970079

AGENCY PERFORMANCE REPORT

1996

AGRICULTURAL UTILIZATION RESEARCH INSTITUTE

Prepared-2/11/97

EXECUTIVE SUMMARY

MISSION:

AURI was created to foster long-term economic benefit, and increased business and employment opportunities for rural Minnesota by:

- identifying, expanding and creating new markets for agricultural commodities, ingredients and products; (M.S. 116 O.09)
- developing more energy efficient, natural resource saving farm production practices; and (M.S. 116 O.08 and M.S. 116 O.09)
- developing new industrial uses and value-added food products from Minnesota agricultural commodities. (M.S. 116 O.09)
- providing applied research and development services to individuals, businesses, or organizations for development of the region's economy through the utilization of regional resources and the development and transfer of technology. (M.S. 116 O.08)
- coordinate and finance research by public and private organizations to transfer new or modified existing technology to businesses, farmers and individuals to promote the development of various agricultural manufacturing and distribution industries. (M.S. 116 O.09)

GOALS AND OBJECTIVES

Goal 1: Assist the private sector to develop new markets and commercialize new products and processes to add value to agricultural commodities and products resulting in lasting economic development in Minnesota's agricultural economy.

Objective 1: The total value added to Minnesota agricultural commodities utilized in funded AURI projects still in operation will increase at an annual rate of 5 %.

Objective 2: The annual ratio of private sector and other matching funds to AURI funds provided to projects will continue to exceed 3:1.

Objective 3: The total number of new products and processes commercialized through the Partnership and Initial Product Assessment programs will increase at an annual rate of 5 %.

Objective 4: Total annual loan repayments through the Partnership Program and Initial Product Assessment program will exceed $500,000 by the end of FY 1999.

Objective 5: Annually assist commodity and farm organizations to identify at least three new markets for traditional or alternative crops and products and advance the research and development of Minnesota agricultural commodities through Market Development Initiatives.

Goal 2: Create long-term benefit to Minnesota's agricultural economy through research alliances, development and technology transfer of new products and processes that provide increased business development and rural manufacturing capacity.

Objective 1: Annually identify technologies related to new or modified agri-based products or processes that possess potential for contributing $30 million annually to the Minnesota economy.

Objective 2: Implement annually research and development activities, in cooperation with university scientists, federal laboratories, foundations and commodity groups that recommend four technologies for technology transfer to the Minnesota agri-business community.

Objective 3: Annually identify two private sector partners and transfer appropriate technologies that can result in commercialization.

Objective 4: Pesticide Reduction Options (PRO) grants will fund research resulting in annual economic benefit to Minnesota producers at least ten times (10X) the state's investment through PRO.

SIGNIFICANT OUTCOMES:

- From 1989 through 1996, in its first 7 years of operation, AURI assisted in the development of 181 new products, the commercialization of 133 new products, and the startup of 106 new businesses.

- During the last two biennium, AURI has funded:

  - over $6 million in Partnership projects;

  - over $1 million in Initial Product Assessments;

  - over one-half $million in New Markets projects;

  - almost three-fourths $ million for applied research.

- In FY 1995, AURI funded $2.26 million in projects, leveraged by $6.88 million in private sector and other matching funds. This represents a 3:1 leverage of state investment.

- In FY 1996, AURI funded $1.32 million in projects, leveraged by $7.05 million in private sector and other matching funds. This represents a 5:1 leverage of state investment.

- AURI has engaged in numerous technology development and marketing initiatives, including:

  - A leadership role in food safety, helping small meat processors meet federal standards;

- Alfalfa product research and development toward a national biomass to energy plant and new feed and food products;
- Hybrid poplar research in collaboration with growers and the paper industry to expand markets for an alternative crop;
- Completion of the first nine research and demonstration projects funded under AURI's Pesticide Reduction Options (PRO) program are projected to yield $6.05 million in annual cost savings to Minnesota farmers;
- New products and cutting edge technologies to add value and utilize Minnesota grains;
- Leadership of a small engine initiative to expand the manufacture and use of agri-based alternative fuels and end use products;
- Innovative technologies to transform waste into economic assets, including hog odor reduction, food waste recycling, organic fertilizers, land application of sweet corn waste, and composting of dead livestock.
- Award of a US patent for a process to derive specialty chemicals from fats and oils.

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AGENCY: Agricultural Utilization Research Institute

PROGRAM: Agricultural Utilization Research Institute

MISSION:

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- identifying, expanding and creating new markets for agricultural commodities, ingredients and products; (M.S. 116 O.09)
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- coordinate and finance research by public and private organizations to transfer new or modified existing technology to businesses, farmers and individuals to promote the development of various agricultural manufacturing and distribution industries. (M.S. 116 O.09)

EXPENDITURE AND STAFFING (FY 1996):

	($ in Thousands)	Percent of Total
Total Expenditures	5,609	
From State Appropriation	3,930	70.0%
From State Appropriation Carryover	532	9.5%
Loan Repayments and Interest	687	12.3%
From Federal and Other Funds	460	8.2%
Number of FTE Staff	30	

GOALS:

Goal 1: Assist the private sector to develop new markets and commercialize new products and processes to add value to agricultural commodities and products resulting in lasting economic development in Minnesota's agricultural economy.

Goal 2: Create long-term benefit to Minnesota's agricultural economy through research alliances, development and technology transfer of new products and processes that provide increased business development and rural manufacturing capacity.

DESCRIPTION OF SERVICES:

The Institute builds working partnerships and alliances with business innovators, entrepreneurs, agricultural groups, federal and state agencies, and scientists to develop new and value-added uses for agricultural goods. AURI provides market development assistance, technical expertise and allied financial assistance to clients for new product research and development. In serving these clients, AURI cooperates with economic development organizations, state and federal agencies and laboratories, nonprofit agricultural and environmental groups, universities and other post-secondary institutions conducting research; and private sector experts.

AURI programs and services include:

- Market Development Initiatives-assist commodity groups, farm organizations and industry organizations to identify opportunities that add value to agricultural commodities and develop new markets or expand existing markets; a for profit business may not be involved, but there must be potential for broad grower benefit;

- Initial Product Assessments-offer support for short-term projects (not more than $15,000) to test technical feasibility and commercial viability of new business concepts;

- AURI Partnerships-help move new products and processes into the marketplace through technical assistance, business development guidance and financial assistance up to $100,000.

- AURI Applied Research Services acquires, develops and transfers new technologies in emerging markets where the potential for new commercial investment is most promising. Focus areas for AURI applied research include alternative fuels and lubricants, industrial oilseeds products, new meat and dairy products, value-added processing of cereal grains, alternative crops and starch-based degradable plastics and chemicals; and

- AURI's Pesticide Reduction Options (PRO) program funds research and demonstration projects intended to reduce the use of petroleum-based products in farm production.

- *Ag Innovation News* is a quarterly newspaper published by AURI to inform the food, agriculture and business communities and the general public about developments in new agricultural-based products. The publication has a circulation of over 12,000, and is sent to 43 states and 9 foreign countries.

AURI programs are market-driven and its services are customer oriented. Operating from field offices in Crookston, Marshall, Morris and Waseca, the decentralized structure provides maximum accessibility for the rural clientele. Laboratories and pilot plant facilities in Crookston, Marshall and Waseca assist clients with benchtop research, testing and analysis, and product scale-up. These unique and valuable resources enable rural innovators to access new product research and development technologies. The St. Paul AURI office helps link markets and businesses with rural clients and AURI services; administers PRO and communications services; and serves as a liaison to state agencies and university services. With the exception of PRO and Market Development Initiatives, AURI financial assistance is provided under negotiable but contractually specified repayment terms. AURI customers indicate that the Institute's allied business and technical services are as essential to success as the direct financial assistance provided.

AURI SERVICE POPULATION (CLIENTS):

- Minnesota-based businesses impacting the rural economy (community), including entrepreneurs and farmer-owned cooperatives.

- Minnesota farmers, agribusinesses and their organizations, including commodity groups, general farm organizations, grower groups and agricultural advocates.

BACKGROUND INFORMATION:

MEASURES OF ACTIVITIES (A)

Type	Measure	1995	1996**
A	Percentage of projects* provided referrals to other public and private programs and services of benefit to the client	78%	61%
A	Percentage of projects* provided technology assessment	69%	51%
A	Percentage of projects* provided product development assistance	44%	42%
A	Percentage of projects* provided feasibility assessment	59%	39%
A	Percentage of projects* provided marketing assistance	45%	35%
A	Percentage of projects* provided publicity assistance	75%	71%
A	Percentage of projects* provided assistance in other funding	38%	30%

* Projects are defined as those receiving AURI funding. Each project is unique in its need for services and assistance.

** Data gathering was expanded to also include non-commercial projects. 1995 data reflected assistance to commercial projects only, which typically receive a wider range of assistance.

PROGRAM DRIVERS:

- **Innovations in agricultural-based product technologies** by private companies, and public and private research institutions demonstrate the importance for Minnesota-based companies to adapt to the latest trends in technology in order to effectively compete.

- **Domestic and international markets for products are constantly developing.** It is essential for entrepreneurs and agri-businesses to access the markets for their crops and products and develop new products to meet the demands of global customers in order to capitalize on these opportunities.

- **Food safety and environmental regulations** present new challenges for Minnesota agriculture and small businesses. USDA's recently adopted "mega-regulation" mandating Hazard Analysis Critical Control Points (HACCP) must be adopted by meat processors. New technology and training must be provided in order to keep Minnesota's meat and livestock industry financially healthy.

- **Federal food and agricultural legislative** movement toward a market-based farm economy necessitates identifying new markets for traditional as well as new crops and products. This will provide an opportunity for more value-added products.

WAYS TO IMPROVE PROGRAM OUTCOMES:

- Initiate cooperative efforts between agencies to further compatible visions.
- AURI will place emphasis on market development, both domestic and international, including the identification of broad market opportunities and market feasibility of products.
- Expand outreach capabilities of AURI to identify and encourage new entrepreneurs.
- Expand technical capabilities to provide additional services for Minnesota agricultural industries.

EMPLOYEE PARTICIPATION:

The development of this report has involved participation by a team of employees drawn from all areas of the Institute, including management, technical staff, field staff and administrative staff, as well as the Executive Director and AURI Board of Directors.

GOALS, OBJECTIVES AND PERFORMANCE MEASURES:

Goal 1: Assist the private sector to develop new markets and commercialize new products and processes to add value to agricultural commodities and products resulting in lasting economic development in Minnesota's agricultural economy.

Objective 1: The total value added to Minnesota agricultural commodities utilized in funded AURI projects still in operation will increase at an annual rate of 5 %.

Measure 1: Total value added to Minnesota agricultural commodities utilized in funded AURI projects still in operation.

	1994	1995	1996	1997	1998	1999
Value-added to Minnesota agriculture (in millions of dollars):						
Actual	15.9	N/A*	15+			
Target as a percentage of FY 1996 baseline			100%	105%	110%	115%

* Data incomplete for FY 1995 due to inadequate reporting by client companies.

** This represents only 44% of commercial client base.

DEFINITION:

Value-added is derived by subtracting the value of raw materials cost from annual product sales over a 12 month period. Value-added is measured for AURI projects funded from 1989 to present, but is only included in a given year's total if the client actually adds value in that year.

RATIONALE:

AURI projects with private sector companies involve mid-to long-term research, development and commercialization endeavors. Sale of products may take two or more years from the onset of a project, therefore value-added may not occur in the initial year of project funding.

According to the Minnesota Department of Agriculture, Minnesota agriculture generates an estimated $22 billion in value-added production (i.e. manufacturing and processing activities that add value to basic commodities) for all economic sectors.

DATA SOURCE:

AURI project data.

DISCUSSION OF PAST PERFORMANCE:

AURI is still a relatively young organization, having been incorporated as a 501 (c) (3) nonprofit corporation in 1989. During the past seven years, AURI evolved its programs to better emphasize private sector clients through its Partnership and Initial Product Assessment programs, while maintaining a strong internal technical program connected with universities and other research institutions. The results have been significant business development, new product and process development and value-added to the Minnesota economy.

OTHER FACTORS AFFECTING PERFORMANCE:

The ability to add value to Minnesota crops and products is influenced by the supply and demand for raw commodities, weather, disease, farm programs and general economic conditions. In the past year, the supply of some grains such as corn and wheat tightened considerably, driving up the price of crops used as feedstocks in value-added products.

Other factors influencing the ability to add value include government regulations in food safety and environmental conditions such as air quality. Renewable agricultural-based crops and products can be substituted for nonrenewable feedstocks such as petroleum to better meet such standards. The ability to effectively compete with agricultural-based products depends in part on the supply and demand for products such as petroleum and the comparative performance of agri-based products to meet consumer preferences and regulatory standards.

PLAN TO ACHIEVE TARGETS:

AURI will continue to assist Minnesota-based businesses to develop and commercialize products and processes through the Initial Product Assessment and Partnership programs. Focus on products with short-to-medium return on investment will continue to receive major emphasis by the institute.

Objective 2: The annual ratio of private sector and other matching funds to AURI funds provided to projects will continue to exceed 3:1.

Measure 1: Ratio of private and other public matching funding to AURI project funds.

	1994	1995	1996	1997	1998	1999
Total Projects Funded	74	138	40			
AURI project funds (millions of dollars)	1.75	2.2	1.32			
Matching funds (millions of dollars)	4.13	6.8	7.05			
Ratio of match to AURI funding						
Actual	2.3:1	3.1:1	5:1			
Target				>3:1	>3:1	>3:1

DEFINITION:

The ratio of private and public matching funds to AURI funding to projects is determined by dividing total private and other matching funds provided to AURI funded projects by total AURI project funds.

RATIONALE:

AURI is a public-private partnership and in order to maximize success by clients, it makes great sense to ensure that funds provided by clients and other organizations are invested to share risk and reward. The result will be a greater return on investment by the State of Minnesota.

DATA SOURCE:

AURI project data.

DISCUSSION OF PAST PERFORMANCE:

Leverage of AURI funds has varied from 2.3:1 in 1994 to a high of 5:1 in 1996.

OTHER FACTORS AFFECTING PERFORMANCE:

Investment dollars to match AURI funds are sometimes difficult to obtain, especially for new small businesses.

In recent years, greater investments have been made in "new-wave" cooperatives, as innovative farmers and their lending institutions have begun to recognize the financial opportunity in value-added processing and product development.

PLAN TO ACHIEVE TARGETS:

AURI will prioritize projects which offer greater return on investment relative to risk and those which maximize matching funds to minimize the risk to AURI funds.

In addition, AURI will work with foundations to identify and advance "second-wave" entrepreneurs to build upon the success associated with new cooperative development.

Objective 3: The total number of new products and processes commercialized through the Partnership and Initial Product Assessment programs will increase at an annual rate of 5 %.

Measure 1: Total number of new products and processes commercialized through the Partnership and Initial Product Assessment programs.

	1994	1995	1996	1997	1998	1999
New products/ processes developed	136	190	181			
New products/ processes commercialized:						
Actual	87	122	133			
Target	N/A	N/A	128	134	140	147

DEFINITION:

Commercialization is defined to occur upon the first sale by client of the AURI-funded product or process.

RATIONALE:

AURI projects with private sector companies involve mid-to long-term research, development and commercialization endeavors. Initial sale of products or processes may take two or more years from the onset of a project.

DATA SOURCE:

AURI project data.

DISCUSSION OF PAST PERFORMANCE:

The number of products and processes funded by AURI which have achieved commercialization has risen steadily over the past few years.

OTHER FACTORS AFFECTING PERFORMANCE:

New product and process development and commercialization is relatively risky. Financial institutions and other investors are often reluctant to invest in new businesses and products

until they are technically proven and in the marketplace. The agricultural depression of the 1980s has had a lasting effect, as agricultural and rural-based businesses are still perceived as higher risk.

PLAN TO ACHIEVE TARGETS:

AURI will continue to help entrepreneurs and agri-based business clients identify markets and manage the deployment of their limited resources in making and selling products. Improvement with the help of AURI and other organizations may increase performance and chance for success.

Objective 4: Total annual loan repayments through the Partnership Program and Initial Product Assessment Program will exceed $500,000 by the end of FY 1999.

Measure 1: Total annual loan repayments through the Partnership Program and Initial Product Assessment Program.

	1994	1995	1996	1997	1998	1999
Total annual loan repayments:						
Actual	56,441	169,387	562,202			
Target	N/A	N/A	300,000	450,000	450,000	550,000

DEFINITION:

Total annual loan repayments constitute the sum of all loan repayments made under AURI contractual agreements with clients.

RATIONALE:

AURI loan repayments serve as an indicator of the success of AURI clients. Funds received are utilized to help fund new AURI clients.

DATA SOURCE:

AURI project data.

DISCUSSION OF PAST PERFORMANCE:

AURI programs have evolved from emphasizing grants to primarily public sector entities to loans to private for profit business clients. As more loans have been made, loan repayments have also increased.

New product and process development and commercialization is relatively risky. Financial institutions and other investors are often reluctant to invest in new businesses and products until they are technically proven and in the marketplace. The agricultural depression of the 1980s has had a lasting effect, as agricultural and rural-based businesses are still perceived as higher risk.

OTHER FACTORS AFFECTING PERFORMANCE:

General economic conditions such as interest rates and disposable consumer income may have a bearing on the sales of new products and processes.

PLAN TO ACHIEVE TARGETS:

AURI will continue to help entrepreneurs and agri-based business clients identify markets and manage the deployment of their limited resources in making and selling products.

In addition, AURI closely monitors its funded projects to ensure compliance with loan repayment terms under project contracts.

Objective 5: Annually assist commodity and farm organizations to identify at least three new markets for traditional or alternative crops and products and advance the research and development of Minnesota agricultural commodities through Market Development Initiatives.

Measure 1: Number of new markets for traditional or alternative crops and products identified.

	1994	1995	1996	1997	1998	1999
Number of new markets identified:						
Actual	8	14	4			
Target	N/A	N/A	N/A	3	3	3

DEFINITION:

Market Development Initiatives assist commodity groups, farm organizations and industry organizations identify opportunities to add value to agricultural commodities and develop new markets or expand existing markets; a for profit business need not be involved, but there must be potential for broad grower benefit.

RATIONALE:

Market Development Initiatives are designed to assist growers to identify new markets and opportunities to grow alternative crops and diversify their operations for future profitability.

DATA SOURCE:

AURI project data.

DISCUSSION OF PAST PERFORMANCE:

AURI has found the New Markets program to be valuable to identify opportunities to develop new agricultural-based markets and industries.

OTHER FACTORS AFFECTING PERFORMANCE:

The ability to add value to Minnesota crops and products is influenced by the supply and demand for raw commodities, weather, disease, farm programs and general economic conditions. In the past year, the supply of some grains such as corn and wheat tightened considerably, driving up the price of crops used as feedstocks in value-added products.

Other factors influencing the ability to add value include government regulations in food safety and environmental conditions such as air quality. Renewable agricultural-based

crops and products can be substituted for nonrenewable feedstocks such as petroleum to better meet such standards. The ability to effectively compete with agricultural-based products depends in part on the supply and demand for products such as petroleum and the comparative performance of agri-based products to meet consumer preferences and regulatory standards.

PLAN TO ACHIEVE TARGETS:

AURI will conduct at least four market feasibility studies and/or economic input/output analyses of agricultural industries to determine the best opportunities for value-added initiatives in Minnesota in FY 1997 and in FY 1998. These will be conducted under a new Market Development Initiatives program.

Goal 2: Create long-term benefit to Minnesota's agricultural economy through research alliances, development and technology transfer of new products and processes that provide increased business development and rural manufacturing capacity.

Objective 1: Annually identify technologies related to new or modified agri-based products or processes that possess potential for contributing $30 million annually to the Minnesota economy.

Measure 1: Number of technologies identified and recommended for further development.

	1994	1995	1996	1997	1998	1999
Technologies identified and recommended:						
Actual	N/A*	N/A*	N/A*			
Target	N/A*	N/A*	N/A*	4	4	4
Value-added or cost savings potential of technologies ($ millions):						
Actual	N/A*	N/A*	N/A*			
Target	N/A*	N/A*	N/A*	30	30	30

*This is a new measure developed by AURI. Data will begin to be collected in FY 1997.

DEFINITION:

AURI Applied Research Services provides technical support and assistance related to acquisition, development and technology transfer to the private sector.

RATIONALE:

In order to remain competitive, Minnesota agri-businesses must identify new technologies for research and development.

DATA SOURCE:

AURI project data.

DISCUSSION OF PAST PERFORMANCE:

- AURI has engaged in numerous technology development and marketing initiatives, including:
  - A leadership role in food safety, helping small meat processors meet federal standards;
  - Alfalfa product research and development toward a national biomass to energy plant and new feed and food products;
  - Hybrid poplar research in collaboration with growers and the paper industry to expand markets for an alternative crop;
  - New products and cutting edge technologies to add value and utilize Minnesota grains;
  - Leadership of a small engine initiative to expand the manufacture and use of agri-based alternative fuels and end use products;
  - Innovative technologies to transform waste into economic assets, including hog odor reduction, food waste recycling, organic fertilizers, land application of sweet corn waste, and composting of dead livestock.
  - Award of a US patent for a process to derive specialty chemicals from fats and oils.

OTHER FACTORS AFFECTING PERFORMANCE:

To successfully research and develop new technologies that add value and save costs to Minnesota's agricultural industry will depend on economic conditions, scientific and technical resources and efforts, and access to state of the art information and technology. In recent years, there has been a trend toward a decline in federal and private sector funds directed toward research and development, increasing the necessity of identifying the potential economic impact to such research before work is funded.

PLAN TO ACHIEVE TARGETS:

The following strategies will be used to achieve the targets:

- **Applied research, pilot plant services and engineering will be organized into teams emphasizing 4 focus areas** with medium- and long-term opportunity for return on investment to the Minnesota economy:

  -Biomass, including energy from alfalfa, fiber for paper and building materials from cornstalks and hybrid poplars, feeds and co-products;

-Proteins, including aquaculture, meats, dairy, grains and oilseeds, food safety and quality, and feed products;

-Fats and Oils, including animal products, grains and oilseeds, renewable chemicals and fuels, food ingredients and feed products;

-Alternative crops, including fruits, vegetables, herbs, food products, nutritional supplements and pharmaceuticals.

In addition, the following key areas will be integrated with all 4 focus areas:

-Waste Utilization

-Pesticide Reduction

- **Market and economic analyses will be conducted** to:

  - assess the current business and rural manufacturing capacity in each of the four major sectors

  -identify the best opportunities for product and process development and technology transfer

  -determine the economic feasibility of technologies

Objective 2: Implement annually research and development activities, in cooperation with university scientists, federal laboratories, foundations and commodity groups that recommend four technologies for technology transfer to the Minnesota agri-business community.

Measure 1: Applied technology projects implemented for technology transfer.

	1994	1995	1996	1997	1998	1999
Applied technology projects implemented for technology transfer:						
Actual	10	2	2			
Target	N/A	N/A	N/A	4	4	4

DEFINITION:

AURI Applied Research Services provides technical support and assistance related to acquisition, development and technology transfer to the private sector.

RATIONALE:

In order to remain competitive, Minnesota agri-businesses must identify new technology opportunities for research and development.

DATA SOURCE:

AURI project data.

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- Leadership of a small engine initiative to expand the manufacture and use of agri-based alternative fuels and end use products;

- Innovative technologies to transform waste into economic assets, including hog odor reduction, food waste recycling, organic fertilizers, land application of sweet corn waste, and composting of dead livestock.

- Award of a US patent for a process to derive specialty chemicals from fats and oils.

OTHER FACTORS AFFECTING PERFORMANCE:

To successfully research and develop new technologies that add value and save costs to Minnesota's agricultural industry will depend on economic conditions, scientific and technical resources and efforts, and access to state of the art information and technology. In recent years, there has been a trend toward a decline in federal and private sector funds directed toward research and development, increasing the necessity of identifying the potential economic impact to such research before work is funded.

PLAN TO ACHIEVE TARGETS:

- **Conduct applied research and product development and testing** to:

  -prove technologies

  -meet the specifications of the marketplace

  -determine the economic feasibility of technologies

Objective 3: Annually identify two private sector partners and transfer appropriate technologies that can result in commercialization.

Measure 1: Number of private sector partners identified and receiving transfer of appropriate technologies.

	1994	1995	1996	1997	1998	1999
Partners identified and receiving transfer of technologies:						
Actual	N/A*	N/A*	N/A*			
Target	N/A*	N/A*	N/A*	2	2	2

*This is a new measure developed by AURI. Data will begin to be collected in FY 1997.

DEFINITION:

Private sector partners are defined as private for-profit companies who will serve as the product champion for a product or process developed through AURI Applied Technology programs.

RATIONALE:

In order for technology developed to be commercialized, private sector partners must be identified and the technology must be transferred to them.

DATA SOURCE:

AURI project data.

DISCUSSION OF PAST PERFORMANCE:

AURI has only recently begun a concerted effort to transfer new technologies to the private sector.

OTHER FACTORS AFFECTING PERFORMANCE:

To successfully research and develop new technologies that add value and save costs to Minnesota's agricultural industry will depend on economic conditions, scientific and technical resources and efforts, and access to state of the art information and technology. In recent years, there has been a trend toward a decline in federal and private sector funds directed toward research and development, increasing the necessity of identifying the potential economic impact to such research before work is funded.

PLAN TO ACHIEVE TARGETS:

AURI technical and business development teams will identify potential commercial partners through direct contact, advertisements in trade publications and other means. Intellectual property agreements between AURI, other research entities and private sector partners will be developed as appropriate.

Objective 4: Pesticide Reduction Options (PRO) grants will fund research resulting in annual economic benefit to Minnesota producers at least ten times (10X) the state's investment through PRO.

Measure 1: Annual projected economic benefit to Minnesota producers due to direct cost savings and increased crop value resulting from PRO projects completed the previous fiscal year.

	1994	1995	1996	1997*	1998*	1999*
PRO Research Projects Funded	11	7	6	6	6	6
PRO Approved Funding	$358,299	$180,060	$179,673			
Completed PRO Projects	N/A	N/A	9	8	7	6
Completed Projects Funding	N/A	N/A	$290,371	$217,968	$209,693	$180,000
Projected Benefit for Following Growing Season:						
Actual	N/A	N/A	$6.05 mil.			
Target	N/A	N/A	$2.9 mil.	$2.2 mil.	$2.1 mil.	$1.8 mil.

*Estimates based on projections for FY 1997-FY 1999.

DEFINITION:

AURI's Pesticide Reduction Options (PRO) program funds research and demonstration projects intended to reduce the use of petroleum-based products in Minnesota agriculture. Projects are one to two years in duration, with some projects extended to three years.

Economic benefit projections are made by project researchers of completed PRO projects, based on their data and projections of producer adoption of new practices.

RATIONALE:

Health and environmental concerns and governmental policies are driving growers toward reduced pesticide usage while economics, soil erosion potential and lack of options drive growers toward an increased dependency on pesticide use. Therefore, research and demonstration is needed to identify practices which maintain or enhance production while reducing input costs and minimizing the use and impact of pesticides.

Scientific research will not always yield their intended benefits, thus benefits are not targeted to individual projects, but to all projects completed in a given fiscal year. Further, the number of years a given practice will provide benefits is not estimable. The annual

economic benefit projection is an estimate of benefits which Minnesota producers will receive each year that the newly developed practices remain in use. Thus, this is a very conservative estimate of actual benefits to Minnesota as a result of PRO-funded projects.

DATA SOURCE:

PRO project data.

DISCUSSION OF PAST PERFORMANCE:

Twenty-four PRO projects were funded during three rounds of funding in FY 1994-FY 1996.

Nine of these projects were completed in FY 1996, resulting in annual projected increased crop values or direct cost savings of $6.05 million to Minnesota producers. An additional eight projects are planned for completion in FY 1997 and the remaining seven projects funded to date will be completed in FY 1998.

A fourth round of proposals is being considered for funding in FY 1997, with an estimated six projects to be completed by FY 1999.

OTHER FACTORS AFFECTING PERFORMANCE:

The incidence of agricultural pests and diseases, climatic conditions, and other factors will affect PRO projects' results and benefit projections.

PLAN TO ACHIEVE TARGETS:

Contingent upon funding for the FY 1998-FY. 1999 Biennium, AURI will continue to fund research and demonstration projects through a request for grant proposals involving university researchers, agricultural organizations and others. Each project has a technology transfer plan to get the new information directly to producers who can utilize and benefit from the newly developed practices. Technology transfer tools include educational meetings, field demonstrations, and publications such as commodity newsletters and AURI's *Ag Innovation News*.