not do what somebody else does.

One of the biggest limitations faced by AURI in 2005 was utilizing reduced resources to the fullest extent while assuring maximum utilization of technology and research available today. AURI initiatives, focused on challenging Minnesota agriculture with forward thinking trends in applied research, were carefully balanced against maintaining direct one-on-one assistance to value-added clients across the state. This balance between proactive knowledge and reactive support to clients produce some of the following projects. (Please refer to Appendix B for a complete list of 2005 projects).

#### **AURI Initiatives started during 2005 include:**

Industrial Products/Biobased Procurement	Glycerin in Combustible Products
Small Food Processors Training	Value-Added Agriculture Forum
Meat Processors Survey: Offal	Local Foods Initiative
Compost Barn Initiative	Amino Acid Applied Research
Value-Added Agriculture Impact Study	Sugar Usage Initiative
Co-Generation Demonstration Program	

## **Highlights of AURI initiatives and direct client projects include:**

### **Distillers Dry Grains and Solubles (DDGS):**

Energy value of DDGS (soluble), transportation (flowability improvement) and value enhancement (oil recovery, ash characteristics from burns) of DDGS have been widely researched by AURI. These activities have contributed greatly to the financial viability of the Minnesota Ethanol Industry and Corn Producers.

### **Biofuels**

A large biofuels organization requested AURI's assistance to train their laboratory technician and establish proper protocol for ASTM testing on their biodiesel. AURI helps them identify necessary equipment to conduct the tests and continues to troubleshoot their analytical processes as needed. In addition to laboratory assistance, the client has requested AURI's assistance to write the BQ-9000 manual for their biodiesel production and certification.

### **Renewable Fuels Technical Services**

This project canvases the renewable fuels spectrum and does not identify one particular project. AURI receives numerous calls/questions regarding renewable fuels, especially those relating to troubleshooting. At times, the discussion is finished and the answers are provided by the end of the phone call. Other times, AURI may spend time troubleshooting a product or searching for answers. Potential or specific projects may result from activities required by AURI via these various discussions/requests.

Requests for scientific technical assistance may include (but not limited to) analytical testing of process products, reviewing process diagrams and/or analytical protocol, technical information searches, and assistance in sourcing products/equipment.

### **Economic Analysis: Co-generation Using Wind and Biodiesel-Powered Generators**

This study was undertaken to determine the economic feasibility of complementing electricity generated by wind with electricity generated by diesel gensets using various blends of biodiesel. An investment model was developed to estimate whether adding a genset, which increases the investment, revenue and operating costs will enhance the economic viability of generating electricity with a wind turbine. The investment model provides a tool that can be used to answer this question for sites with various wind characteristics and with alternative sources of revenue.

### **Agri-Fuels**

AURI provided assistance to identify new/other agriculturally derived sources of biomass to be used as a fuel source in direct and co-firing. AURI is providing technical assistance to identify agriculturally derived fibers for use as a fuel source to meet current biomass fuel opportunities.

## **Bio-Fuel Development**

AURI provided scientific technical assistance with further development/refining of a biomass pellet with specific physical characteristics. Co-Product lab provided assistance to develop further pellet fuels for testing. AURI technical and lab assistance refined biomass material to assist with burn characteristics (more specifically – to assist with decreasing ash content).

## **Co-Product Utilization**

AURI is currently working with a group of individuals utilizing a low valued agricultural co-product as a ‘carrier’ material for active ingredient. This co-product provides specific handling characteristics that promote flowability and low dust characteristics. The effect this co-product has on eliminating noxious dust during consumer application has created nationwide interest in the product. The agricultural co-product used will be sourced and prepared in Minnesota.

AURI’s Co-Product Lab has also worked with specific Minnesota based grain processing groups to evaluate the potential of their cull products. Characteristics of these products were identified for their sorbent and binding abilities and are now being utilized in a variety of products. The assistance given to one Minnesota company has created a 50% increase in their co-products value and opened new opportunities for their company.

AURI has had multiple projects focusing on utilizing agricultural residues and biomass as potential energy sources. One of the major areas of emphasis is the development of an agriculturally based pellet fuel to compete with wood pellets. Wood pellets are becoming very expensive along with growing demand and low supply; this has led to a great opportunity for three Minnesota companies. AURI’s Co-Products Lab has assisted with identification of potential agricultural biomass sources, evaluation of energy potential, pellet fuel development, and economics.

AURI has offered technical assistance in the development of an agriculturally based mat to be utilized in the swine industry to replace rubber mats used in the farrowing and nursery stages. Rubber mats were being evaluated due to disease carryover after disinfecting the mats. The agricultural fiber constructed mat allows for mat composting after use and provides an economical solution to the conventional rubber mats.

## **Straw Paper**

AURI has been representing wheat growers at a consortium with Liberty paper, providing technical information on collection, handling and price. In May of 2005, AURI with the Minnesota Wheat Growers Association identified 7-variety sample that were sent to Washington State for analysis. The University is requesting 100lb samples of the top two varieties for actual pilot plant runs.

If the project is successful, Liberty Paper will seriously explore the building of an \$80 million recycled cardboard processing center in Northwest Minnesota. The plant would use up to 100,000 tons of straw per year for an added value of \$3 to \$4 million dollars back to the wheat producers per year.

### **Grass Seed Producers**

AURI conducted Btu analysis on various types of grass straws and the waste screenings for grass seed producers at its Waseca and Marshall laboratories. AURI's laboratories identified grass screenings as a potential biomass to be used in gasification for electrical generation. AURI contacted EERC (Energy Environment Research Center) in Grand Forks, North Dakota regarding the organization's biomass gasification research. EERC is working with a manufacturing company in India who constructs and sells a biomass gasification unit, and has made modifications to the unit. Currently, EERC is able to create a gas that is used to run an electrical generator to produce electricity. EERC believes the installation of a biomass gasifier at the client site would be cost effective given the Btu analysis of the screenings, negative cost of hauling, current use of electricity saving the coop \$45,000 per year in electrical costs.

### **BEEF Steak Evaluation**

The beef industry has made many changes over time. Changes from hauling live animals, to hauling hanging carcasses and now the shipment of boxed beef. The fabrication of the beef carcass initially was all cut up with bone in. The next step was to cut all the meat as boneless with close trim to make it easier for the consumer. The most recent research in the industry has been on individual muscles. This research shows that some of the muscles used for ground beef or roasts in the past have more value as steaks. This has generated the most recent change in fabricating the beef carcass by separating individual muscles.

The major problem with changing and creating new steak cuts is that the consumer does not know what they are or their value. So this project will create a poster for meat departments and shops to inform their consumers. This poster ranks and compares the new and different types of steak with the old. If the consumer knows how the new steaks compare with ones they are familiar, they will be more likely to buy them. For example the top blade will sell for \$6.49 per pound instead of \$3.19. Four other steaks in the marketplace are sold for less than their market value. AURI is developing a poster informing consumers the value of some new, different and unknown types of steak. Currently these steaks are sold for much less than their value because they are different.

## **Renewable Energy Conferences**

AURI was the co-sponsor of two major renewable energy conferences during 2005, one in Bemidji and one in Owatonna. Presentations on the future of bio-based renewable fuels was not only highly successful, but AURI once again demonstrated its ability to leverage partnerships with critical organizations across the state. Conference partners included:

Department of Employment and Economic Development (DEED)	
Bemidji State University	Bemidji!Bio(Joint Economic Development)
Minnesota Corn Growers	Minnesota Soybean Growers
Minnesota Department of Agriculture	Minnesota Technology, Inc.
University of Minnesota	University of Minnesota – Crookston
University of North Dakota	

## **B. Additional Funding Sources**

During 2005, the Institute was awarded and/or implemented two major grant opportunities: The USDA Agricultural Innovation Center grant, utilized to establish the Minnesota Center for Producer-Owned Energy (\$1,000,000), and the Xcel Renewable Energy Development Fund grant for \$760,000. The awarding of these two grants in the field of renewable energy means that AURI has effectively leveraged the \$1,600,000 state appropriation one to one. It should be noted the \$1,000,000 USDA grant expires on 06.27.06. As of the date of this report, AURI estimates that there is the potential for over \$700,000 in new renewable energy projects that need to be addressed across the state.

All AURI and MNCPOE projects maintain a 1:1 matching requirement. Funding and/or matching sources are raised from the client and other partners such as the Minnesota Soybean Growers Association, Minnesota Corn Growers Association and various other commodity groups, farm organizations and economic entities across the state. In addition, efforts have been made to fortify relationships with federal partners as well as national foundations to ensure economic viability well into the future.

## **II. Organizational Priorities**

AURI staff and programs place an emphasis on activities that have a greater chance of making a substantial impact on the utilization of Minnesota commodities, and projects are evaluated to ensure that resources are directed to allow for the maximum benefit to Minnesota agriculture. Further, AURI staff works with other partners to ensure efforts are not duplicated and that the client gets the best service possible.

## A. Critical Value Added Priorities

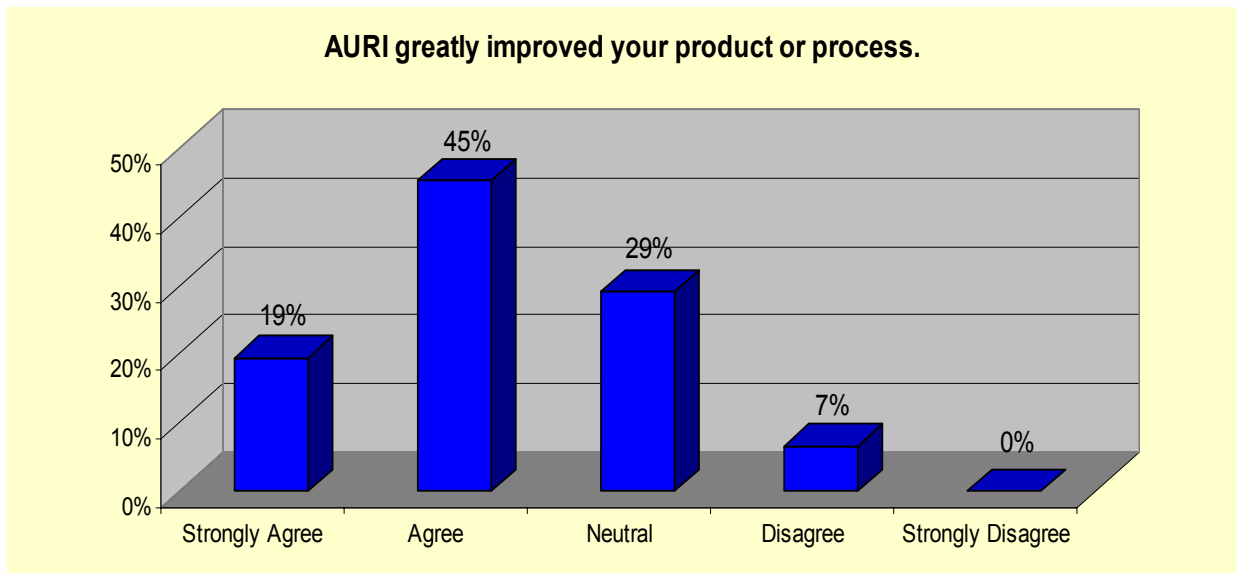
1. Energy & Co-Products
  - Co-products, Fats & Oils Tech Assistance
  - Analytical/Process/Pilot Plant Services
  - Project Development Services across Greater Minnesota
  - Establishment of the Minnesota Center for Producer-Owned Energy
2. Commodity Utilization – Food/Non-food uses
  - One-Site Technical Assistance in labs located in rural Minnesota
  - Project Development Services across the Greater Minnesota Region
3. Animal Product Processing & Product Development
  - Technical Assistance On-Site in AURI's USDA certified Meats Lab in the Marshall Facility
  - Lab Development Services in Crookston, Marshall and Waseca
  - Project Development Services across Greater Minnesota

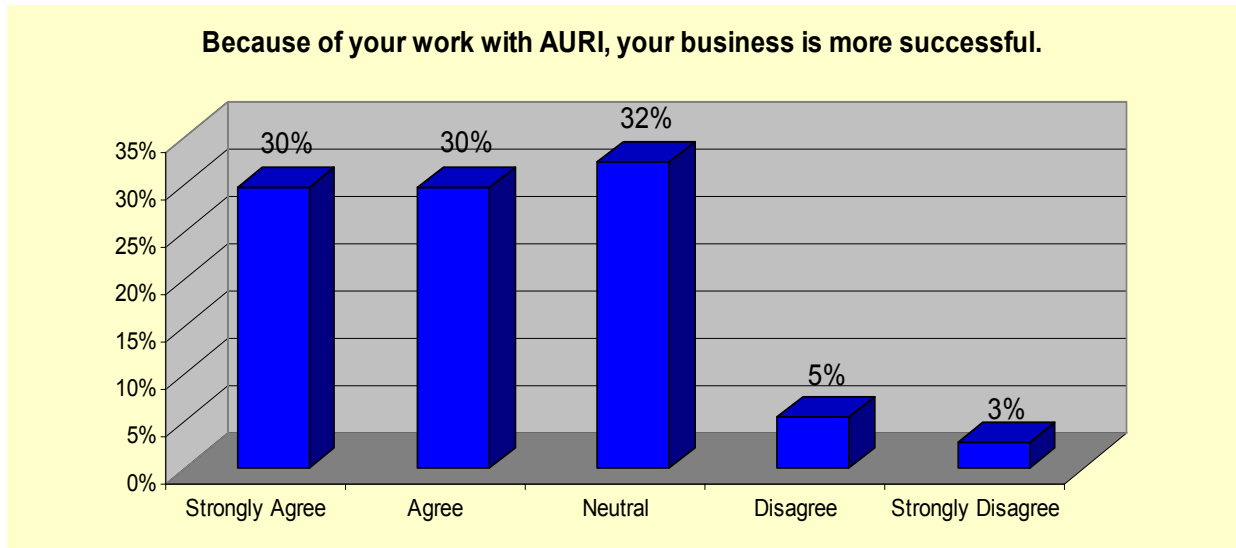
## B. Targeted Clients and Projects

AURI project development priorities are placed on producer-owned cooperatives and on established agricultural processors. While these are not the exclusive focus of AURI activities, these broad groups offer some of the greatest potential producer impact. AURI continues to assist with start-up and entrepreneurial projects which could be considered smaller scale.

## What our clients say about us

Each year, AURI commissions a satisfaction study conducted by an independent firm to evaluate its effectiveness in services to clients. Sample outcomes include:





### **III. Administrative Activities**

#### **Ongoing Objectives of AURI Administration**

- Capacity Development – What resources does AURI have today and what does it need for the future?
- Project Management – How does AURI create a balanced project portfolio between proactive initiatives and reactive client services?
- Collaborative Relationships and Duplication of Services – How does AURI continue to do what it is best at doing while fostering partnerships with complementing resources?
- Organizational Learning – What have AURI past projects taught us?
- Program Evaluation – Are AURI's programs as effective as possible?
- Continual Identification of New Opportunities – How does AURI continue to be the leader in value-added agriculture?

### **IV. Agriculture Innovation Center - Center for Producer-Owned Energy**

In the fall of 2003, AURI applied for a USDA Agriculture Innovation Center grant to fund the "Center for Producer-Owned Energy." In October of 2003, AURI was notified that its proposal was selected to receive a \$1 million grant to fund the center. This \$1 million requires at least a one-to-one match in funding from AURI and other partners.

#### **Focus**

AURI created the Minnesota Center for Producer-Owned Energy. The mission of the Center is to support the creation and development of producer-owned value-added



businesses related to the production of renewable energy and the utilization and marketing of related co-products and byproducts.

## **Collaboration**

Over 50 different partners have offered support and assistance in the development and implementation of the Center for Producer-Owned Energy. Collaboration is a key component of the development of and future operation of the center. Partners span the range of state, federal, public and private organizations.

## **Projects Identified**

Appendix C lists the projects identified and implemented under the AIC grant.

## **V. Summary of Programs**

AURI scientists and technologists provide a wide range of expertise including feasibility evaluation, product development, co-products utilization, process and product evaluation and product scale-up. In addition, AURI laboratory and pilot plant facilities are equipped to help with a variety of technical issues facing value-added projects. AURI can also assist with collaborative efforts and referrals to other organizations that may be of assistance.

Technical and business development services are offered by AURI's professional and technical staff through the following programs:

- A. Applied Technology Services** (ATS) program is intended to bring agriculturally-based products or processes to commercialization by using AURI technical personnel, labs and pilot plant services.

*Technical Feasibility:* A project may focus on a new or improved process technology or on development of new value-added food or non-food agricultural products. The project may include an evaluation of the product's technical soundness and quality.

*AURI technologists/scientists* provide consulting and technical services related to product and process development; product evaluation and testing; and sourcing materials and equipment. These services are provided directly in Greater Minnesota.

*AURI pilot plants and labs* are available to assist in product and process development, scale-up, nutritional assessment and production for market assessment.

**B. Product Development Services (PDS)** program is intended to produce value-added products. The PDS program is focused on developing, in concert with AURI staff, a salable product, process or production technology to enhance a feasible product. AURI personnel, labs and pilot plants are available to assist a Minnesota-based client by:

- Providing entrepreneurial resources to value-added start-ups
- Providing informational and technical assistance
- Providing high quality process and product development
- Fostering project development through collaboration

In addition to obtaining grant funding for services AURI cannot provide, clients utilizing this program must be actively involved in a team project with AURI technical and scientific staff. All AURI grants require a one-to-one match contribution by the client or other funding entity.

**C. Distribution Enhancement Program (DEP)** is intended to bring agriculturally-based value-added products or processes to market at an introductory level. The DEP grant program focuses on enhancing an active AURI project that demonstrates a need for assistance in the distribution environment.

**D. Green Field Energy Program** is a technical assistance services program available to agricultural producer groups to evaluate the market and technical feasibility of developing and producing agriculturally-based renewable forms of energy or co-products. Green Field promotes the establishment of producer-owned energy entities that don't currently exist or were only recently organized. A network of specialized technical assistance providers, working in concert with and coordinated by the Center, provide the core services for this program on a cost-share basis with applicants. All proposed projects must have needs related to market feasibility and business development to be eligible for the program.

Determining feasibility is the ultimate goal in evaluating potential new renewable energy ventures. Renewable energy and co-product technologies that will be considered for feasibility evaluation and further development under this program may include:

- New technology development
- Adapting or perfecting existing technology; or
- New value-added energy products development.

**E. Renewable Technology Assessment Program (RTAP)** is a technical assistance services program available to existing agricultural producer-owned organizations to evaluate the market and technical feasibility of developing or perfecting technologies related to the production of agriculturally-based renewable forms of energy or co-products. A network of specialized technical assistance providers, working in concert with and coordinated by the Center, provide the core services for this program on a cost-share basis with applicants.

Determining feasibility is the ultimate goal in technology evaluation and development. Renewable energy and co-product technologies that will be considered for feasibility evaluation and further development under this program may include:

- New technology development
- Adapting, perfecting and maximizing existing technology; or
- New value-added energy products development

## **VI. Project Activity, FY 2005**

### **A. Funded Projects – Appendix A**

### **B. Technical, Pilot Plant and Laboratory Services – Appendix B**

### **C. Minnesota Center for Producer-Owned Energy Implemented (MNCPOE) Projects – Appendix C**

## Appendix A

### Agricultural Utilization Research Institute Projects Funded during State Fiscal Year 05

<b>Project Title</b>	<b>Funding</b>
MULTI-Minnesota Slim	\$ 2,183.59
COLLAB-Berkshire Marketing	\$ 5,520.00
BEANS-DD Value Added IP	\$ 750.00
OATS,WHT-Hot Cereal & Soup Mix	\$ 3,333.34
COPROD-Mississippi Topsoil Exp	\$ 333.62
POULTT-Turkey Co-Product Dev.	\$ 1,250.00
COPROD-Value-Added Co-Products	\$ 85,000.00
FSMIP	\$ 2,235.34
WOOL-Raw wool/ Landscape mulch	\$ 3,087.00
ELK-Elk Meat Marketing	\$ 6,000.00
CORN-Corn Utilization Research	\$ 5,852.27
BEEF-SW MN. Natural Beef	\$ 500.00
SOYB-Fuel Additive	\$ 9,999.90
BEANS-Navy Bean Cull Opportunity	\$ 1,000.00
HAY-Midwest Forage Council	\$ 500.00
CORN-Corn Clothes Collaboration	\$ 7,500.00
Nutritional Labeling-Brochures	\$ 1,367.53
Strawberry Production System	\$ 6,779.18
Reduce Pesticide Use Greenhouse	\$ 1,075.76
Genetics/Blotch Resistance	\$ 19,142.64
Bio Control Sweet Corn Soybeans	\$ 29,060.79
Control of Yellow Asters	\$ 18,451.63
On-Farm Implement of Cabbage	\$ 8,219.58
Imp Bio. Control & Comp Pest	\$ 827.91
Reduce Pesticide Use-Cabbage	\$ 29,760.60
Mgmt. Cottonwood Leaf Beatle	\$ 8,801.26
Crop Rotation-Canola Disease	\$ 18,691.11

## Appendix B

### Agricultural Utilization Research Institute Project Technical Assistance Fiscal Year 2005

Project Number	Team Leader	Project Title	Hours Expended
2000023T	CWADHAWA	MULTI-Bakery Products	1.25
2000053T	EWENE	FPEAS-Crookston Bean	3.00
2000055T	JCRAWFOR	COPROD-Value Added Manure	51.00
2001005T	MSPARBY	CORN-Distiller Grain Protein	2.00
2001046T	CWADHAWA	MULTI-Bakery Mix Business	8.50
2001059T	DTIMMERM	MULTI-Minnesota Enhanced Beef	14.50
2001060T	MNORRIS	DUCK-Frnch Spec Foods Mkt Dev	1.00
2001065T	DTIMMERM	BEEF-Kim Vig Inc. Market	39.50
2001067T	JCRAWFOR	SOYB-Soybean Product Expansion	6.50
2001071T	MSPARBY	COPROD-Poultry Bedding	2.00
2001073T	ADOERING	Making Biomass Energy A	24.00
2001084T	DTIMMERM	COLLAB-Berkshire Marketing	43.50
2001094T	CGEHRKE	PORK-Pastures Pork	3.50
2002025T	ADOERING	FIBR-Agri Mulch	2.00
2002027T	DTIMMERM	PORK-Hmong Processing Center	3.00
2002040T	CGEHRKE	BEEF-R&P Gourmet Beef	88.25
2002041T	DBARTHOL	SOYB-Soy-based Meat Analogue P	1.50
2002049T	ADOERING	AG RESIDUES-Characterizing Ag.	33.00
2002051T	ADOERING	U of M - New Feed Alternatives	11.50
2002061T	DTIMMERM	BEEF- MN Enhanced Beef-Phase 2	8.00
2002063T	DTIMMERM	South West Min. Natural Beef	10.00
2002076T	ADOERING	Fact Sheet - Corn Burners and	1.00
2002078T	CWADHAWA	WHT-Product Dev. for line exte	1.00
2002084T	ADOERING	Value added Utilization of DDG	20.00
2002086T	CWADHAWA	Evaluation of Soybean Varietie	9.25
2002091T	ADOERING	Utilization of DDGs	78.00
2002093I	MSPARBY	Small Food Processors Training	2.50
2002093T	MSPARBY	Small Food Processors Training	5.50
2002094T	MNORRIS	Value Added Ag Challenge	1.50
2002103T	ADOERING	SOYB-Knewtson Seed Co	192.00
2002106T	DTIMMERM	COPROD-Animal Co-Products Util	8.50
2002108T	MNORRIS	BEANS-DD Value Added IP	88.50
2003002T	CWADHAWA	BUKWT-Dev. & Marketing of Prod	14.25
2003005T	DTIMMERM	POULT-Natural & Organic Poultr	245.50
2003010T	CWADHAWA	SUGR,WHT,DAIRY-Gourmet Health	3.00
2003014T	MNORRIS	LAMB-help launch reduced fat	3.50
2003015T	CWADHAWA	BISN-Buffalo Pass Ranch VA Pro	2.00
2003017T	CGEHRKE	BEEF-MN Beef Ind. VA Products	5.00
2003018T	CWADHAWA	FLAX-Product development Marke	6.25
2003021T	CWADHAWA	OATS-Commercialize Oat Cookies	1.25
2003023T	ADOERING	DAIRY-Willmar Digester/Energy	3.50
2003028T	CWADHAWA	Nutritional Labeling-Brochures	31.50
2003033T	MNORRIS	PORK-P G Reduced Fat Bratwurst	1.00

<b>Project Number</b>	<b>Team Leader</b>	<b>Project Title</b>	<b>Hours Expended</b>
2003036T	CGEHRKE	MULTI-Lamb shop Gyros, Lunch M	14.50
2003040T	ADOERING	WHT - Improved Cat Litter	47.33
2003042T	MNORRIS	MULTI-Eval. oils as Fuels/Turb	22.00
2003044T	CWADHAWA	MULTI-Certified Organic Entree	27.75
2003048T	CWADHAWA	MULTI-Dairy & Beans	23.25
2003051T	CWADHAWA	RICEW-Anal/Nutrit. Label/Wild	1.75
2003052T	DTIMMERM	PORK-Health Ben/Extruded Soybe	177.50
2003053T	CWADHAWA	CORN,POULTC,PORK-Tamales	13.25
2003057T	ADOERING	COPROD-Ag Biomass Fuel Evaluat	3.00
2003062T	CWADHAWA	BEEF-test Market.Pepper Sticks	0.75
2003064T	CWADHAWA	DAIRY-Commercial of Cheescake	1.00
2003065T	CWADHAWA	MULTI-Nut. Labels/10 froz pizz	0.50
2003066T	CWADHAWA	POULTT,POULTC-Gai Yoh testing	0.25
2003076T	CWADHAWA	MULTI-Gluten Free Products	4.75
2003080T	CWADHAWA	WHT-Dry Weather Creek	2.75
2003082T	CWADHAWA	HONY-Commercial of Hot Wing Sa	20.83
2003084T	ADOERING	FIBR-Fiber Evaluation	1.00
2003089T	ADOERING	COPROD-Ag. Fiber Pellet	1.50
2003090T	CWADHAWA	SUGR-Unique flav/Jams, Jellies	0.25
2003095T	ADOERING	COPROD-Ag. Fiber Carriers	188.25
2003096T	MSPARBY	RASP-Raspberry Greenhouse Prod	0.50
2003099T	DTIMMERM	PORK-Light-weight Pork Market	88.00
2003100T	ADOERING	COPROD-Product Densification	4.00
2003109T	CWADHAWA	MULTI-Organic Certification	8.75
2003110T	CGEHRKE	BEEF-Gelbvieh Breed Nutritiona	30.84
2003113T	CGEHRKE	POULTT-Shelf Stable Turkey Jer	115.00
2003117T	ADOERING	ETH-Ethanol Co-Prod./Livestock	24.00
2003118T	CWADHAWA	MULTI-Small Business Dev. Cent	60.75
2004002T	MSPARBY	COPROD-Mississippi Topsoil Exp	3.00
2004003T	ADOERING	COPROD-Energy Generation Thru	1.50
2004004T	DTIMMERM	MULTI-Corn & Soybean Energy Re	64.50
2004005T	DTIMMERM	CORN-Ultra-Sonic Processing	8.50
2004006T	DTIMMERM	POULTT-Turkey Co-Product Dev.	23.00
2004007T	DTIMMERM	CORN/SOYB-SW.MN.Biopolymers	94.50
2004008T	DTIMMERM	PORK-Ultrasonic Imaging	7.00
2004011T	EWENE	MULTI-Mulch Development	10.00
2004012T	EWENE	SBEET-Sugar Beet Pre-processin	1.00
2004014T	RPATZER	COPROD-Market/omega3 chick&egg	2.25
2004017T	MNORRIS	SOYB-Soymor: tests/Biodiesel	13.25
2004019T	DTIMMERM	BUFF-Buffalogal Bison	4.00
2004023T	CGEHRKE	BEEF-Value-Added Beef Cuts	9.50
2004024T	MNORRIS	COPROD-Value-Added Co-Products	77.50
2004026T	DTIMMERM	SOYB-Environmental Dust Contro	197.00
2004027T	CWADHAWA	DAIRY, SUGAR-Organic Ice Cream	1.00
2004028T	MNORRIS	COLLAB-2003 Client Survey	17.00
2004029T	CWADHAWA	MULTI-Meat Product Labels	1.00
2004030T	DTIMMERM	FSMIP Time	109.00
2004031T	MSPARBY	FIBR-Pelletization/Grass Fiber	163.50
2004032T	MSPARBY	WOOL-Raw wool/landscape mulch	50.50
2004033T	CWADHAWA	PORK/POULTRY-Cooked Sausage	1.85

<b>Project Number</b>	<b>Team Leader</b>	<b>Project Title</b>	<b>Hours Expended</b>
2004034T	ADOERING	COPROD-Swine Odor Analysis	10.00
2004035T	ADOERING	MULTI-Aqua Innovations	4.50
2004036T	CWADHAWA	SUGR,DAIRY-labeling/Chocolates	10.70
2004038T	CWADHAWA	WHT-Nutrit.Labeling/Pita Bread	2.00
2004039T	CWADHAWA	WHT-Dev./Low Carb Bread	0.75
2004040T	CWADHAWA	WHT/FLAX-Low Carb Breads	45.50
2004041T	MSPARBY	SOYB-Central MN Soybean Proces	128.00
2004042T	JCRAWFOR	SOYB-Cheryl Niemela	2.50
2004044T	CGEHRKE	BEEF-Rhine Lake Product Develo	10.00
2004045T	DTIMMERM	ELK-Elk Meat Marketing	273.50
2004046T	ADOERING	HAY-Native Prairie Grass Hay	11.50
2004047T	ADOERING	CODROD-Bio-Mat for Livestock	69.75
2004048T	DTIMMERM	CORN-Corn Utilization Research	81.50
2004049T	ADOERING	COPROD-EnvirGro Solutions, Inc	3.50
2004050T	CGEHRKE	BEEF-Scottish Highland Organic	51.00
2004051T	CGEHRKE	MULTI-Pork & Beef Process Meat	20.00
2004052T	RPATZER	MULTI-Recycled Grease/An. Fats	212.50
2004053T	MSPARBY	MULTI-Feas/Optimal size Biodie	126.00
2004054T	DTIMMERM	MULTI-Hybrid Biodiesel/Wind Ap	278.50
2004055T	ADOERING	MULTI-EC2	13.00
2004057T	DTIMMERM	POULTT-Utiliz.turkey litter	9.50
2004058T	CWADHAWA	TRANS FATS-Information Brochur	31.75
2004059T	DTIMMERM	FLAX-Blue Ribbon Foundation	75.50
2004060T	DTIMMERM	GOAT-Meat Processing Plant	4.00
2004061T	MSPARBY	MULTI-Energy Alley	54.00
2004062T	MSPARBY	FIBR-Fiber Consortium	99.00
2004063T	ADOERING	COPROD-Biomass Feedstock Engin	13.50
2004064T	DTIMMERM	COLLAB-Berkshire Marketing	31.00
2004065T	DTIMMERM	BEEF-SW MN. Natural Beef	54.50
2004066T	MSPARBY	SOYB-Fuel Additive	129.50
2004067T	MSPARBY	CORN-Cellulose Conversion	66.50
2004068T	CGEHRKE	BEEF-Sausage Development	71.00
2004069T	CWADHAWA	DAIRY,SUGAR-Creamy Creations	20.00
2004070T	MSPARBY	CORN-Stover Test Burn	17.00
2004071T	ADOERING	BEANS-Navy Bean Cull Opportuni	35.50
2004072T	ADOERING	COPROD-Granular Development	31.00
2004073T	ADOERING	BEANS-Bean Waste Evaluation	40.50
2004074T	ADOERING	FIBR-Prep & Sourcing Agricultu	14.50
2004075T	ADOERING	NUT-Badgersett Research	36.50
2004076T	RPATZER	BIODIESEL-Sm Biodiesel Process	5.75
2004077T	DTIMMERM	BEEF-Sausage Development	-
2004078T	ADOERING	FFA-Product Development Contes	12.50
2004GRANT	MNORRIS	Preparing Grant writing Propos	85.50
2004T	MNORRIS	Discovery 2004	1,152.75
2005001T	RPATZER	Glycerin in Combustible Produc	70.00
2005002T	DLEMKE	Brochures/Informational Report	53.00
2005004T	MSPARBY	HAY-Midwest Forage Council	46.50
2005005T	MSPARBY	FIBR-Akona Sweeping Compound	43.00
2005006T	RPATZER	BIOFUELS-Renew Fuels Presentat	116.50
2005007T	DTIMMERM	MULTI-Healthful Foods	1.00

<b>Project Number</b>	<b>Team Leader</b>	<b>Project Title</b>	<b>Hours Expended</b>
2005008T	CWADHAWA	FLAX-Horse coat Supplement	7.75
2005009T	ADOERING	COPROD/ETH-Biomass Pellet Fuel	28.00
2005010T	CWADHAWA	WHT-FLAX-Super Bakery	57.50
2005011T	CWADHAWA	WHT-Deve. of Multiseed Bread	7.00
2005012T	CWADHAWA	SUGR,DAIRY-Nutr. Label/Truffle	1.50
2005013T	ADOERING	COPROD-Bio Fuel Development	173.00
2005014T	CGEHRKE	MULTI-Auri Meat Lab Act. 2005	166.20
2005015T	CWADHAWA	WHT:BEEF-Sanbusa Service	37.95
2005016T	DTIMMERM	MULTI-Blue Earth Bio-Diesel	2.00
2005017T	DTIMMERM	CORN-Snack Food, Product Proce	288.00
2005019T	MSPARBY	CORN-Corn Clothes Collaboratio	43.50
2005020T	MSPARBY	SOYB-Edible Soybean Plant Feas	27.00
2005021T	MSPARBY	ALF-Hay Drying Prototype	2.00
2005022T	MSPARBY	RICEW-Red Rice Components	2.00
2005023T	DTIMMERM	FIBR-Switch Grass Enviro Mats	5.00
2005024T	ADOERING	BIOMASS-Fossil Fuel heat/repla	12.50
2005025T	ADOERING	COPROD/ETH-Liquid Feed/Pellet	75.00
2005026T	EWENE	BEANS-Gluten-Free Food	13.50
2005027T	DTIMMERM	CORN-Corn Cob Recovery & Utili	3.00
2005028T	RPATZER	SOYB-Susp Determ/Biodiesel Fue	18.00
2005029T	RPATZER	COLLAB-Biodiesel Test. Assessm	35.50
2005030T	ADOERING	COPROD-Custom Pellet Formulati	13.00
2005031T	RPATZER	COLLAB-Util. of Cuphea/Biosies	26.25
2005032T	ADOERING	FIBR-Integrated Biorefinery	1.50
2005033T	ADOERING	COPROD-DDGS Evaluation	3.50
2005034T	RPATZER	MULTI-Quality Assure est/Lab	18.00
2005035T	CWADHAWA	FLAX-Flax Enhanced Products	3.25
2005036T	CWADHAWA	APPLE-Add vaule/organic Apples	10.50
2005037T	CGEHRKE	POULTT-Turkey Valley Farms	72.50
2005038T	MSPARBY	CORN-Nature's Way Lawn Food	22.50
2005040T	CGEHRKE	MULTI-Circle Pines Sausage	166.00
2005041T	CWADHAWA	TMATO-Campfire Salsa	8.50
2005042T	CWADHAWA	SUGR-Fruity Salsa and BBQ Sauc	0.50
2005043T	RPATZER	MULTI-In Situ-Biodiesel Produc	134.00
2005044T	ADOERING	COPROD-Malting Waste Fiber	10.50
2005045T	ADOERING	CAR-Carrot/Vegetable Treats	36.00
2005046T	ADOERING	COPROD-Midwest Agri Fuels	10.00
2005047T	ADOERING	WHT-Horse Bedding	12.50
2005048T	CWADHAWA	MULTI-Standardize Egg Roll	17.50
2005049T	EWENE	PORK-NutriPro Biosystems, Inc.	11.00
2005050T	MSPARBY	FIBR-Straw Paper	53.00
2005051T	MSPARBY	COPROD- Compost Barn	3.00
2005052T	CGEHRKE	PORK-BBQ Rib Shelf-life testin	53.05
2005053T	ADOERING	COPROD-Pettet Formation	23.50
2005054T	RPATZER	SOY-Melt Pt/Humidity/Soy Candl	19.00
2005055T	CWADHAWA	SOYB-Dev. of Bean Based Snacks	2.00
2005056T	CWADHAWA	WHT CORN- Dev. Health Mixes	11.50
2005058T	ADOERING	COPROD-Eval/Co-Prod in Litter	14.50
2005072T	MNORRIS	AURI-FY 2004 Client Survey	12.00
2005078T	MSPARBY	COLLAB-Compost Barn	26.50



<b>Project Number</b>	<b>Team Leader</b>	<b>Project Title</b>	<b>Hours Expended</b>
2005GRANT	MNORRIS	Preparing Grant writing Propos	413.50
2005T	MNORRIS	Discovery 2005	3,298.80
99020T	MSPARBY	DAIRY-Whole Farm Cooperative	0.50
99032T	JCRAWFOR	COPROD-Liquid Compost	27.00
99056T	MNORRIS	MULTI-Minnesota Slim	122.50
AIC	EOLSON	AIC Administrative Work	135.25
AIC001T	DTIMMERM	SOYB/CORN Hybrid Biodiesel/Win	42.00
AIC001TD	DTIMMERM	SOYB/CORN Hybrid Biodiesel/Win	26.50
AIC002T	MSPARBY	AIC002 TIME/Energy-Waste Anima	13.75
AIC002TD	MSPARBY	Energy-Animal Waste to Biogas	138.00
AIC003TD	ADOERING	ETH - Agri-Energy Ethanol	0.50
AIC004T	MNORRIS	CORN//BRLY-New Harvest Ethanol	32.00
AIC004TD	MNORRIS	CORN/BRLY-New Harvest Ethanol	91.50
AIC005TD	ADOERING	COPROD/ETH-Biomass Pellet Fuel	12.25
AIC006TD	DTIMMERM	CORN-Ethanol Production Utiliz	90.50
AIC007TD	MNORRIS	BIOFUELS-Biomass Derived Fuels	6.00
AIC008TD	MSPARBY	FIBR-Grass Screenings Gasifica	111.50
AIC009TD	DTIMMERM	SUGR-Utilizing Excess Beet	176.50
AIC010TD	DTIMMERM	WIND-Pipestone Wind Power	8.50
AIC011TD	DTIMMERM	WIND-Community-based Wind	3.25
AIC012T	TMELIN	CORN-Ottertail Ag Enterprises	29.00
AIC012TD	TMELIN	CORN-Ottertail Ag Enterprises	50.25
AIC013TD	DTIMMERM	DAIRY-Small Dairy Methane Dige	110.00
AIC014TD	MSPARBY	SOYB Biodiesel ATV	1.00
AICFEDTIME	MNORRIS	AIC Direct Employee Salaries	2,416.05
AICTIME	MNORRIS	AIC Staff In-Kind Salaries	1,759.15

**Total Direct Project Hours: 17,519.50**

## Appendix C

### AIC Project Status Update

#	Project Name	# of Producers
AIC001	Biodiesel Wind Generation	2,859
AIC002	West River Dairy	10
AIC003	Agri-Energy	
AIC004	Agassiz Energy	8
AIC005	Bixby Energy	
AIC006	Ethanol Production Utilizing Corn Stover	5
AIC007	Biomass Derived Oils for Turbo Generation	
AIC008	Grass Screenings Gasification	30
AIC009	Utilizing Excess Beet Sugar in Ethanol Production	580
AIC012	Ottertail Ag Enterprises	9
AIC013	Small Dairy Methane Digester	10
AIC014	Biodiesel ATV	MSGA
AIC015	Global Agricultural Biomass Study **	Industry-wide
AIC016	Biodiesel in Mississippi River Boats	6
AIC017	Biomass in Combustion Systems	
AIC018	Central MN Ethanol Coop	850
AIC020	Community Wind Handbook	
AIC021	Pulp Gasification	

**Total** 4,367

\* Please note that the # of producers may increase significantly if some feasibility studies prove favorable.

#### Collaborative Partnerships

MCRPC MN Corn Research & Promotion Council  
MSRPC MN Soybean Research & Promotion Council  
MSGA MN Soybean Growers Assn.  
CDR Center for Diesel Research (U of Minnesota)  
SMBSC Southern MN Beet Sugar Cooperative  
CMEC Central MN Ethanol Cooperative  
SWMNF Southwest Minnesota Foundation