**University of Minnesota Extension Service**
**Federal Plan of Work**
**1999 – 2004**

## A. Background

The Agricultural Research, Extension and Education Reform Act of 1998 (AREERA) requires that each Extension service develop a Plan of Work (POW), to document the use of Smith Lever 3(b) and (c) funds.

The University of Minnesota Extension Service works in conjunction with the following Colleges of the University of Minnesota to fulfill its outreach function: College of Agriculture Food and Environmental Sciences (COAFES), College of Human Ecology (CHE), College of Veterinary Medicine (CVM), College of Natural Resources (CNR), Hubert H. Humphrey Institute of Public Affairs, College of Education and Human Development, College of Liberal Arts, College of Architecture and Landscape Architecture, Center for Urban and Regional Affairs, School of Nursing, School of Public Health, University of Minnesota Crookston, University of Minnesota Duluth, and the University of Minnesota Morris.

Much of Extension's work in Minnesota is conducted on a multi-county basis. Contiguous counties are grouped in "clusters" and Extension educators work in teams, utilizing their specialized expertise to address local issues. Most clusters also have actively involved stakeholder advisory groups that identify and prioritize issues and make recommendations for effective program delivery.

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## B. Operating Philosophy

The shared missions of the University of Minnesota Extension Service and the Agricultural Experiment Station include serving the people of our state based upon three parameters: economic viability; environmental sustainability; and quality of life. We are committed to serve all sectors of the population and to that end view diversity in ideas and people as a strength. We believe the roles of participants within our programs should be structured to promote collaborations and to provide an arena for change.

Five pervasive values for our projects and programs for in each of the five goals of AREERA include:

1. to integrate research, education, and outreach efforts in a comprehensive program
2. to engage in research and educational practices that do not deplete our nonrenewable resources nor negate quality of life
3. to derive synergy from multidisciplinary research and collaborative learning partnerships;
4. to support and encourage experiential knowledge and the co-learning role of citizens;
5. to encourage diversity of ideas and people within a learning environment.

**Stakeholder Input:**

Continuous stakeholder input is sought from key constituents and stakeholders appropriate to each goal. These include groups such as the following: peers; citizen advisory committees; program specific advisory committees including ethnic and racial minorities; and the Association of Minnesota Counties. In addition, a system of Regional Partners is being developed throughout Minnesota to address and engage in research critical to their region (three were developed in 1999 and additional regional partners will be formed as soon as funding from the State Legislature is secured).

**Reaching Under-Served and Under-Represented Populations:**

The University of Minnesota Extension Service has made a conscious effort to reach out to under-served and under-represented groups, such as ethnic minorities and new immigrants. A significant proportion of the new and under-served populations reside in the Twin Cities area. A number of programs targeted to these populations have already been implemented and internal program grant funds are targeted toward leveraging innovative new efforts to reach the under-served and under-represented. In addition, Extension has made a commitment to university administrators, via a performance contract, both to reach out to new and under-served audiences and to significantly increase the number of ethnic minority persons employed by Extension.

Some examples of Extension programs targeted to new and under-served or ethnic minority audiences include nutrition and exercise programs and 4-H Youth Development arts and gardening programs for inner city minority youth, renter and homeowner indoor environmental quality programs for extended immigrant families, intensive vegetable gardening and nutrition programs on all of the MN American Indian Reservations, New Immigrant Farmer Program in the Twin Cities Metro area, Bi-Cultural Parent Education Program, Hmong Citizenship Promotion Program, MN Migrant Health Promoter Program, Community Connector Program (southern and south central MN), Supporting Community Diversity (SW MN) and 4-H Diversity Study Circles, and Nutrition Education and Family Nutrition Programs targeted to food-stamp recipients. In addition, family financial management programs have been developed and targeted to individuals and families making the transition from welfare to work.

**Equal Opportunity:**

We adopt by reference the University of Minnesota's Affirmative Action Program for procedures for reporting Civil Rights compliance and Equal Employment Opportunity requirements.

**Funding Resources:**

Funding resources include federal funding (Smith Lever), state, county, income, grants and gifts. The ratio of federal funding to others sources is 1:8. In addition, special initiatives address critical issues such as rural economic viability.

**Identification of Multi-State, Multi-Disciplinary Programs:**

Minnesota engages in numerous multi-state programs and national or regional projects. Some of these involve direct financial support; others involve collaborative sharing of research, knowledge, training expertise, and educational materials. For example, UM has joint projects and shared faculty appointments in sugar beet and potato production and management with North Dakota State University/the North Dakota Cooperative Extension Service. These arrangements also include active partnerships with the appropriate commodity groups.

MN also helps to fund and actively participates with the North Central Regional Rural Development Center, IDEA (the Information Development—Expanding Awareness Project), and the Midwest Planning Service, all located at Iowa State University. Other regional or multi-state efforts include Dairy HACCP (with CA), a livestock marketing program (with CO), the Pork Industry Handbook, assistance for establishing new agricultural/value-added cooperatives (shared faculty member with the University of Wisconsin-River Falls), and a forestry project (PA). Some examples in the water quality/pollution prevention area include Farm*A*SYST/HOME*A*SYST, the Management System Evaluation Area Regional Publications Project, and the Basin Management Collaboration with the University of Wisconsin on adjacent watersheds.

In addition, several Human Ecology Extension/research faculty are conducting multi-state programs or sharing resources with other states. Some examples are Indoor Air Quality and Radon Training (multi-state effort supported by U.S. EPA), “Who Gets Grandma’s Yellow Pie Plate?” (an educational program on successfully transferring non-titled property and assets—in-service training conducted in WI, IL, and MD—materials adapted by IA, MT, NC, OR, and TX), “Long-Term Care Financing” (materials shared/assistance provided with adaptation in IA, IN, KY, NE), “Positive Parenting of Teens” (in partnership with the University of Wisconsin Extension), and “Woodlands Wisdom” Nutrition Project (development of a food and nutrition academic program in six tribal colleges in MN, ND, and WI).

**Identification of Extension Outreach Programs Integrated With Research:**

The appendix indicates the extensive listing of University of Minnesota faculty with joint appointments including both research and outreach components. This listing exceeds the federal requirement for integration and will serve to provide evidence of the integrative efforts for federal funding at the University of Minnesota.

In addition to meeting federal funding requirements, there are many other instances of programs initiating research and carrying through to dissemination through outreach. Minnesota Impacts! is a joint research and outreach database for reporting research and outreach impacts within the state of Minnesota. Examples can be obtained by accessing the Impacts! website at www3.extension.umn.edu/mnimpacts).

**Allocation of Resources Summary:**

| | 1999/2000 | 2000/2001 | 2001/2002 | 2002/2003 | 2003/2004 |
|---|---|---|---|---|---|
| | FTEs of Professional, Paraprofessional, and Administrative Time | | | | |
| **Goal 1** | 111.27 | 114.26 | 115.16 | 115.76 | 115.00 |
| **Goal 2** | 32.27 | 34.20 | 35.57 | 36.63 | 38.00 |
| **Goal 3** | 119.38 | 120.13 | 121.13 | 122.33 | 123.43 |
| **Goal 4** | 80.33 | 80.83 | 83.98 | 84.12 | 85.38 |
| **Goal 5** | 171.42 | 169.67 | 166.83 | 167.83 | 168.87 |
| | 514.67 | 518.67 | 522.68 | 526.67 | 530.68 |
| | Salary Investments (Value of FTEs Above) | | | | |
| **Goal 1** | $6,054,936 | $6,341,996 | $5,511,813 | $6,667,344 | $6,755,031 |
| **Goal 2** | 2,232,006 | 1,729,646 | 1,831,510 | 1,920,684 | 2,026,577 |
| **Goal 3** | 4,130,904 | 4,263,527 | 4,400,357 | 4,550,613 | 4,700,153 |
| **Goal 4** | 4,507,369 | 4,635,811 | 4,883,595 | 4,987,101 | 5,150,355 |
| **Goal 5** | 7,825, 233 | 7,907,331 | 7,939,643 | 8,147,060 | 8,364,583 |
| | $24,750,448 | $24,878,311 | $25,566,918 | $26,272,802 | $26,996,699 |

## GOAL 1. AN AGRICULTURAL SYSTEM THAT IS HIGHLY COMPETITIVE IN THE GLOBAL ECONOMY

### Program 1. Agricultural Production and Farm Business Management

**Statement of Issue:**

The 1996 Farm Act quickly and dramatically changed the decision making environment for farmland operators, owners, and managers. The emergence of the Farm Act with its production flexibility contract payments (PFCPs) and its almost complete elimination of planting restrictions jolted many people engaged in agriculture. Some of the primary issues Minnesota agricultural producers will need to address as a result of the changes in the agricultural industry and policy include: strategic positioning, transferring management capabilities, frequent performance monitoring, evaluating new technology, monitoring external factors, managing information, and accountability.

The Center for Farm Financial Management within the College of Agricultural, Food and Environmental Sciences was established to develop educational tools for farmers, agricultural lenders, and educators to apply the principles and concepts of farm planning, financing and analysis in a practical manner. These educational tools are usually in the form of computer software that helps improve the decision-making ability of farmers. To remain competitive in agriculture, Minnesota producers and agriculture businesses must be better able to develop sound production and business management plans.

**Performance Goals:**

- Existing educational programs will be extended to new audiences and new programs developed as needed to address the rural economic crisis in MN.
- Existing publications and software will be revised, as needed, and new publications, software, and Internet accessible information will be developed to address the rural economic crisis in MN.
- Industry connections will be assessed in determining the usefulness of existing programs and teaching materials, as well as in determining the need for new programs, materials, and delivery methods.
- The economic and social impacts of farm business management programs will be determined and made available via Minnesota Impacts!

**Key Program Components:**

- Conduct educational programs and develop publications that improve decision-making in farm planning and financing for farmers and lenders.
- Conduct educational programs and develop publications to improve decision-making in financing for agricultural business owners.
- Develop educational materials for decision analysis, including worksheets and computer simulations.
- Develop internet-based educational programs.

**Internal and External Linkages:**

**Internal:**
- Extension and research faculty in agronomic and animal related departments in College of Agricultural, Food, and Environmental Sciences (COAFES)
- USDA/ARS
- Minnesota Agricultural Experiment Station
- HHH Institute of Public Affairs (UM)

**External:**
- Farm lenders
- Farm credit institutions
- Farm Service Agency

**Target Audiences:**

- Farmers operators and families
- Farm landlords
- Extension educators
- University/Technical college educators
- Agricultural lenders
- Veterinarians
- Other public agencies
- Private businesses and consultants

**Evaluation Framework:**

- Participant evaluations of financial management programs (intent to apply information).
- Follow-up surveys of participants to determine application and impact of education received.
- Informal interviews with Extension educators, bankers, agriculture professionals, and farm management instructors regarding their observations of changes in financial management practices and profitability of farm businesses.

**Output Indicators:**

- Number of farm business consultants, Extension educators, and other participants completing training on the use of FINPACK and other decision analysis tools.
- Number of new farm business consultants, Extension educators, and others offering their financial analysis expertise to farm and other agricultural business operators.
- Number of farm and other agricultural business operators participating in farm financial management programs and individual farm or business financial analysis sessions.
- Number of new publications, other educational materials, software, and Internet-based educational programs developed.

**Outcome Indicators:**

- Number of individual farms or agricultural businesses who improved their financial situation as a result of the financial analysis information they received from Extension or a financial consultant trained by Extension.
- Overall economic impact on MN farms and agricultural businesses served by Extension.

**Program Duration:** Intermediate Term

## Program 2. Agricultural Marketing and Distribution

### Statement of Issue:

Producers of livestock commodities in Minnesota are facing major changes ranging from industry structure changes (ownership arrangements, cooperating arrangements, size and alternative production issues) to perceived or actual impact of operations on the environment. The livestock industry is the highest value economic enterprise in Minnesota's agricultural economy. Improvements in economic efficiency affect many people involved in production, distribution and marketing of livestock and meat products and impacts are likely to be long term in nature (10-20 years). The greatest economic value is likely derived from understanding and utilizing price risk management. Improved price risk management can result in substantially improved profitability in any given year.

The production and distribution of food and fiber in Minnesota have changed dramatically during the last decade. Food in the supermarket and restaurant is as likely to come from another state or continent as it is from Minnesota, thereby creating a disconnection between producer and consumer.

### Performance Goals:

- Existing marketing and price risk management programs will be extended to new audiences and new programs developed as needed to assist in addressing the rural economic crisis in MN.
- Existing publications will be revised and new publications and other educational materials prepared to support marketing and price risk management programs.
- Internal and external collaborators will be involved in identifying new opportunities for educational programs and in assessing the impact of existing programs.
- The economic and social impacts of marketing and price risk management programs will be determined and the results will be made available to policy makers and the public via Minnesota Impacts!

### Key Program Components:

- Conduct educational programs and develop publications to improve decision making in farm planning and financing for farmers and lenders.
- Conduct educational programs and develop publications to improve decision making in financing for agricultural business owners.

### Internal and External Linkages:

**Internal:**
- Extension and research faculty in agronomic and animal related departments in College of Agricultural, Food, and Environmental Sciences (COAFES)
- USDA/ARS
- Minnesota Agricultural Experiment Station

**External:**
- Farm lenders

- Farm credit institutions
- Farm Service Agency

**Target Audiences:**

- Farm operators and families
- Extension educators
- University/Technical college educators
- Agricultural lenders
- Veterinarians
- Other public agencies
- Private businesses and consultants

**Evaluation Framework:**

- Participant evaluations of marketing and price risk management programs (intent to apply information).
- Follow-up surveys of participants to determine application and impact of education received.
- Informal interviews with Extension educators, bankers, agricultural professionals, and other collaborators regarding their observations of changes in marketing and price risk management strategies by program participants and the profitability of their businesses.

**Output Indicators:**

- Number of farm operators, Extension educators, university/technical college instructors, and others completing marketing and price risk management educational programs.
- Number of Extension educators, university/technical college instructors, and other agricultural professionals conducting marketing and price risk management programs and providing individual consultations for farmers and others.
- Number of new or revised publications and other educational materials prepared on marketing and price risk management.

**Outcome Indicators:**

- Number of individual farms or agricultural businesses who improved their financial situation as a result of applying marketing and price risk management information provided by Extension or other professionals trained by Extension.
- Overall economic impact on MN farms and other agricultural businesses served by Extension.

**Program Duration:** Intermediate Term

## Program 3. International Economic Competitiveness

### Statement of Issue:

Minnesota agriculture has become much more affected by global conditions. Economic decline in Southeast Asia affects the ability to market commodities in that part of the world. Growing conditions in Brazil and Canada affect the prices for Minnesota products. Also, trade agreements affect what can be bought and sold in countries around the world.

The Center for International Food and Agricultural Policy in the College of Agricultural, Food, and Environmental Sciences was established to analyze the forces that underlie international trade restrictions, describe the dynamic interdependence of farmers' production and investment decisions and governments' agricultural and trade policy decisions, and look at the economic effects of policy decisions in other countries on agriculture in Minnesota and the U.S. With its interdisciplinary approach, the center uses its research and education activities to increase international understanding about food, agriculture, nutrition, natural and human resources, and the environment, and to positively impact the policies of both developed and developing countries.

### Performance Goals:

- Develop publications and plan and deliver programs on the economic interrelationships in both the domestic and foreign food and agricultural industries.
- Develop and maintain an analytical support system that facilitates research and analysis on food, agricultural, and trade policy issues and utilizes this information in educational programs.
- Provide information to help public policy program participants and decision makers evaluate trade and policy issues and increase public understanding of these issues.
- Assess economic and social impacts and report them to policy makers and the public via Minnesota Impacts!

### Key Program Components:

- Explanation of the economic interrelationships between the domestic and foreign food and agriculture industries and their implications for producers, agribusinesses, policy makers, and the public in MN and in other countries.
- Explanation of alternative food and agriculture-related policies and their potential impact on MN and other farmers, agribusinesses, and consumers.
- Criteria for evaluating alternative food and agriculture policies and assessing their domestic and international impacts.

### Internal and External Linkages:

**Internal:**

- Extension and research faculty in the Departments of Food Science and Nutrition, Applied Economics, Rhetoric, Soil, Water, and Climate, (COAFES)
- Hubert H. Humphrey Institute of Public Affairs (UM)
- Economics Department (UM)
- College of Natural Resources (UM)
- Law School (UM)
- Carlson School of Management (UM)

- Department of Political Science
- Minnesota Agricultural Experiment Station

**External:**

- 30 international affiliates in countries such as Poland, Germany, Italy, and Argentina

**Target Audiences:**

- State legislators
- Farm operators and families
- Extension educators
- University/Technical college educators
- Agricultural lenders
- Other public agencies
- Private businesses and consultants

**Evaluation Framework:**

- Participant evaluations of domestic and international agricultural trade programs (increase in understanding of issues, etc.).
- Informal interviews with Extension educators, agriculture professionals, and policy makers regarding their increased understanding of policy issues and alternative choices.

**Output Indicators:**

- Number of participants in food and agriculture policy meetings and discussions, including estimated number of readers of newsletters and newspaper articles about food and agriculture policies and their impacts.
- Number of meetings, discussions, publications and other articles published on trade interrelationships and the impacts or implications of food and agriculture trade policy alternatives.

**Outcome Indicators:**

- Program participants' increased understanding of the impacts of food and agriculture policy alternatives and the economic interrelationships between domestic and international trade.
- Program participants' actions taken to influence the food and agriculture policy making process.
- Policy makers' increased understanding of the impacts of food and agriculture policy alternatives and the economic interrelationships between domestic and international trade.

**Program Duration:** Intermediate Term

## Program 4. Animal Production and Management Strategies

### Statement of Issue:

Minnesota livestock producers are challenged with integrating knowledge from diverse disciplines into production practices suitable for their individual operations. Educational programs on animal production systems must address the interactions between nutrition, genetics, reproduction, physiology, microbiology, immunology, and molecular biology, as well as related effects on animal health, productivity, and impacts on the environment.

In Minnesota, large amounts of land (including two million acres of Conservation Reserve land) are suited for beef cow/calf operations, but the cost of production is high due to feed costs and inefficient use of available forage. Educational programs need to assist producers in developing grazing and forage systems to reduce feed costs and improve profitability.

Educational programs that lead to applications in production efficiency, sustainability, animal and environmental well-being, and high quality products are imperative if Minnesota animal agriculture is to remain economically viable.

### Performance Goals:

- Existing educational programs will be extended to new audiences and new programs developed to encourage landowners and crop producers to diversify and add livestock enterprises.
- Existing educational programs on cost-efficient nutrition and management will be revised and promoted to livestock producers and potential livestock producers.
- Existing publications and educational materials will be revised and new information will be prepared on economically and environmentally sustainable animal production.
- Greater collaboration will be sought with the livestock and agribusiness industry to communicate research information and to address issues limiting the expansion of the industry in MN.

### Key Program Components:

- Nutrition and management factors affecting the biologic and economic efficiency of animal production systems.
- Evaluation of alternative feeds and feeding and management strategies to improve economic efficiency.
- Determination of nutrient requirements to enhance economic and environmentally sustainable animal production.
- Improved definition of dietary nutrient needs for food animals.
- Provide information on improved sources of nutrients and their bio-availability.

### Internal and External Linkages:

**Internal:**

- Extension and research faculty in the Departments of Animal Science; Food Science and Nutrition, Applied Economics; Soil, Water, and Climate, and Agronomy and Plant Genetics (COAFES)
- Center for Alternative Animal and Plant Products (COAFES)
- MN Institute for Sustainable Agriculture

- USDS/ARS
- College of Veterinary Medicine
- Minnesota Agricultural Experiment Station

**External:**

- MN Cattlemen's Association
- MN Turkey Growers Association
- National Turkey Federation
- MN Pork Producers
- MN Soybean Growers Association
- National Pork Producers Association
- U.S. and MN feed industry

**Target Audiences:**

- Farm operators and families
- Extension educators
- University/Technical college educators
- MN feed industry
- Other public agencies
- Private businesses and consultants

**Evaluation Framework:**

- Participant evaluations of livestock expansion and nutrition and management programs (intent to apply information).
- Follow-up surveys of participants to determine application and impact of education received.
- Informal interviews with Extension educators, veterinarians and other agriculture professionals, commodity association representatives, agribusiness people, bankers, and others related to the livestock industry, regarding their observations of changes in livestock production practices and the profitability of livestock enterprises.

**Output Indicators:**

- Number of participants in livestock expansion and nutrition and management programs.
- Number of producers adding new livestock enterprises to their operations.
- Number of livestock producers enhancing their economic efficiency while maintaining or improving environmental conditions on their farms.
- Number of new or revised publications and other educational materials prepared to disseminate new research information on livestock nutrition and management, alternative livestock enterprises, and environmentally-responsive livestock production.

**Outcome Indicators:**

- Number of farm operators who improved their financial situation as the result of adding or improving the economic efficiency of a livestock enterprise as a result of participating in an Extension program.
- Number of individual farm operators with livestock enterprises who improved the environmental conditions related to their businesses.
- Overall economic impact on MN livestock-producing farms and agribusinesses served by Extension.

**Program Duration:** Intermediate Term

## Program 5. Crop Production and Management Strategies

### Statement of Issue:

Production capacity, production efficiency, and crop protection are major factors supporting Minnesota crop productivity. Minnesota agriculture is relatively diverse with production in corn, soybeans, spring wheat, barley, alfalfa, sugarbeets, and sunflowers ranking in the top four states nationally. Minnesota producers are seeking ways to minimize their use of pesticides and fertilizers in adopting new crop technologies, diversifying their crops, minimizing soil erosion with reduced tillage operations, and taking advantage of new alternative crop markets.

New technologies, including plant transformation, genomics, and computer assisted biology, will help provide the necessary tools needed to understand and later modify plants for improved production characteristics.

Production of high quality food and fiber is a important industry in Minnesota and sustaining this high level of production and quality is imperative. However, to remain viable in an increasingly global and competitive agriculture, Minnesota producers must have access to novel approaches that reduce production risks while protecting the natural resource base of the state.

### Performance Goals:

- Develop new and revise existing educational programs, involving a farming systems approach with the goals of maximizing profitability while protecting the environment and natural resource base.
- Use “whole farm” demonstrations to accelerate the adoption of research results and overcome crop production constraints.
- Revise and develop new publications and other educational materials to incorporate and promote a farming systems approach to crop production.
- Collaborate with the crop production industry to identify crop production constraints, promote a farming systems approach, identify demonstration farm sites, and promote Extension educational programs.
- Measure economic and environmental impacts of Extension education and report them via Minnesota Impacts!

### Key Program Components:

- Farming systems that maximize profitability while protecting the natural resource base.
- Research to identify and overcomes constraints to crop production.
- Educational programs that focus on soil health, tillage systems, crop rotations, pest management, and decision support systems to accelerate the adoption of research results on farms by demonstrating the benefits of research in terms of the whole farm.
- Development of efficient crop production and sustainable cropping systems and subsequent transfer of products to customers. Overall challenges include substantially increasing the knowledge base of sustainable technology for crop production and cropping systems; improving the delivery of technologies generated; and promoting the use of these systems.

**Internal and External Linkages:**

**Internal:**
- Extension and research faculty in the Departments of Agronomy and Plant Genetics, Soil, Water, and Climate, Horticulture, Entomology, Plant Biology, and Plant Pathology.
- Minnesota Agricultural Experiment Station
- Center of Alternative Animal and Plant Products (COAFES)
- USDA/ARS
- MN Institute for Sustainable Agriculture

**External:**
- Minnesota Department of Agriculture
- MN Wheat and Barley Growers
- MN Soybean Growers Association
- MN Corn Growers Association
- MN Wild Rice Growers Association

**Target Audiences:**

- Producers
- Extension educators
- Crop consultants

**Evaluation Framework:**

- Participant evaluations of whole farm/cropping systems educational programs (intent to apply information in their operations).
- Follow-up surveys of participants to determine application and impact of education received.
- Informal interviews with Extension educators, crop consultants, commodity group representatives, and others in the crop industry regarding their observations of farming systems changes in crop production and economic and environmental impacts of Extension educational programs.

**Output Indicators:**

- Number of participants in whole farming systems crop production programs.
- Number of Extension educators and crop consultants given additional training in whole farming systems approaches to crop production.
- Number of revised and new crop systems programs developed and delivered.
- Number of individual alternative crop consultations provided by the Center for Alternative Animal and Plant Products (CAAPP) and by Extension educators.
- Number of publications and other educational materials revised or developed.

**Outcome Indicators:**

- Number of individual farm operators who adopted farming systems approaches to crop production as a result of Extension programs.
- Number of individual farm operators successfully adding alternative crop enterprises as a result of Extension programs or consultations with CAAPP or Extension educators.
- Number of new farming system demonstration farms established with Extension assistance.

- Overall economic and environmental impacts on MN farms and agribusinesses as a result of Extension programs and consultations.

**Program Duration:** Intermediate Term

### Program 6. Value Added Agriculture

**Statement of the issue:**

Minnesota's agriculture faces increasing, intense competition in the global marketplace. Worldwide, agricultural production has increased faster than demand in many areas, resulting in current commodity surpluses, low prices, and unreliable profitability. Recent shifts in U.S. farm policy to remove price supports emphasize the need for Minnesota's producers to move beyond production of ever-larger quantities of ever-cheaper commodities. Producers must be able and willing to produce higher-quality products that can be differentiated from lower-value commodities; commodities and co-products must be converted into useful value-added food and nonfood products; and products must be protected from contamination or loss of quality after harvest to ensure marketability. These applications could include traditional uses such as food and feed, or nontraditional applications in nonfood products such as adhesives, plastics, composite products, fuels, lubricants. Other uses could include nutriceuticals, pharmaceuticals, biopesticides, or other high-value uses.

**Performance Goals:**

- Revise and develop new educational programs to identify alternative, value-added production opportunities and to encourage production and marketing of high quality and value-added products.
- Disseminate the results of research on new specialty crops and animal products and ways to enhance product quality and reduce production costs.
- Collaborate with industry and commodity groups to identify new alternative crops and value-added product opportunities and issues to be addressed in order to successfully introduce and market them, as well as effective ways of delivering information to individual producers and the crop and livestock industries.
- Provide training for Extension educators, crop consultants, and other crop and livestock industry staff on new alternative crops and value-added product opportunities.
- Revise and develop publications and other educational materials to disseminate information on new alternative crops and value-added product opportunities and on improving product quality.
- Assess and report economic and social impacts of developing and introducing new alternative crops and value-added products and improving product quality in Minnesota Impacts!

**Key Program Components:**

- Research to develop knowledge and technology for crop and animal product quality measurement and maintenance or enhancement during processing and marketing.
- Commodity and co-product value-added processing and development of new specialty products from crops and animals.
- Research to identify the role of product composition, molecular structure, and physical state in determining end-use quality.

- Applied research to develop new processes to maintain or enhance product quality during harvest, storage, transport, and marketing.
- Innovative processes for the extraction and purification, or manufacture, of superior products from agricultural commodities. Application of these innovative technologies will expand the range and value of agricultural products and reduce the cost of their production.
- Identify alternate sources and create technology leading to an expanded, diverse range of value-added food and nonfood products from commodities and undervalued byproducts of agriculture.
- Development of high-value, "designer" crops.

**Internal and External Linkages:**

**Internal:**
- Extension and research faculty in the Departments of Agronomy and Plant Genetics, Soil, Water, and Climate, Horticulture, Entomology, Plant Biology, Plant Pathology, Biosystems and Agricultural Engineering, Animal Science, and Food Science and Nutrition.
- Minnesota Agricultural Experiment Station
- Center of Alternative Animal and Plant Products (COAFES)
- USDA/ARS
- MN Institute for Sustainable Agriculture

**External:**
- Minnesota Department of Agriculture
- MN Wheat and Barley Growers
- MN Soybean Growers Association
- MN Corn Growers Association
- MN Wild Rice Growers Association
- MN Pork Producers
- MN Beef Producers
- MN Turkey Growers Association

**Target Audiences:**

- Producers
- Extension educators
- Crop consultants

**Evaluation Framework:**

- Participant evaluations of Extension programs on alternative, value-added production opportunities and production and marketing of high-quality and value-added products (intent to use information received).
- Extension educator, crop consultant, and agricultural professionals' evaluations of Extension training (intent to use information received).
- Follow-up surveys of external and internal participants to determine actual use and impacts of Extension information.
- Informal interviews with Extension educators, crop consultants, and other crop and livestock industry and commodity group representatives regarding their observations of changes in product quality and successful alternative crop and livestock enterprises and new value-added products introduced.

**Output Indicators:**

- Number of new alternative crops, animal and other products, and uses identified.
- Number of new product-quality improvement processes developed.
- Number of educational programs revised, developed, delivered, included professional staff development activities.
- Number of presentations to and consultations with industry and producers.
- Number of revised or new publications and other materials prepared to disseminate research results.
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**Outcome Indicators:**

- Economic and social impacts of new products, new processes, new enterprises, new markets, and new industries created as a result of Extension programs.

**Program Duration:** Intermediate Term

**Program 7. Green Industry**

**Statement of Issue:**

The green industry is one of the fastest growing segments of Minnesota's agriculture economy. The Green Industry is defined as firms involved in the production, design, installation, maintenance, and sale of plant products to enhance human environments. As such, the industry consists of three major components: landscape services, nursery/greenhouse production and distribution, and florists. Within landscape services, there are three basic activities: design, installation and maintenance. Within the nursery sector, there are three basic activities: production of plant materials, wholesale distribution, and retail distribution of nursery products. Production of plant materials includes field production, specialized rose and sod farms, and container and greenhouse production of plants. In the industry, production and wholesaling often go hand in hand.

The Green Industry's growth is closely tied to increases in population and subsequent increases in construction. Consequently, the industry grew at a phenomenal rate during the 1970's and 1980's. Part of the growth in the 1980's was also fueled by corporate outsourcing of landscape services. In other words, many commercial establishments that previously would have retained landscape maintenance crews in-house began hiring outside landscape service firms to provide these services. Between 1974 and 1987, the industry increased fourfold in employment and eightfold in nominal payroll. Between 1987 and 1994, employment in the industry increased by 30% and payroll increased by 22%.

Educational programs that address new technologies and strategies that increase profitability while minimizing the environmental impact from urban agriculture are needed. The aesthetic, functional and economic impact of ornamental plants in our working and living environment have a profoundly positive impact on the quality of life.

**Performance Goals:**

- Revise existing Extension programs and develop new ones that respond to the ethical and economic development needs of the green industry.

- Revise and develop publications and other educational materials to support educational programs and extend research results to the green industry.
- Collaborate with industry groups and other key partners to identify priority industry needs and address key issues.
- Assess the economic, environmental, and social impacts of Extension's work with the green industry and report them to decision-makers and the public via Minnesota Impacts!

**Key Program Components:**

- Development of educational programs and publications on nursery products which will enhance the ethical and economic progress of the industry.
- Educational programs on improved nursery products and techniques.
- Educational programs that address new technologies and strategies that increase profitability while minimizing the environmental impact from urban agriculture.

Internal and External Linkages:

**Internal:**

- Extension and research faculty in the Departments of Horticulture, Agronomy and Plant Genetics, Soil, Water, and Climate, Horticulture, Entomology, Plant Biology, Plant Pathology, and Biosystems and Agricultural Engineering.
- Minnesota Agricultural Experiment Station
- Center of Alternative Animal and Plant Products (COAFES)
- USDA/ARS
- MN Institute for Sustainable Agriculture

**External:**

- Minnesota Department of Agriculture
- MN Commercial Flower Growers Association
- MN Horticultural Society
- Society of American Florists
- Professional Plant Propagators Association
- MN Nurserymen's Research Corporation

**Target Audiences:**

- Landscape industries
- Extension educators
- Nursery industries
- Public
- Land use planners
- State and local governments
- Master Gardeners

**Evaluation Framework:**

- Participant evaluations of educational programs (intent to apply information).
- Follow-up surveys of participants to determine application and impact of education received.
- Informal interviews with Extension educators specialized in horticulture, industry representatives, horticulture professionals, and others regarding their observations of changes in the profitability of individual firms and the adoption of ethical practices in the green industry.

**Output Indicators:**

- Number of contacts with new green industry businesses.
- Number of participants in various green industry educational programs.
- Number and variety of educational programs conducted, in relation to industry needs.
- Number of new and revised publications and other educational materials prepared and used to support educational programs.
- Effectiveness of industry partnerships in identifying educational needs and delivering programs.

**Outcome Indicators:**

- Number of individual green industry businesses who participated in Extension programs and subsequently adopted new technologies and strategies to increase profitability and minimize environmental impacts.
- Number of individual green industry businesses who participated in Extension programs and subsequently improved their profitability and/or adopted environmentally friendly practices.
- Overall economic, environmental, and social impacts on the green industry.

**Program Duration:** Intermediate Term

## Program 8. Food Crops

**Statement of Issue:**

The production, marketing, and selling of fruit and vegetable crops is a growing industry in Minnesota. Minnesota commercial food crop production is relatively diverse with production in sweet corn, processing peas, potatoes, and apples ranking among the top four states nationally.

To remain competitive in our rapidly changing global economy, these commercial food crop producers must adopt new cultivars or rootstocks that are more tolerant to environmental stresses affecting plants, cultural systems that improve production efficiency and promote sustainability, and post-harvest handling practices that improve crop utilization and product safety.

**Performance Goals:**

- Revise existing educational programs and develop new efforts to disseminate information about new cultivators/rootstocks, cultural systems, and post-harvest handling techniques to commercial fruit and vegetable growers.
- Revise existing publications and other educational materials and develop new items to support commercial fruit and vegetable production and post-harvest handling and food processing educational programs.
- Collaborate with growers, handlers, processors, and other industry representatives and groups to identify priority educational needs, promote educational programs, and address issues of concern to the industry.
- Assess the economic, environmental, and social aspects of Extension programs and report them to decision-makers and the public via Minnesota Impacts!

**Key Program Components**

- Educational programs to assist commercial food crop producers to adopt new cultivars/rootstocks that are more tolerant to environmental stresses.
- Education programs on cultural systems that improve production efficiency and promote sustainability.
- Educational programs on post-harvest handling practices that improve crop utilization and product safety.

**Internal and External Linkages:**

**Internal:**
- Extension and research faculty in the Departments of Horticulture, Agronomy and Plant Genetics, Soil, Water, and Climate, Horticulture, Entomology, Plant Biology, Plant Pathology, and Biosystems and Agricultural Engineering.
- Minnesota Agricultural Experiment Station
- Center for Alternative Animal and Plant Products (COAFES)
- USDA/ARS Fruit Laboratory

**External:**
- Minnesota Department of Agriculture
- Minnesota Apple Growers Association
- Minnesota Fruit and Vegetable Growers Association
- Dwarf Fruit Tree Association
- MN Grape Growers Association
- North American Strawberry Growers Association

**Target Audiences:**

- Producers
- Extension educators
- Public
- Food processors
- Master Gardeners

**Evaluation Framework:**

- Participant evaluations of Extension programs (intent to use information received).
- Extension educator and Master Gardener evaluations of training received (intent to use information).
- Informal interviews with industry representatives and groups to determine satisfaction with Extension educational effort and their observations of changes in production and cultural systems and post-harvest handling of fruits and vegetables and adoption of recommended food safety procedures.

**Output Indicators:**

- Number of Extension programs conducted for commercial fruit and vegetable growers, handlers, processors, and other industry representatives.
- Number of professional improvement programs conducted for Extension educators and Master Gardeners.

- Number of participants in Extension programs for commercial fruit and vegetable growers, handlers, processors, and other industry representatives.
- Number of publications and other educational materials revised or prepared.
- New industry connections and partnerships developed.
- Number of news releases and other information prepared for the public and presentations given to consumer audiences.

**Outcome Indicators:**

- Number of individual commercial fruit and vegetable growers, handlers, and processors who improved their profitability as a result of applying new production, handling, and processing information provided by Extension.
- Post-harvest food safety procedures adopted by food handlers and processors.
- Overall economic and environmental impacts on the commercial production, harvesting, handling, and processing fruits and vegetables in MN.

**Program Duration:** Intermediate Term

**Program 9. Agricultural Information Technology**

**Statement of Issue:**

The information revolution is profoundly impacting agricultural producers and businesses. Changes in information collection, processing, and technology are causing dramatic changes in the structure of agriculture. Everything from precision farming to electronic markets will impact the sector.

The adoption and widespread use of information technology in agriculture is constrained by a number of factors. First, many of the technologies are not yet profitable within current production systems. Second, producers lack objective information on new equipment, software, data systems, training on how to operate and use the information hardware, and decision tools. Third, the necessary private infrastructure for efficient operation of systems is lacking.

Educational programs are needed to provide the necessary information to producers and business so that they can make informed decision on the purchase and use of information technology.

**Performance Goals:**

- Develop and disseminate new Extension information and programs on information technology applicable to the agriculture industry, including considerations for purchasing equipment, software, data systems, and decision tools.
- Develop and disseminate new publications and other educational materials to assist farmers and other agriculture industry representatives in determining their technology needs and in choosing the appropriate equipment, hardware, software, and data analysis systems to meet their needs.
- Collaborate with agriculture industry representatives to determine technology information needs and the most effective ways to deliver information for decision making on purchases of equipment, hardware, software, and data systems.

**Key Program Components:**

- Educational programs on information technology purchase and use for producers and agribusinesses.
- Educational programs on data management and analysis.

**Internal and External Linkages:**

**Internal:**

- Extension and research faculty in the Departments of Rhetoric, Horticulture, Agronomy and Plant Genetics, Soil, Water, and Climate, Horticulture, Entomology, Plant Biology, Plant Pathology; and Biosystems and Agricultural Engineering

**External:**

- Minnesota Department of Agriculture

**Target Audiences:**

- Producers
- Extension educators
- Public
- Consultants

**Evaluation Framework:**

- Participant evaluations of Extension agricultural information technology programs (intent to use information received)
- Follow-up readership surveys on usefulness of publications and other information in understanding agricultural information technology and in purchasing equipment, software, data analysis systems, etc.
- Informal interviews with Extension educators and agriculture industry representatives on the adoption of information technology information and the effectiveness of new partnerships that were established

**Output Indicators:**

- Number of Extension programs on agriculture information technology developed and delivered.
- Number of participants in agriculture information technology programs.
- Number of new publications and other educational materials on agriculture information technology developed and delivered.
- New collaborative efforts and partnerships developed in disseminating agriculture information technology information.

**Outcome Indicators:**

- Specific examples of the economic, social, and environmental impacts of the adoption of new agriculture technology on MN farms and in agribusinesses.

**Program Duration:** Intermediate Term

## GOAL 2: A SAFE AND SECURE FOOD AND FIBER SYSTEM

### Statement of Issue:

The United States is recognized as having the most plentiful and safest food supply in the world. Nevertheless, consumers are anxious about real and/or perceived hazards that affect food safety and quality. Improper food production and processing practices and subsequent handling has recently been implicated in outbreaks of food-borne illness. Three key educational areas emerging in the area of food safety include:

- Consumers are concerned about the safety of their food, but they lack balanced, researched-based information to aid decision-making about risk reduction and selection of alternatives.
- Critical participants in food production and preparation lack skills in critical thinking, problem solving, and decision-making related to food safety and nutrition.
- Food producers, processors, handlers, and consumers with adequate resources lack knowledge and sufficient application of recommended practices to reduce potential hazards in the state food supply.
- Minnesota state government recently adopted the Minnesota Food Code, a modification of the FDA code, which requires food manager certification for most food service operations.

### Performance Goals:

- Increase consumer awareness of food safety/ foodborne risks and implementation of risk reduction practices by consumers.
- Assist food producers, processors and handlers to implement risk reduction practices and comply with state and regulatory requirements.

### Key Program Components:

1. Consumer Education
    - Weekly electronic updates for Extension educators on the latest food safety crises, recalls, and regulatory and policy changes to assist them in answering consumer inquiries.
    - Local newspaper and newsletter articles, state-wide news releases, local radio and TV spots utilizing the Fight BAC materials, food preservation materials, "Clip and Use" articles from a monthly electronic newsletter and other resources regarding at-home and emergency food safety.
    - Leader training lessons on the importance of temperature control, use of thermometers to monitor critical control points, and promotion of instant read thermometers.
    - Food preservation training to prepare food preservation consultants to assist with educating consumers and to educate consumers directly.
    - Continued development of low literacy/ kitchen graphic materials (print and computer software) for use with two "communities of color" (Native American, Afro-American, or an Asian community in Minnesota.)
1. Youth Education
    - Collaborative pilot and implementation of a 7$^{th}$ and 8$^{th}$ grade food safety mini-curriculum from USDA/CREES funded projects and other sources for use in family and consumer science/ biological science courses.
1. Non-Profit Community Food Service Education

- Workshops utilizing the Occasional Quantity Cooks curriculum for community and church organizations.
- Workshops and materials for temporary food stand operators (4-H, county fairs and special events) in collaboration with the local environmental health sanitation officers from the Minnesota Department of Health.

1. For-Profit Food Service/ Retail Grocers Education
    - Workshops/ short courses for managers and workers in commercial food service operations to comply with the new Minnesota food manager certification requirement.
    - Workshops/ short courses for managers and workers in retail grocery stores to reduce potential food hazards during display and purchasing.
1. Livestock Production
    - Pork Quality Assurance training sessions required by area packing plants in compliance with USDA/FSIS HACCP (Hazard Analysis Critical Control Point) requirements.
1. Fruit and Vegetable/ Crop Production
    - Local newspaper articles, field days and workshops regarding potential environmental and food safety concerns related to the use of pesticides for fruits and vegetables.
    - Private Pesticide Applicator Training program for local crop producers to emphasize correct use of pesticides if a non-chemical alternative is not available.
1. Food Processing
    - Sanitation and HACCP workshops for meat and fresh vegetable processors
    - Better Process Control Schools/ short courses for the regional thermal processing/ canning industry.

**Internal and External Linkages**

**Internal:**

- University of Minnesota Extension Service counties and cluster teams (program planning and implementation; materials development)
- Dept. of Food Science and Nutrition, U of MN (program planning and implementation; materials development)
- Families That Work Program [EFNEP/FNP] (funding of materials development)
- Pesticide Applicator Training Program (ongoing educational program)

**External:**

- U.S. Food and Drug Administration, Minneapolis District Office (federal regulations)
- Minnesota Dept. of Agriculture (production and processing regulations)
- Minnesota Dept. of Health (food service regulation, food manager certification monitoring, funding for $7^{th}$ and $8^{th}$ grade youth materials/ program, local environmental sanitarian co-planner and -trainer)
- International Meat and Poultry HACCP Alliance (HACCP course certification)
- National Restaurant Association (ServSafe curriculum use with for-profit food service)
- Minnesota Pork Producers Association (Pork Quality Assurance curriculum)
- The Food Processors Institute (Better Process Control School text)
- Yard and Garden Clinic ( general public information on insect and plant problems)
- Master Gardener Program (train volunteers to assist general public with home gardening)
- Minnesota Fruit and Vegetables Growers Association (commodity group which supports member education)
- Family and Consumer Science Teachers in Marshall and Staples, MN (youth curriculum delivery)

- Minnesota Dept. of Children, Families, and Learning (coordination of youth curriculum with education requirements)

**Target Audiences:**

- Consumer Education - consumers, general public, low literacy individuals
- Youth Education - 7th and 8th grade youth
- Non-Profit Community Food Service Education - temporary food stand operators; community and church organizations
- For-Profit Food Service/ Retail Grocers Education - restaurants and other non-exempts
- Livestock Production - pork producers in southern Minnesota
- Fruit and Vegetable/ Crop Production - southern Minnesota producers
- Food Processing - state and regional food processors, especially meat and vegetables

**Evaluation Framework:**

Data will be collected via numerous instruments tailored to the individual program to determine effectiveness and results. These instruments include:

- Random phone interviews
- Surveys
- Pre-post evaluations
- Focus groups
- Secondary data sources
- Post-workshop evaluation

**Output Indicators:**

- Consumer Education: number, content, and circulation/ audience for electronic updates, local newspaper articles, local radio and TV spots.
- Leader trainer lessons: number, content, and attendance.
- Food preservation training sessions: number, attendance/ number of volunteers trained.
- New low literacy print and computer software.
- Youth Education: number of students and schools participating, materials purchased/developed.
- Non-Profit Community Food Service Education: number of community organizations and/or participants.
- For-Profit Food Service/ Retail Grocers Education: numbers reached, organization/ company participating.
- Livestock Production: number of producers participating/ attending.
- Fruit and Vegetable/ Crop Production: number, content, circulation of newspaper articles; content, number participating and location of field days and workshops; number of crop producers trained in pesticide application (PPAT).
- Food Processing: number of participants, types of companies.

**Outcome Indicators:**

- Consumer Education: pre/post tests of knowledge gain and follow-up assessment of behavior change for home study group participants and users of low literacy materials (relative to potential hazards presented and those observed by educator during in-home visits).
- Youth Education: pre/post tests of knowledge gain and behavior change; observational input from teachers and parents, monitoring use of hand washing supplies and sick days reported by participants.
- Non-Profit Community Food Service Education: pre/post tests of knowledge gain and follow-up assessment of behavior change for community participants focusing on critical control points, tabulation of violation reports by local environmental sanitarians for temporary food stands.
- For-Profit Food Service/ Retail Grocers Education: pre-post tests of knowledge gain and follow-up assessment of behavior change.
- Livestock Production: number of hogs marketed by producers.
- Fruit and Vegetable/Crop Production: monitor of number and type of misapplication complaints received by the Minnesota Department of Agriculture.
- Food Processing: monitor number and type of product and inspection violations imposed by the Minnesota Department of Agriculture and FDA.

**Program Duration:**

- Consumer Education - Long Term
- Youth Education - Short and Intermediate Term
- Non-Profit Community Food Service Education - Long Term
- For-Profit Food Service/ Retail Grocers Education - Long Term
- Livestock Production - Short and Intermediate Term
- Fruit and Vegetable/ Crop Production - Long Term
- Food Processing - Long Term

## GOAL 3: A HEALTHY, WELL-NOURISHED POPULATION

Nutrition and optimal food intake is important to the well-being of Minnesotans. Research has established the link between adequate nutrition in the early years and adult productivity. Research is establishing the link between adequate nutrition and risks of disease and disability and between nutrition education and nutritional intake.

Low-income households are particularly vulnerable to the effects of inadequate diet. Research shows that food costs account for a much higher percentage of income for people at or below poverty than for people above poverty – 30% compared to about 11%. In Minnesota, 16% of the population is estimated to lack adequate food each day.

Most adults are inundated with nutrition information; however, relatively few consume a well-balanced diet. Critically evaluating information can lead to better decisions in making health choices such as proper nutrition, and selection and consumption of foods as medicine.

**Performance Goals:**

- Increase ability of low-income households to obtain, select, and consume a nutritionally adequate diet.
- Increase consumers' ability to evaluate nutrition claims, especially those related to neutraceuticals, herbals, and alternative products used to promote nutritional health.
- Collaborate with internal and external partners to identify program priorities, new research information, and effective ways of reaching new and underserved audiences and influencing food-related public policies.

**Key Program Components:**

- Information on buying nutritious foods for a well-balanced diet on a low-income budget.
- Information on the linkages between the risks of disease/disability and reduced productivity and an adequate nutritional food intake.
- Making better health choices on proper nutrition and selecting/consuming foods as medicine.

**Internal and External Linkages:**

**Internal:**
- University of Minnesota College of Human Ecology
- University of Minnesota College of Agricultural, Food and Environmental Sciences
- University of Minnesota School of Public Health
- University of Minnesota School of Medicine

**External:**
- WIC
- American Beef Council
- American Soybean Association
- National Dairy Promotion Council
- Minnesota Department of Human Services
- Minnesota Department of Health
- Minnesota Department of Children, Families, and Learning

**Targeted Audiences:**

- Youth and families as consumers
- Low income youth and families with children
- Social service recipients
- Immigrants
- Migrant workers
- Policy makers
- Neutraceutical companies
- Medical industry

**Evaluation Framework:**

- Pre and post-program participant surveys to determine changes in knowledge and attitudes.
- Follow-up surveys and observations to assess changes in behaviors and practices.
- Assessment of economic and social impacts on program participants which will be reported in Minnesota Impacts! and disseminated via other outlets for information.

**Output Indicators:**

- Number of program participants
- Number of educational sessions conducted
- Program materials produced
- Newsletters, newspapers, and journal articles produced

**Outcome Indicators:**

- Extension educators develop knowledge and capacity to answer questions and develop programs to address consumer concerns about nutrition and neutraceuticals.
- Program participant knowledge, skills, and attitudes before and after instruction and indicators of behavioral change after instruction.
- Program participant satisfaction with program content.

**Program Duration:** Long Term

## GOAL 4: AN AGRICULTURAL SYSTEM WHICH PROTECTS NATURAL RESOURCES AND THE ENVIRONMENT

### Program 1. Sustainable Agriculture

**Statement of Issue:**

To make agriculture sustainable, farm families and rural communities need to simultaneously balance economic, environmental, and quality of life goals. There is concern that our current agricultural systems do not adequately consider all three of these goals. Some of our current agriculture production practices are not environmentally sound and are having adverse effects on water and air quality. Many farm families are not meeting economic goals and are struggling financially; some are selling their farms and leaving agriculture. Other families are leaving agriculture because they are dissatisfied with their quality of life, and some who appear to be economically successful are concerned that the quality of life in their community is decreasing because so many of their neighbors have quit farming and moved out of the community.

Extension has the potential to provide resources and planning assistance to facilitate discussion that would help farmers and communities articulate and achieve their environmental, economic, and quality of life goals. But some citizens perceive that Extension is part of the problem rather than the solution. They perceive that we are focusing too much on production and economics and are encouraging farmers to “get big or get out,” that we don’t present all of the options that might be available to farmers, and that we are reluctant to use information resources outside of the University of Minnesota.

There is a need to engage Extension personnel in learning about the principles of sustainability and the importance of balancing environmental, economic, and quality of life goals. When different members of the community initially disagree on what these goals should be, we need to be able to facilitate open discussion that leads to greater understanding and win-win decisions for all members of the community. We also need to become more familiar and comfortable with alternative production practices and with alternative sources of information.

**Performance Goals:**

- Our long term objective is to make agriculture more sustainable.
- Our intermediate objective is to help Extension personnel become better learners, teachers, and facilitators of sustainable agriculture.

To accomplish these things, we need to convince conventional farmers and Extension personnel that many of our current approaches to agriculture are probably not sustainable, to demonstrate that there are practical alternatives to conventional practices, and to show Extension personnel that citizens want us to participate in learning how to make agriculture more sustainable.

**Key Program Components:**

- Publishing a monthly sustainable agriculture newsletter that goes to many Extension employees, farmers, and partner organizations.
- Conducting workshops on sustainable agriculture topics at Extension in-service training sessions, at specialization team meetings, and at other events for Extension personnel.

- Developing a new task force consisting of interested Extension personnel, farmers, and members of partner organizations to help direct our work in sustainable agriculture.
- Publicizing sustainable agriculture learning opportunities provided by other organizations and providing scholarships for Extension faculty to take advantage of them.
- Seeking information demonstrating that farming systems that meet environmental and quality of life goals can also be profitable.

Innovative techniques: Some approaches that are not new in other places, but have not been widely used recently in Minnesota include working with farmers to plan and conduct on-farm research and using farmers as resource people to help extend learning to other farmers.

We will work with organizations like the Minnesota Institute for Sustainable Agriculture and the University of Minnesota Program for Decision Cases to develop educational materials that will go through the Extension review process and be available from the Extension Distribution Center.

**Internal and External Linkages:**

- We will work internally with several different University of Minnesota Extension Service specialization teams to accomplish our objectives. These will primarily include the specialization teams that do most of their work in agriculture (Crop Systems, Livestock Systems, Horticulture), as well as those that do some work in agriculture (Financial and Business Management; Environment and Natural Resources). We will also try to engage members of specialization teams that have not traditionally played a large role in agricultural programming (Nutrition, Food, and Health, Leadership/Citizenship Education, Community Resource Development, Family Development, Child and Youth Development). We need people with widely differing perspectives working together if we hope to balance economic, environmental, and quality of life goals and achieve sustainability.
- The Minnesota Institute for Sustainable Agriculture (MISA) provides both internal and external linkages since it is a partnership between the University of Minnesota and a group of non-profit organizations called the Sustainer's Coalition. One of MISA's primary goals is to "facilitate the internalization of sustainable agriculture in the University so that the concepts permeate teaching, research, and extension." This goal makes that organization a natural partner for our effort. We plan to work with MISA to develop new educational materials, to continue to publish our joint monthly *Sustainable Agriculture* newsletter, and to identify new members for our advisory group.
- One excellent external partner is the Sustainable Farming Association of Minnesota. This organization consists of about 1,200 farmer members in 12 different local chapters. The primary purposes of this organization are sharing of information about sustainable agriculture and support for farmers who are engaging in alternative farming practices. Extension personnel have an opportunity to learn with the farmer members, and where appropriate, to offer information and resources that might benefit members of the chapter.
- The Minnesota Department of Agriculture (MDA) has an energy and sustainable agriculture program that funds on-farm research and demonstrations, field days, and preparation of educational materials. We plan to work with MDA to get some of their educational materials into the Extension Distribution Center, to publicize their field days, and to learn from their on-farm research.
- The North Central Sustainable Agriculture Research and Education (SARE) Program provides small grants to each state and funds additional competitive grants to encourage training in sustainable agriculture for Extension personnel (called the Professional Development Program (PDP) or Chapter 3 Program). We intend to use the grant funds to

provide scholarships for Extension personnel to participate in educational opportunities, to offer workshops, to print materials, and to publish the *Sustainable Agriculture* newsletter. We will also encourage Minnesota Extension personnel to write proposals to obtain additional PDP funding and to participate in training activities offered by other groups in our region that have received SARE funding.

**Target Audiences:**

- The audience for our intermediate objective is University of Minnesota Extension personnel who have an interest in agriculture and its impacts on the environment, youth, families, and rural communities. We want them read our newsletter and educational materials, participate in workshops, attend demonstrations and field days, and perhaps join local Sustainable Farming Association chapters. Eventually, we expect that Extension personnel will work with citizens to initiate local sustainable agriculture activities.
- The primary audience for our long term objective is Minnesota farmers and the businesses that serve them. We want them to read our newsletter, use our educational materials, contact Extension offices regarding sustainable agriculture issues, attend activities sponsored by Extension, and work with us to plan and conduct additional learning opportunities.
- Women, ethnic minorities, and part-time farmers often do not participate in our traditional agricultural extension programs, so we will make a special effort to reach these audiences. We will undoubtedly need to adjust the timing, location, format, and marketing of our programs to better meet their needs.

We expect that increasing the involvement of target audience members in planning and conducting learning activities will help to sustain participation.

**Evaluation Framework:**

- Participant evaluations of Extension programs
- Surveys of program participants
- Extension educator evaluations of sustainable agriculture learning opportunities.
- Interviews with partners and collaborators
- Collection of data on publication and other educational materials distribution and use, new program impact assessments, number of new sustainable agriculture grants obtained, and number of new farmers, particularly women, ethnic minorities, and part-time farmers.

**Output Indicators:**

- More sustainable agriculture educational materials in the Extension Distribution Center.
- Greater number of Minnesota Impacts! statements that include the term “sustainable agriculture.”
- More Extension personnel who attend Sustainable Farming Association meetings.
- More Extension personnel requesting scholarships to participate in sustainable agriculture training activities.
- More Extension personnel listed as collaborators on sustainable agriculture producer grants submitted to MDA and SARE.
- Increase in demand for *Sustainable Agriculture* newsletter.

**Outcome Indicators:**

- More farmers adopting alternative production practices.
- Increase in total number of individuals beginning farming.
- Greater number of women and ethnic minorities beginning farming.

**Program Duration:** Long Term

### Program 2. Increasing and Maintaining Diversity in Agricultural Systems

**Statement of Issue:**

Diversity is an element of the complex system of interactions that provide resilience and long term stability in the natural world. In our current agricultural systems we have replaced interactive systems with a reliance on technology fixes for both biological and environmental problems associated with these systems.

Formerly, many Minnesota crop rotations included a mix of perennial and annual crops. In southern and southwestern Minnesota, crop diversity has declined in recent decades, leaving approximately 75% of the land area in a simplified corn and soybean rotation. In Northern Minnesota, the small grain production system has been hard hit by diseases associated with continuous small grain production. Livestock farms have become larger, fewer, and more specialized. The number of diversified livestock farms that included multiple species and a diversified cropping system has also declined.

Current emphasis on the large-scale growing of a few crops and animal species has consequences in terms of disease susceptibility, environmental and ecological degradation, and economic limits. Increasing the species diversity of Minnesota's agriculture will help insure a viable future.

**Performance Goals:**

- Place increasing emphasis in existing and new Extension crop production programs on increasing crop diversity via new cropping systems and new rotations.
- Encourage crop farmers to add livestock enterprises to their operations.
- Revise existing publications and educational materials and develop new materials to support diversified crop and livestock production programs.
- Collaborate with the crop and livestock industries, other agencies and commodity groups to promote more diversification of farm production and to identify priority issues and approaches to dealing with them.
- Assess the economic, social, and environmental impacts of increasing agricultural diversification and report them to decision makers and the public via Minnesota Impacts!

**Key Program Components:**

- Educational programs to help producers identify and develop new plant traits, new cropping systems, and new rotations that will increase diversity.
- Educational programs to help producers identify and develop new animal traits, new animal species, and new production systems for livestock to improve diversity.

**Internal and External Linkages:**

**Internal:**

- Extension and research faculty in Departments of Agronomy and Plant Genetics, Soil, Water, and Climate, Horticulture, Entomology, Plant Biology, and Plant Pathology
- Minnesota Agricultural Experiment Station
- Center of Alternative Animal and Plant Products (COAFES)
- MN Institute for Sustainable Agriculture
- USDA/ARS

**External:**

- Minnesota Department of Agriculture
- MN Wheat and Barley Growers
- MN Soybean Growers Association
- MN Corn Growers Association
- MN Wild Rice Growers Association
- MN Independent Crop Consultants
- MN Vegetable Growers Association
- MN Pork Producers
- MN Cattleman's Association

**Target Audiences:**

- Producers
- Extension educators
- Crop consultants
- Consumers

**Evaluation Framework:**

- Participant evaluations of Extension programs (intent to use information).
- Participant surveys to determine extent of diversification and resulting economic, social, and environmental impacts.
- Informal interviews with Extension educators, industry and commodity group representatives and others regarding their observations of changes in crop and livestock diversification and profitability of farm operations.

**Output Indicators:**

- Number of crop production programs revised or developed that include information on diversification.
- Number of livestock production programs revised or developed to include information on new production systems.
- Number of publications and other educational materials revised or developed that include crop diversification or livestock production systems information.
- Number of Extension educators and crop consultants trained in crop diversification approaches.
- Number of Extension educators trained in new livestock production systems.

**Outcome Indicators:**

- Number of farm operations who diversified their crops and/or livestock production systems and improved their financial situation and their immediate environment as a result of Extension programs.
- Overall economic, social, and environmental impact on MN agriculture.

**Program Duration:** Intermediate Term

## Program 3. Animal Waste Management

**Statement of Issue:**

A strong livestock industry is essential to Minnesota's economic stability, the viability of many rural communities, and the sustainability of a healthful and high quality food supply for the American public. Manure management is becoming a critical component in the planning and operation of livestock and poultry production in Minnesota. Manure must be collected, stored, and utilized on animal production operations in an environmentally friendly manner in order for them to meet state regulations and to exist in an increasingly environmentally conscious society. Major environmental issues center on water quality (surface and groundwater) and gaseous emissions, including odors.

Odors from livestock production systems pose significant nuisances to surrounding communities, including the producers themselves, as well as to residential neighbors. However, there is concern that some compounds, particularly hydrogen-sulfide, also may possess some human health hazards. Some livestock systems are believed to generate this substance up to one or two miles of its source.

If the odor problem isn't dealt with, Minnesota's livestock producers may not be able to remain viable for the long term. The emergence of odor control regulations and systems will force management practices to change. Technological changes may also occur to minimize odor generated from manure storage. This may become so cost prohibitive that Minnesota could lose many of its livestock producers. From a consumer standpoint, the costs of odor control technology may increase the cost of animal or meat products by a slight margin. However, this would be preferable to an industry exodus from Minnesota which could otherwise occur if sudden, stringent regulations were to take effect.

Ultimately, the livelihoods of 40,000 Minnesota livestock producers could be protected over the next 10-20 years. By proactively minimizing the odor problem, the livestock industry will be more inclined to stay in Minnesota, and thus jobs in this sector will be maintained. However, we expect a neutral economic improvement overall. The introduction of odor-control technology will add to production costs, but these will be offset by lower legal, social, and real costs of dealing with odor issues over the long term. Other long term environmental impacts, such as ammonia release and greenhouse gas production from animal production systems, and policy questions surrounding change and uncertainty in the livestock industry, are among the most important issues facing agriculture today.

**Performance Goals:**

- Revise or develop new Extension programs on animal waste management and cropping systems.
- Revise or develop new publications and other educational materials to include animal waste management and cropping systems recommendations.
- Collaborate with other agency and commodity group representatives and local government employees to identify and prioritize issues, determine educational approaches, and develop local solutions to animal waste management problems.
- Assess economic, social, and environmental impacts of Extension animal waste management programs and report them to decision makers and the public via Minnesota Impacts!

**Key Program Components:**

- Waste management and cropping systems educational programs to minimize environmental costs associated with animal agriculture.
- Improve animal manure handling, storage, and application management systems.
- Improve design of animal production systems.

**Internal and External Linkages:**

**Internal:**
- U.S. Farm Service Agency
- U.S. Natural Resource Conservation Service
- Extension and research faculty in the departments of Agronomy and Plant Genetics, Soil, Water, and Climate, Biosystems and Agricultural Engineering, and Animal Science.
- College of Veterinary Medicine
- Minnesota Agricultural Experiment Station
- Center for Alternative Animal and Plant Products (COAFES)
- USDA/ARS
- MN Institute for Sustainable Agriculture
- County water planners

**External:**
- Minnesota Department of Agriculture
- MN Pollution Control Agency
- MN Associate of Counties
- MN Pork Producers
- MN Beef Producers
- MN Corn Growers Association
- MN Turkey Growers Association
- MN Soybean Growers Association

**Target Audiences:**

- Producers
- Extension educators
- State and local governments
- Public

**Evaluation Framework:**

- Participant evaluations of Extension animal waste management programs (intent to use information).
- Follow-up surveys of program participants to determine adoption of new practices and systems and economic and social impacts.
- Informal interviews with Extension educators, agency and commodity group representatives, and state and local government officials regarding observations of changes in animal waste management practices and environmental, economic, and social impacts.

**Output Indicators:**

- Number of Extension programs revised or developed on animal waste management and cropping systems.
- Number of publications and other educational materials revised or developed.

**Outcome Indicators:**

- Number of farm operators adopting new animal waste management practices and improving the environmental quality of their localities.
- Changes in air and water quality in communities where Extension animal waste management programs have conducted.
- Economic, environmental, and social impacts of Extension animal waste management programs.
- Changes in livestock industry employment in MN.

**Program Duration:** Intermediate Term

**Program 4. Soil Nutrient and Water Management**

**Statement of Issue:**

As farmers find that they must farm an ever-increasing number of acres to survive, they take second jobs to maintain family income and environmental protection often takes a back seat. This practice has detrimental effects on land and water quality within Minnesota.

**Performance Goals:**

- Increased knowledge and adaptation of best management practices by Minnesota farmers, communities, and residents will lead to less soil erosion. Development and maintenance of manure management plans will result in less feedlot runoff, lower nitrogen and phosphorus input into lakes, rivers and streams.

**Key Program Components:**

- Development of workshops, field days, and test plots for farmers and agriculture professionals.
- Development of brochures on Best Management Practices for farmers.
- Workshops and consultations for people with individual septic systems.

**Internal and External Linkages:**

**Internal:**

- University of Minnesota Extension Master Gardeners
- University of Minnesota Departments of Botany, Agronomy, Forestry, Horticulture

**External:**

- MN Department of Agriculture
- Natural Resource Conservation Service
- MN Pollution Control Agency
- Soil and Water Conservation Districts

**Target Audiences:**

- Minnesota farmers
- Citizens with individual treatment systems
- Fertilizer and pesticide dealers

**Evaluation Framework:**

- Data collection: number of web page hits, brochures distributed, workshops conducted, water quality measures, etc.
- Workshop participant evaluations (intent to adopt soil and water management practices).
- Follow-up surveys to determine program participant practice adoption and impacts.
- Informal interviews with Extension educators, agency representatives, fertilizer and pesticide dealers regarding observations of changes in practices and impacts related to Extension programs.

**Output Indicators:**

- Development of a web page for farmers on farm planning.
- Brochures developed on Best Management Practices.
- Workshops for agricultural producers and professionals related to nutrients, grazing and pest management.
- Monitoring of rivers and lakes for nitrogen, phosphorous, and coliform bacteria.

**Outcome Indicators:**

- Decrease in amount of soil erosion
- Use of proper nutrient management
- Installation of effective individual septic systems
- Decrease in the nitrogen and phosphorus levels of lake and rivers

**Program Duration:** Intermediate Term

## Program 5. Improving Water Quality in the Minnesota River Basin

### Statement of Issue:

Today, many farmers are aware that their farming practices can have a far-reaching effect on Minnesota's rivers and streams. The evidence that some practices were detrimental has been clear for some time: agricultural runoff has been one of the major factors in the pollution of the Minnesota River Basin. Other Minnesota lakes and streams have also suffered from the results of runoff. Responding to this problem, many farmers have adopted methods of production and management to minimize soil erosion and runoff from nutrients and pesticides, thus working to improve the quality of Minnesota's rivers and lakes.

However, the Minnesota River is considered one of the 20 most endangered waterways in America. A report by the Minnesota Pollution Control Agency (MPCA) entitled Minnesota River Assessment Project (MRAP) documented frequent violations of federal or state standards for bacteria, phosphorus, turbidity, and dissolved oxygen at several monitoring stations along the Minnesota River or its tributaries. MRAP suggested several possible sources for these pollutants, including feedlots, septic systems, wastewater treatment plants, stream and ditch erosion, and runoff or erosion from agricultural lands. MRAP presented both an agency and a citizens advisory group plan for implementation of practices to control pollution in the Minnesota River basin.

To address these issues, educational programs will be needed to be developed to assist in developing a systematic, comprehensive, and scientific approach for addressing agricultural profitability and non-point source pollution reduction in the Minnesota River basin.

### Performance Goals:

- Revise existing Extension programs or develop new efforts to address agricultural profitability and non-source pollution reduction.
- Revise existing publications and other educational materials or develop new materials to support Extension agricultural profitability/non-source pollution reduction programs.
- Provide additional training on agricultural profitability/non-source pollution reduction for Extension educators and crop consultants.
- Collaborate with other agencies and organizations to identify and prioritize issues and determine educational approaches to addressing the profitability/non-source pollution issue.
- Assess economic, social, and environmental impacts related to Extension programs and report them to decision makers and the public via Minnesota Impacts!

### Key Program Components:

- Develop a framework for describing and inventorying the characteristics of the Minnesota River basin that affect non-point source pollution, agricultural management practices and their potential for reducing non-point source pollution.
- Develop an educational outreach program for disseminating information about the Minnesota River basin and accelerating the adoption of farming practices to reduce agricultural NPS pollution.
- Describe and evaluate the performance of various simulation models used for estimating the impact of farm management practices on NPS pollution in the Minnesota River basin.

### Internal and External Linkages:

**Internal:**

- Extension and research faculty in the Departments of Agronomy and Plant Genetics, Soil, Water, and Climate, Biosystems and Agricultural Engineering
- Minnesota Agricultural Experiment Station
- MN Institute for Sustainable Agriculture
- MN Water Resources Research Institute
- University of Minnesota Water Resources Center
- College of Natural Resources
- USDA/ARS

**External:**

- Minnesota Department of Agriculture
- National Institute of Water Resources
- MN Board of Water Resources
- State and local governments
- MN Wheat and Barley Growers
- MN Soybean Growers Association
- MN Corn Growers Association
- MN Wild Rice Growers Association
- MN Independent Crop Consultants
- MN Vegetable Growers Association

**Target Audiences:**

- Producers
- Extension educators
- Crop consultants
- MN state agency personnel
- Consumers

**Evaluation Framework:**

- Participant evaluations of Extension programs (intent to adopt new practices).
- Follow-up surveys of participants to determine adoption of new practices and impact on profitability.
- Extension educator and crop consultant evaluations of training sessions (intent to use information in working with farm operators).
- Informal interviews with Extension educators, crop consultants, and agency and industry representatives regarding observations of changed practices and economic and environmental impacts.

**Output Indicators:**

- Number of Extension programs revised or developed.
- Number of publications and other educational materials revised or developed.
- Number of training sessions provided for Extension educators, crop consultants, and other agriculture professionals.

**Outcome Indicators:**

- Framework that describes and inventories the characteristics of the MN River Basin.
- Adoption of farming practices that reduce agricultural NPS pollution.
- Changes in water quality in the MN River Basin.
- Environmental, economic, and social impacts of increased use of farming practices that reduce NPS pollution.

**Program Duration:** Intermediate Term

**Program 6. Sustainable Natural Resource Management and Stewardship**

**Statement of Issue:**

To make natural resource management sustainable, landowners, industries, policy makers, professionals, and rural communities need to simultaneously balance environmental, economic, and quality of life goals. There is concern that our current management and production systems do not adequately consider all three of these goals. Some of our current land management practices are not environmentally sound and are having adverse effects on water and air quality.

Extension has the potential to provide education to help landowners, industries, policy makers, professionals and citizens articulate and achieve their sustainability goals. There is a need to engage Extension personnel in learning about the principles of sustainability and the importance of balancing environmental, economic, and quality of life goals. There is a need for citizens and university faculty to formulate new types of partnerships to design and implement research and education programs that advance sustainable development, These partnerships will be led by citizens and implemented at the local level.

Our long term objective is to make natural resource management more sustainable. Our intermediate objective is to help Extension personnel become better learners, teachers, and facilitators of sustainable management.

**Performance Goals:**

- To increase the theoretical and practical knowledge base about sustainable natural resource development and management among citizens, policy makers, professionals, and the public.
- To increase the number of landowners and professionals who are attempting to implement sustainable practices.
- To increase youth understanding of watershed, ecosystem, and sustainability concepts.

**Key Program Components:**

- Workshops, information services, and publications for landowners, industry personnel, and resource management professionals.
- Partnership teams that include citizens and faculty who identify, fund, and implement experiments in sustainable practices according to local needs and issues.
- Revision of a book on forest landowner stewardship.
- Citizen science programs that involve faculty and citizens in learning about biodiversity, ecosystem processes, and sustainable practices.
- Web-based and video educational materials for use in formal and non-formal youth education environments.

- *Living Snow Fences and Feedlot Tree Plantings:* Using the USDA payment program CRP (plus FEMA for living snow fences), educate landowners about the positive benefits of these plantings.
- *Protecting snow/drifting snow from roadways:* Use trees and shrubs to screen and/or protect livestock facilities from public view, wind, and snow.

**Internal And External Linkages:**

**Internal:**
- The Minnesota Institute for Sustainable Agriculture (MISA)
- Regional Sustainable Development Partnership
- Center for Integrated Natural Resource and Agricultural Management (CINRAM)

**External:**
- Agroforestry Coalition of Minnesota
- Minnesota Forest Stewardship Program
- Minnesota Forest Industries
- MN Forest Resources Council
- Sustainable Farming Association of Minnesota
- Institute for Sustainable Natural Resources
- National Aeronautics and Space Administration
- Natural Resource Conservation Service
- Farm Service Agency
- Soil and Water Conservation Districts
- MN Department of Natural Resources
- MN Department of Transportation
- Resource Conservation and Development Committees
- Center for Integrated Natural Resource and Agricultural Management
- Commodity groups
- Township, county and state agency staff
- County engineers

**Target Audiences:**

- Forest land owners
- Natural resource management professionals
- Forest industry practitioners
- Citizen leaders with interests in advancing sustainable development
- University of Minnesota Extension Service staff
- General public
- Youth in 7th, 8th, 11th and 12th grades
- All livestock producers
- Any land owner who has land near a critical identified roadway that has been identified as having drifting and blowing snow problems

**Evaluation Framework:**

- Participant evaluations of Extension programs (intent to use information and adopt recommended practices).
- Follow-up surveys of program participants to determine application and impacts of education received.
- Informal interviews with Extension educators, teachers, forest industry practitioners, local government officials, and agency representatives regarding their observations of changed practices and environmental, economic, and social impacts.

**Output Indicators:**

- Educational materials and programs produced for and utilized by target audiences.
- Meaningful new partnerships between faculty, citizens and other organizations.
- Youth knowledge.

**Outcome Indicators:**

- Public and professional audience knowledge bases about the practice of sustainability.
- Number of acres under management by landowners trying sustainable practices.
- Better definition of the term "sustainable development."
- More Extension personnel requesting information about sustainable management and incorporating sustainability themes in their programs.
- Youth will have more knowledge about systems and watersheds and about the use of technology in natural resource careers.

**Program Duration:** Intermediate Term

## Program 7. Environmental Learning and Leadership

**Statement of Issue:**

There is an ever-increasing public demand for environmental learning across the life span. In 1991, Minnesota passed the state Environmental Education Act. It calls for the achievement of broad environmental education goals in formal and non-formal settings. The National Science Foundation has released science competencies for K-12 and non-formal education environments. The National Association of Environmental Education has released competencies for environmental educators. The Minnesota Department of Education has added environmental competencies to the high school graduation requirements. Altogether, these developments comprise an explosion in the demand for research and education on environmental learning.

Among researchers, there is considerable interest in the development and testing of innovative environmental learning methodologies. Among formal and non-formal educators, there is increasing demand for advanced degree and continuing education opportunities where they can improve their knowledge base in natural and social sciences and learn to apply new environmental learning methodologies. The ultimate goal is to expand learning opportunities across the life span that foster an understanding of environmental issues and themes, integrate meaning from the social and natural sciences and encourage leadership and citizenship as a basis for achieving total environmental health.

Environmental education practitioners, students, faculty, and the public need quick and easy access to research and education networks, new knowledge and information from environmental learning research, and opportunities to try out a variety of instructional strategies appropriate for diverse learners and curriculum materials for environmental and leadership education.

The Center for Environmental Learning and Leadership (CELL) at the University of Minnesota is a major development and delivery vehicle addressing environmental education goals for the state. The center, launched in late 1995, will continue as a collaborative effort of the Extension Service and several colleges with expertise in the many disciplines underlying Environmental Education. The center addresses the growing demand for environmental knowledge and learning by linking an integrated research, teaching and outreach program at the University of Minnesota with environmental education practitioners and situations across the state. All CELL programs apply action research and learning processes, are interdisciplinary in nature, are founded in the study of basic science and processes of human development, and address the total environmental, economic, and social health of ecosystems in a global-international context.

**Performance Goals:**

- To foster environmental health through integrated research, outreach and teaching programs that enhance the skills of educators and improve the quality and effectiveness of environmental learning programs.

**Key Program Components:**

- Professional development opportunities for Extension educators in the environmental arena.
- A network for sharing of environmental education tools and methodologies and identification of research priorities.
- Evaluation research on existing non-formal environmental education programs in the state.
- Outreach education programs for citizens and communities (e.g., a seven-day residential camp focused on service inquiry and ecosystem management for high school teens) A special emphasis will be placed on recruiting girls and minorities through scholarships and direct mailings of promotional literature.

**Internal And External Linkages:**

**Internal:**
- College of Natural Resources
- College of Education and Human Development
- College of Biological Sciences
- Several other colleges and centers within the University of Minnesota

**External:**
- Minnesota's residential environmental learning centers
- Nature centers
- State agencies
- School districts
- Museums

**Target Audiences:**

- Extension educators

- Agency field staff
- School teachers
- Nature center and learning center educators
- Students in formal and non-formal environmental education environments

**Evaluation Framework:**

- Educator/teacher evaluations of training sessions, networks for sharing environmental education resources, and quality of educational materials for teaching environmental education.
- Outreach program participant evaluations (changes in knowledge and attitudes toward environmental sustainability).
- Camp participants' evaluations of their experiences and enhanced knowledge of environmental issues.
- Follow-up surveys of program participants to determine what impact they've had in their programs, classes, courses, or informally in their communities.
- Informal interviews with Extension and other educators, teachers, and representatives of environmental groups regarding their observations of changes in knowledge, attitudes, and behaviors of their constituents.

**Output Indicators:**

- Educational materials and programs produced for and utilized by target audiences.
- Graduate student involvement in outreach programming.
- Numbers of evaluation research projects completed.
- Number of learners attending continuing professional education programs and utilizing print and video educational materials.
- Range of cultural perspectives included in programming.

**Outcome Indicators:**

- Enhanced environmental learning situations.
- Teachers and educators well versed in the sciences, pedagogy, leadership, and ethics.
- Increased participation by minorities and young women in natural resource education programs, and ultimately, in natural resources college education and careers.

**Program Duration:** Intermediate Term

### Program 8. Fisheries and Wildlife Habitat Management

Wild animals interact with humans in many ways. Humans consider some interactions desirable and some undesirable. Animal damage control is the area of work dealing with minimizing the undesirable interactions and the impacts of these interactions in both urban and rural settings.

Canada geese are found throughout the continental United States. Their population levels in many Minnesota urban areas are high. Flocks inhabiting urban areas are often responsible for damage to vegetation and landscapes. They also cause undesirable and unsanitary conditions when they occupy beaches and lakeshore lawn areas.

**Performance Goals:**

- Reducing damage from migratory birds like geese requires special equipment, special knowledge, and special licensing. Training for public and private land managers to meet these requirements is essential to their success in reducing property damage.

**Key Program Components:**

- New and revised publications
- Fact sheet series for homeowners and Master Gardeners
- Chapters in a new pest control manual
- Brochures and technical work sheets dealing with Canada Goose control
- Decision case dealing with control of Canada Geese in the Twin Cities
- Workshops, conferences, seminars, tours, volunteer training
- Master Gardener core training workshops
- Second state-wide conference dealing with Canada Geese
- First volunteer training at Eagle Bluff Environmental Learning Center (wildlife/fisheries)
- Yard and garden club seminars in Twin Cities area (attracting wildlife and controlling damage)
- Volunteer training in Chicago related to assessing coyote population levels in urban parks
- Primary and secondary school presentations dealing with various wildlife and fishery topics

**Internal and External Linkages:**

**Internal:**
- Department of Horticulture and Landscape Architecture
- Department of Forest Resources
- Department of Ecology, Evolution and Behavior
- Bell Museum of Natural History
- Extension educators
- Computer and Telecommunications Technology
- Student Chapter of The Wildlife Society

**External:**
- MN Department of Agriculture
- MN Department of Natural Resources
- MN Department of Health
- MN Board of Water and Soil Resources
- USDA, Natural Resources Conservation Service
- USDA, Farm Services Agency
- USDA, Animal, Plant, Health Inspection Service
- USDI, Fish and Wildlife Service
- USDI, Section of Extension Publications and Training
- USDI, Minnesota Valley National Wildlife Refuge
- Local governments in Minnesota metro areas
- Minnesota Waterfowl Association
- Geese Unlimited

- FATE/Animal Rights Coalition
- Eagle Bluff Environmental Learning Center and other environmental learning centers as opportunities arise
- Twin City nature centers
- Hennepin Parks Wildlife Section
- The Minnesota Chapter of The Wildlife Society

**Target Audiences:**

- Garden club members
- Master Gardener volunteers
- Youth in school settings
- Youth on field trips in camps seeking information on the natural history of wildlife and specific techniques for attracting or identifying wildlife, signs of their presence, and their habitat needs
- Public land managers
- Private land managers
- Local government officials seeking information relative to control of property damage or public health problems caused by wildlife
- Structural pest control operators needing very specific technical information related to the reduction or elimination of damage caused by wildlife

**Evaluation Framework:**

- Participant evaluations of group Extension programs (garden club members, Master Gardeners, youth, public land managers, pest control operators, etc.) (increases in knowledge and understanding, changes in attitudes, potential changes in behaviors).
- Follow-up surveys of program participants to assess actions taken and impacts of Extension education.
- Informal interviews with Extension educators, teachers, professionals and agency representatives, and others regarding their observations of changed attitudes and behaviors which can be attributed to Extension programs and training sessions.

**Output Indicators:**

- Attendance at conferences and workshops
- Evaluations of events by attendees
- Volunteers' written evaluations at the completion of their training and after approximately thre months of volunteer service.

**Outcome Indicators:**

- Informed public
- Educated professionals
- Reduced property damage

**Program Duration:** Intermediate Term

**Program 9. Natural Resources Information Services**

**Statement of Issue:**

There is a constant flow of public phone inquiries to the colleges with inquiries about all aspects of renewable resource management.

**Performance Goal:**

- To provide the public with quick response and quality information on natural resource management topics.

**Key Program Component:**

- Information services are located in the three departments of the College of Natural Resources: Forest Resources, Wood and Paper Science, and Fisheries and Wildlife. Graduate assistant staffers answer the public's phone inquiries about resource management and direct callers to print and video materials related to their management questions. Fact sheets and photocopies of non-copyright material are often used to reinforce the verbal communications.

**Linkages:**

**Internal:**
- College of Natural Resources

**External:**
- General public
- Public officials/local governments
- Environmental learning centers
- Environmental groups
- Public school teachers

**Target Audiences**:

- General public inquiring about natural resource management

**Evaluation Framework:**

- Periodic surveys of customer satisfaction with response/information received.

**Output Indicator**:

- Number of inquiries received and successfully answered or referred.

**Outcome Indicator:**

- Better informed public and more visible Extension Service and college programs.

**Program Duration:** Intermediate Term

**GOAL 5: ENHANCED ECONOMIC OPPORTUNITY AND QUALITY OF LIFE**

**Program 1. Financing and Providing Public Services**

**Statement of Issue:**

Elected and appointed officials face ongoing challenges in conducting government and providing services. Among these challenges are Federal devolution of responsibilities, such as income maintenance, and changes in basic policy, such as the impact of farm legislation on agriculture that affect state and local levels of government, as well as citizens and communities. Diverse views on the role and size of government are widespread as are disagreements on how the public sector should be financed. Current and emerging issues in Minnesota are chronicled daily in the media and reported to the state faculty by Extension educators, who also have direct contacts with elected and appointed members of government bodies, citizens' groups, and business and development groups who work closely with government. Ongoing public policy issues include determining the appropriate revenue mix among intergovernmental, tax, and fee-based sources; financing of infrastructure and capital needs; dealing with unfunded mandates; privatizing governmental services; developing a process for resolution of governmental boundary disputes; and cooperation/collaboration options.

**Performance Goals:**

- Continue to provide background information on public finance and service provision issues, track and interpret trends, and identify emerging issues and their implications for local government officials and community leaders.

**Key Program Components:**

- Revise and update basic curricular materials and publication on public finance and government organization in Minnesota (Taxes: Where Does the Money Go? and accompanying Facilitator's Guide).
- Respond to research and educational needs identified in the Fiscal Health Education Program.
- Provide in-service education opportunities and support to Extension educators who plan programs on these kinds of issues.
- Maintain annotated reference and resource lists related to this program on the Extension website and or personal faculty websites.
- Improve Extension's ability to develop and work with Local Area Finance Profiles.

**Internal and External Linkages:**

- State legislators and their staff members
- County governments and other local elected and appointed officials
- Association of Minnesota Counties

**Target Audience:**

- Local government elected and appointed officials
- Community leaders
- Economic development professionals
- Citizen and nonprofit groups – especially those active in the tax, education, government, and service areas
- State-level policymakers
- Interested citizens

**Evaluation Framework:**

- Follow-up interviews with Fiscal Health Education recipients and Extension educators to determine reactions to assistance, further assistance needed, and application of information to improve fiscal health of the recipients.
- Follow-up interviews with Extension educators regarding their improved ability to develop and work with Local Area Finance Profiles.
- Maintenance of website information on the Fiscal Health Program and usage of it.

**Output Indicators:**

- Number of Fiscal Health Program research/education responses.
- Number of in-service educational efforts and support provided Extension educators.
- Number of "hits" on website(s) and new information/revision of information added to site(s).
- Improvement in Extension's ability to develop and work with Local Area Finance Profiles.

**Outcome Indicators:**

- Better informed public officials and community leaders.
- Better financed local governments.
- Improved decision-making on public issues, taxes, and government expenditures.

**Program Duration:** Long Term

**Program 2. Leadership Development**

**Statement of Issue:**

Economic, environmental, and social issues, particularly in rural areas and communities, are growing increasingly complex. Experiencing high degrees of change, these communities are challenged to address issues that involve sharply divergent viewpoints, problems, and solutions that are both unclear, stakeholders that are newcomers, and/or issues that require the attention of all facets of the community. The best hope for communities and individuals dealing with complex problems is to rely on the people closest to them. The knowledge and experience of citizens must be relied upon and built on to address issues and pursue opportunities for enhanced quality of life. Collective, purposeful, informed action is necessary to address complex issues. Therefore, the strategy needed in leadership development is that of actively engaging citizens and building on their capacities in community decision-making and leading positive change.

This work is designed to support and enhance the capacity of citizens and leaders to build communities that are safe and viable and have enhanced economic opportunities and quality of life. Programs and efforts will help participants appreciate how they can contribute to their community's future; develop and enhance leadership skills; identify and affect issues which affect families and communities; apply learning experiences to specific situations and issues; develop a greater understanding of diversity issues; and learn and support processes that engage citizens support formal leaders. Major programs include:

- Rural Youth Leadership

- Building Leadership for the 21st Century
- Volunteer Facilitation Resources
- Community Diversity Leadership

**Performance Goals:**

- 50% of the 250-400 youth who participate in the Rural Youth Leadership Program will become active in the civic and economic life of the Community.
- 50 leaders will complete the 18-month, eight session leadership programs and 75% of them will apply their learning to local district and organization-wide issues.
- 100 trained volunteer facilitators will help 100 non-profit groups run more effective and efficient meetings.
- 65% of 40-48 citizens and leaders from four participating communities who participate in the 18-month, eight-session program will be involved in specific community-based programs or initiatives that address diversity related issues.

**Key Program Components:**

- Two-day conferences and follow-up community projects.
- Eight two-day workshops with speakers and opportunities for issue action teams comprised of participants to meet and work together.
- 30-hour course with eight-faceted curriculum and twenty hours of facilitation activities.
- Eight two-day experiential workshops and applied learning projects in a local community.

**Internal and External Linkages:**

**Internal:**
- Hubert H. Humphrey Institute of Public Affairs
- Office of Diversity and Inclusion and Office of Multicultural Affairs

**External:**
- Community Education Programs in Marshall, Montevideo, New London, New Ulm, Redwood Falls, Willmar, Worthington
- Southwest Minnesota Foundation
- Minnesota Association of Soil and Water Conservation Districts (MASWCD).
- Department of Natural Resources Rural Development Council
- Ethnic interest groups, county commissioners, local human service agencies, city administration

**Target Audiences:**

- Sixth, seventh and eighth grade youth in leadership positions at their schools or in other organizations and their adult advisors in fourteen western Minnesota counties
- Elected supervisors, board members and staff of the MASWCD
- Community volunteers and community nonprofit groups
- Community team members (citizens, positional leaders, nonprofit and local corporate representatives and their community members)

**Evaluation Frameworks:**

- Participant assessment of changes in knowledge, attitudes, skills, and aspirations

- Assessment of changes in individual practices or organizational practices
- Assessment of changes in individual practices and group processes
- Assessment of benefits and consequences resulting from the practice change of the participants

**Output Indicators:**

- Community service project outcomes
- Participant evaluations of each session
- Curriculum materials developed
- Post-program alumni activity records
- Participant evaluations of learning sessions
- Participant activity records of groups facilitated by them
- Participant evaluations of learning sessions
- Community based initiatives planned and implemented

**Outcome Indicators:**

- Self-reports about attitudes and civic work activities.
- Documentation from participants indicating where they have used their learning and MASWCD documentation on progress toward specific selected organizational issues.
- Documentation of group leaders in regard to effectiveness and efficiency of group meetings facilitated by volunteers from program.
- Documentation of involvement of participants in local, collaborative efforts to build and support sustainable diverse communities.

**Program Duration** (for each program component)**:**

- Long Term
- Long Term
- Long Term
- Intermediate Term

### Program 3. Business Retention and Expansion Strategies Program

**Statement of Issue:**

Most local economic growth comes from a community's existing firms. Communities vary widely in their capacity to help existing firms become more competitive in national and global markets. Community leaders need assistance in learning to work with business and industry, especially existing businesses.

**Performance Goal:**

- To help four communities per year to develop BR&E Visitation Programs, set priorities on BR&E projects, and develop effective implementation projects. Each community will visit each least 30 business firms and include at least 30 community leaders in their program.

**Key Program Components:**

- Surveys of 30 to 100 firms, analysis of the survey results, and development of research reports.
- Obtaining consensus from community leaders on the highest-priority long term projects for helping existing local firms and implementation of these projects.

**Internal and External Linkages:**

- BR&E is a highly integrated Extension/research and local community effort. Extension staff and regional leaders do the community level organizational work and campus faculty conduct the applied research. Approximately 10 faculty and state agency staff from a variety of departments are involved in the projects implemented by each local program.

**Target Audiences:**

- Between 30 and 80 community leaders and 30 and 100 firms are involved in each local program. Community leaders come from business, local government, economic development, and education.

**Evaluation Framework:**

- Each program is evaluated by the degree to which it builds the capacity of the local task force to deal with community issues of importance to their local business firms.

**Output Indicators:**

- The number of community leaders participating in each program
- The percentage of targeted firms actually contacted in surveys
- The number of state agency personnel and university faculty participating in each program and project implemented

**Outcome Indicators:**

- Speed of completing the program
- Quality of individual firm responses to the surveys
- Degree of project implementation in each program
- Length of time that the BR&E Task Force in each program maintains an active effort in working on the projects selected for implementation

**Program Duration**: Intermediate Term

**Program 4. Tourism Development Program**

**Statement of Issue:**

Tourism is major economic sector in the Minnesota economy. Tourism development affects individuals, communities, and private sector interests. The Tourism Center addresses tourism development through programs in Festival and Event Management, Rural Tourism Development, Customer Service, Business Retention and Expansion, and Ag-Tourism.

**Performance Goals:**

- Certified Festival Management (CFM) has a goal of 30 trained professionals for 1999, expanding to 100 in 2000
- Customer Service trains approximately 25 instructors each year to administer the program to approximately 600 front line personnel
- Tourism Business Retention and Expansion targets up to two communities each year
- Rural Tourism Development is currently being redesigned to include a seminar (target of 30 students annually) plus updated informational materials
- The Ag-Tourism Program is currently undertaking an inventory of providers to determine market potential

**Key Program Components:**

- Key component for CFM, Customer Service, and Rural Tourism Development is a training program lasting from four hours (Customer Service) to 40 hours (CFM, Rural Tourism Development).
- The key component of the Business Retention and Expansion Tourism Program is a survey of tourism businesses.
- The key component for the Ag-Tourism Program is an inventory of providers using Extension educators to conduct interviews.

**Internal and External Linkages:**

- In each program, Extension educators help design the program and deliver the information. Those who deliver information are prepared by the Tourism Center faculty for the particular training they will deliver. In addition, Tourism Center staff supervise each program activity.

**Target Audiences:**

- Community representatives
- Tourism industry employees
- Festival and event managers
- Members of the agriculture industry
- Managers of tourism-dependent businesses

**Evaluation Framework:**

- Each program is evaluated by its target audience.
- Post program evaluation of how activities or ways of doing business have changed.

**Output indicators:**

- Number of people trained or enrolled for each program
- Degree to which changes in operating procedures have been implemented

**Outcome Indicators:**

- Increased profitability for tourism businesses involved in Extension programs
- Revenue enhancement in the private sector
- Community acceptance of tourism development

**Program Duration:** Intermediate Term

**Program 5. 4-H/Youth Development**

**Statement of Issue:**

A significant number of Minnesota youth, 320,000 at present, are positively impacted by educational and developmental activities created by the 4-H Youth Development Program in Minnesota. The program has been successful despite decreasing financial and professional support for 4-H Youth Development opportunities in the state. There is great need to reconnect with counties and clusters around 4-H Youth Development opportunities that are strategically chosen, adequately assessed, effectively implemented, and appropriately aligned. Past successes such as the development and dissemination of the *Key Elements to Positive Youth Development* and the curriculum revisions to date indicate a strong interest in and partnership between the Center for 4-H Youth Development and county and cluster programs.

Three focal areas:
- Supporting quality, research-based, positive youth development opportunities.
- Increasing communities' intentionality around youth development, based on new research and emerging frameworks for effective community-based youth development and mobilization.
- Expanding the understanding of positive youth development through applied research, education, and publications using research-based information.

**Focus: Supporting quality, research-based, positive youth development opportunities**

**Performance Goals:**

- Focus growth and energy around 5 to 6 theme areas so as to expand their appeal to current and new audiences and better educate youth in science, technology, the arts, the environment, and healthy lifestyles.
- Strengthen the research base for selected programs.
- Commit to a center that ensures that 4-H youth development efforts thrive, evolve, and diversify in the next century, going beyond maintenance of the traditional program.
- Make visible changes in the way the center operates through structural and staffing changes.
- Integrate administrative and program functions.

**Key Program Components:**

- Continue to review, revise, and replace educational curriculums.
- Plan and conduct Educational Summit's around major theme areas.
- Introduce new staffing systems and positions, i.e., lead educator system, volunteer coordinator position, and multicultural youth development position.
- Clarify programs in order to better support quality 4-H youth development opportunities.
- Strengthen the relationship between the Center for 4-H Youth Development and the Minnesota 4-H Foundation in order to generate additional resources to support for children, youth, and family work.
- Change the program management software around the state to increase ability to manage, evaluate, and conduct research on the youth and adults in the program.
- Increase urban presence.
- Continue to develop and implement a long-range strategic plan around 4-H Youth Development opportunities at the Minnesota State Fair.
- Launch new directions for the Center for 4-H Youth Development early in 2000.

**Internal and External Linkages:**

- Strengthening clubs and groups: Minnesota, Wisconsin, and Iowa
- National 4-H Club Assessment
- Public Adventures National Curriculum Project focusing on building youth civic capacities
- CSREES: Children, Youth, and Families at Risk, national connections in evaluation, technology, and educational programming

**Target Audiences**

- Cloverbud age
- Kids in Transition – middle school age
- Retention age—teens
- Diverse volunteers
- Extension educators
- Adult volunteers

**Evaluation Framework:**

- New database management software use implemented
- Surveys
- National impact study participation (Additional frameworks to be developed when new youth development evaluation specialist position is filled.)

**Output Indicators:**

- ES237
- New analyses of existing data bases

**Outcome Indicators:**

- Increased volunteer and family involvement.
- Greater specificity of county strategic directions.
- Greater quality and quantity of youth development opportunities that ensure diversity and a respect for living and growing in a multicultural world.
- Youth project team concept implemented.

**Focus: Increasing communities' intentionality around youth development based on new research and emerging frameworks for effective community-based youth development and mobilization.**

**Performance Goals:**

- Community leaders will seek guidance in helping their communities become intentional about youth development.
- Extension educators are welcomed and valued partners in creating opportunities for quality youth development.
- 4-H youth development educators convene people in their communities around youth development issues, develop strategic plans for their areas, and manage programs via support and training.
- Community needs are taken seriously and community strengths are acknowledged.

**Key Program Components:**

- State Fair Theme Days focusing on the promise of safe places to learn and grow, ongoing relationships with caring adults, a healthy start in life, marketable skills through effective education, and opportunities to give back to the community through service.
- Collect, develop, and disseminate tools and frameworks for community use and planning around positive youth development.
- Continued support for community-based programs focusing on improving conditions for children, youth, and families.
- Development of a long-range strategic plan around inclusivity and living in changing communities.

**Internal and External Linkages:**

- Collaborations with statewide youth development organizations and agencies.
- CSREES-Federal Networks focusing on children, youth, and families.

**Target Audiences:**

- Extension educators
- Community partners

**Evaluation Framework:**

- To be developed more clearly when a new youth development evaluation specialist position is filled.
- Community-based evaluation using the Jacob's Ladder Evaluation Model.

**Output Indicators:**

- Reports generated by new database management software.
- Increased number of community and statewide partnerships and collaborations that result in joint educational programming efforts.

**Outcome Indicators:**

- Increased number of communities that have developed intentional plans for creating positive developmental opportunities for youth.
- Diversity and multicultural plan of action is in place.
- Lessons learned in community-based programs are shared throughout the system to be implemented when and where appropriate.

**Focus: Expanding the understanding of positive youth development through applied research, education, and publications.**

**Performance Goals:**

- Adult and youth volunteers have the support and training needed to manage the range of 4-H youth development opportunities on a regular basis.
- Faculty increase their collective understanding of youth development in practical, hands-on ways through research, evaluation, teaching, and training.

**Key Program Components:**

- Continue to create and publish educational materials, journal articles, and research reports that contribute to the further development of positive youth development opportunities.
- Conduct coordinated training for volunteers, program assistants, and volunteer coordinators.
- Develop Twin Cities' Best Program focusing on community youth worker training.
- Create a youth project team that develops opportunities for youth leadership at the university.

**Internal and External Linkages:**

- Strengthen partnerships with new Gateway Building partners -- Adolescent Health, Konopka Institute, and the University-wide Consortium for Children, Youth, and Families.
- Connect with colleagues at other research and educational institutions around the country.

**Target Audiences:**

- Adult volunteers
- Program assistants
- Volunteer coordinators
- Community youth workers
- Other youth development professionals

**Evaluation Framework:**

- To be developed when youth development evaluation specialist position is filled.

**Output Indicators:**

- Number of publications, research papers, and educational curriculums written, revised, and presented.
- Number of training sessions conducted.
- Number of youth recruited for youth project team.

**Outcome Indicators:**

- Increased number of well-prepared adult and youth volunteers.
- The Center for 4-H Youth Development will be nationally recognized for combining practical research and quality practice in community-based youth development.

**Program Duration:** Long Term

## Program 6. URBAN AND RURAL LANDSCAPES

**Statement of Issue:**

Issues in the landscape industry are both economic and environmental. They involve public, private, government and commercial segments. Each segment agrees that the landscape should be visually pleasing, but they often disagree as to what visually pleasing means, how to get there, and the economic costs and benefits, as well as the environmental costs and benefits. Polarities continue within each segment that favor the extremes on each issue.

**Performance Goals:**

Extension goals in the landscape area center around providing current research-based approaches to the various issues and recognizing that each segment has specific goals that may be in conflict. Extension continually deals with inaccurate perceptions that generate from the poles on each issue, many of which are adopted by industry organizations, advocacy groups, and often the state legislature. Extension strives to present a sustainable approach to landscaping, identifying the best solutions for each specific issue and providing information through various outreach formats and educational methods, including both scholarly publications and mass media.

**Key Program Components:**

Landscape-related program components are broad-based and directed towards the consumer horticulture group or those with commercial horticulture interests. These programs are based in the Horticulture Specialization Team, a group composed of Extension educators and state specialists who are campus-based faculty members holding Extension and research or teaching appointments. Individual components include:

- Yard & Garden Line – A consumer answering service offering free, accurate information in the areas of garden and landscape, insects and plant diseases, wildlife appreciation and control, water quality, and related topics.

- Info U – A series of hundreds of tape-recorded messages on these same topics and others in the area of human ecology, such as child rearing, food safety and preservation, and healthful eating.
- Center for Urban Ecology and Sustainability – A growing collection of educational materials for consumers, including bulletins, slide sets, posters, and video tapes on topics such as butterfly gardening, hardy shrub roses, landscaping lakeshore property, and others. Much of this work has been accomplished in cooperation with the Minnesota Department of Natural Resources.
- Minnesota Master Gardeners – A state-wide cadre of nearly 2,000 University-trained volunteers who answer landscape-related questions through the Yard and Garden Line, through referrals to their county Extension office, at garden centers, and civic functions where they set up booths, and through the public schools and libraries. They also write for local papers, appear on radio and cable television, take programs to nursing homes, and are active in many beautification efforts on the local level. Minnesota Master Gardeners have close ties and share programs with counterparts in Iowa and Wisconsin.
- Minnesota Turf & Grounds Foundation – Membership in this umbrella organization consists of many individual professional organizations in landscape-related industries. Members come together to present high quality, current educational programs and conferences for themselves and their employees. These programs bring in speakers and authorities from throughout the U. S., in order to upgrade and update horticultural knowledge in landscaping and turf maintenance.
- Sustainable Urban Landscape Information Series – An ambitious new website created for consumers, students, and working professionals that will ultimately cover all areas of sustainable landscape design and maintenance. Although the site isn't fully complete yet, there is already a vast amount of material posted at http://www.sustland.umn.edu/.

**Internal and External Linkages:**

- The Horticulture Specialization Team includes representatives from several University departments, including Horticultural Science, Plant Pathology, Soil Water and Climate, Agronomy, Entomology, and Urban Forestry. This team collaborates with the Bell Museum of Natural History, the Minnesota Department of Agriculture, the Minnesota Department of Natural Resources and staff at the Water Line, a water quality resource for consumers. These relationships create close ties between University undergraduate and graduate education, research, and Extension, as well as other related governmental agencies.
- Multi-institutional and multi-state activities are many and frequent as the Horticulture Specialization participates in developing and presenting programs with state and regional attendance. Dozens of nationally renowned researchers and specialists make presentations alongside local experts. Many of these programs are open to the general public; some are geared specifically to industry organizations and associations. The Minnesota Nursery and Landscape Association annual convention attracts over 4,000 participants annually. The Minnesota Turf and Grounds Foundation represents eight allied associations with a total membership that exceeds 5,000; their annual conference draws thousands of attendees.
- Minnesota Departments of Natural Resources and Agriculture.

**Target Audiences:**

- Landscape-related programs are addressed primarily to two different target audiences: (1) Consumers of horticultural goods and services and, (2) commercial horticultural enterprises. The consumer horticulture group includes a wide range of individuals and families with a variety of interests, abilities, and knowledge, ranging from complete novices to experienced Master Gardeners, and from children to seniors. The commercial horticulture industry in Minnesota also includes a very broad range of interests. Extension addresses the needs of individuals who work in all levels of the commercial industry, as well as supporting the various industry-related state associations and organizations.

The commercial industry can be divided into two segments:

- *Commercial businesses* are those that sell a service or product and generate profit to exist. They include nurseries, garden centers, lawn care and landscape maintenance companies, sod producers, landscape designers and architects, landscape contractors, irrigation specialists, tree services, and others.
- *Commercial departments* are those that design, implement, or maintain landscapes under the umbrella of a larger organization that may or may not be "for profit." They can be associated with state, county, or municipal government, colleges, universities, and public schools, or corporate businesses or plants. Included in this category are golf courses, cemeteries, parks, and a variety of public and private grounds.

**Evaluation Framework:**

- Most landscape-related programming is on-going rather than short-term. Evaluations are as broad as the programs offered. They can be as specific as audience evaluations of programs and speakers at seminars and workshops to the more difficult to measure response and appropriate reaction to challenging issues such as water quality or pesticide usage. Printed and electronic materials are evaluated internally and by colleagues in neighboring states before they're made available to the public.

**Output Indicators:**

- Numbers of participants in consumer and industry programs.
- Number of Master Gardeners trained and contributing to program delivery.
- Numbers of calls to Master Gardeners and website hits.
- Numbers of copies of educational materials requested.

**Outcome Indicators:**

- Changes in home gardening and landscaping practices that have positive economic and environmental impacts.
- Improvements in industry management and practices.
- Effectiveness of delivery methods in responding to consumer and industry needs.

**Program Duration:** Long Term

## Program 7. Personal And Family Health And Well-Being

### Statement of Issues:

Never has it been more challenging for families in society to grow and nurture their members into healthy, productive adults. Most statisticians concur that about half of the couples who marry in the United States will divorce, if current trends continue. This family disintegration and the conflict preceding it have a deleterious effect on the growth, development, and well-being of the children affected. Violence among youth is escalating at an alarming rate, and parents are fearful of sending their children to places once regarded as safe havens - such as schools. Welfare reform has pushed more and more parents into the workforce, driving up the need for quality child care or leaving children to be on their own at home. Increasing demands by stakeholders for schools to be more accountable for their outcomes have led to increased educational pressure on children and parents for early and more comprehensive learning. New immigrant populations are often faced with cultural norms which aren't familiar to them and are challenged with raising their children who want to fit in and integrate into western culture in a way that is true to their heritage. Policies typically address issues that involve families in a compartmentalized way, addressing one piece of the problem, or even just one person, rather than using a systemic or holistic approach which addresses the entire family system, and the community and the environment in which they live. All of these issues are further complicated by busy lifestyles and little time for family, resulting from the out-of-home employment of most adults in households.

The hope in this seemingly grim picture is that families are beginning to see that societal situations have a direct effect on them and are taking more ownership for what happens to their families. In addition, policymakers seem to have an increased understanding of the fact that what happens in a child's life (positive or negative) has a direct outcome on their well-being later in life. Excellent resources are becoming available to support family development and well-being and families are beginning to make use of them.

### Performance Goals:

- Coordinate with appropriate agencies to assess the availability of school age child care and out-of-school time activities, and convene community groups to address the needs
- Connect with the resources of the National Extension Child Care Initiative to enhance the work of other child care agencies in Minnesota.
- Provide parenting education directly to parents and/or to other trainers of parents, so there are ample opportunities for parents to participate.
- Provide bi-cultural parenting education programs to help immigrant parents address issues of cultural clashes between them and their children.
- Address the needs of divorcing parents through comprehensive, court-ordered educational programs.
- Provide relationship education for youth and adults, with the goal of strengthening couple relationships.
- Provide research-based materials and activities for parents to help enhance their children's learning.
- Provide research to policy-makers to inform their decision making, particular in areas related to families.
- Address the specific needs of rural families, particularly farm families, as they experience stress and other issues related to the social and economic crisis in rural Minnesota.

### Key Program Components:

The goals will be addressed through various family education programs developed and delivered by University of Minnesota Extension Service staff, in partnership with appropriate community collaborators. Among the programs are:

- Positive Parenting, a three-part video-based parenting education series (Goal 2).
- Helping Youth Succeed; A Parenting Guide for Southeast Asian Families, a video and case-study based program (Goal 3).
- Parents Forever: Education For Families in Divorce Transition (Goals 4 and 7).
- Dads Make A Difference and the R Factor, two relationship education curricula taught in schools (Goal 5).
- Minnesota Marriage Initiative, a multi-agency initiative formed to address issues of marriages and communities (Goal 5).
- All Parents Are Teachers (Goal 6).

**Internal and External Linkages:**

**Internal:**

- Children, Youth and Family Consortium
- College of Human Ecology
- College of Agricultural, Food and Environmental Sciences
- College of Education and Early Development
- Center for 4-H/Youth Development
- School of Public Health
- College of Education and Human Development;
- Hubert H. Humphrey Institute for Public Affairs.
- An additional partner in the Positive Parenting work is the University of Wisconsin Extension Service, which has been fully integrated in the development and delivery of this program since its inception.

**External:**

- Minnesota Department of Children, Families and Learning
- Child Care Resource and Referral Network
- Minnesota Department of Health
- State and local Departments of Human Services, including Child Support Enforcement
- Various Twin Cities Southeast Asian community groups
- Southeast Asian Media Service
- Minnesota Supreme Court
- Minnesota Council of Chief Judges
- Family Law Division of the Minnesota Bar Association
- District court system
- State and local mental health organizations
- Minnesota Attorney General's Office
- Family Tree Clinic
- Numerous Minnesota school districts
- Bethel College and Seminary
- National and Minnesota Councils on Family Relations
- Minnesota Coalition for Family Policy

**Target Audiences:**

- Families

- Professionals who work with families

**Evaluation Framework:**

- Parents Forever, Dads Make A Difference, and The R Factor all have longitudinal studies in process to assess the effectiveness and behavioral outcomes of the program. Positive Parenting has an evaluation piece built into the curriculum. Other programs, especially those in the developmental stages, are assessing ways to effectively evaluate as part of the program development process.

**Output Indicators:**

- Program development and implementation for children, youth, families and communities.
- Community needs assessment conducted.
- Train-the-trainer events for relevant partners on related programs and/or curricula.
- Consultations with groups/individuals using programs and/or materials.
- Participation/representation in relevant state and local collaborations to advance and/or support our common work with children, youth and families.

**Outcome Indicators:**

- Each program has specific outcome indicators. The overall indicator is increased family well being.

**Program Duration:** Long Term

**Program 8. Individual and Family Financial Management**

**Statement of Issues:**

Families and individuals are influenced by the social, economic, and political (governmental), and the physical environments around them. All of these factors influence the micro environment within the family, as well as the system(s) within the communities where families and individuals live and work.

Rural, urban, and suburban families and individuals are constantly being pressured to find ways in which they can increase their self-sufficiency. The social and economic environments determine where families and individuals live and work. In some cases, families and individuals will only be able to barely survive, while others will be able to work toward self-sufficiency. However, this situation is insufficient to improve the overall well-being of all individuals, families, and communities. Our goal should be to work toward socially and economically sustainable situations for all individuals, families, and communities. In the next five years, the movement from welfare to work will be a major transition for some individuals and families. Another transition may mean an increase in different family forms, such as grandparents raising grandchildren while the parents try to find ways of being self-sufficient. In addition, the parenting issues related to support for children whose parents are separated, divorced, or never married will still be present.

Increasing numbers of persons in the workforce as the result of welfare to work, increasing retirement age, and enhanced education that allows persons to build more human capital are all examples of the influence of changing public policies on individuals and families and their

financial well-being that will continue to be evident during 1999-2004. Increasing the capacity of individuals and family members to financially care for their children will also change their social and economic environments. This change will also help to curb the number of persons living in poverty in Minnesota.

All individuals and families desire to live a lifestyle that allows them to cover their basic needs and have goals for the future. Some families struggle more than others. Increasing human capital via financial education will assist them to change the manner in which they manage their resources. Today's high school graduate will earn over $1 million in their lifetimes. Equipping them with knowledge and skills for managing their money is very important. Many of the individuals and families that are assisted by University of Minnesota Extension Service programs aren't earning at the level of future workers. Thus, programs that assist individuals and families in understanding how they can help themselves, as well as how public policies affect them and their communities, are vital to their well-being and that of our communities.

**Performance Goals:**

3227. Continue to monitor state and federal legislation that affects the financial well-being of individuals and families (urban, rural, suburban; one-parent, two-parent; young, middle-aged, old; and the financial impact on children, especially those in poverty).
3228. Continue to measure changes in Minnesota in the movement of individuals and families from welfare to work.
3229. Continue to monitor the economic literacy of persons involved in University of Minnesota Extension Service programs (High School Financial Planning, Dollar Works, and Parents Forever Programs, and new programs that deal with the financing of long-term care, etc.).
3230. Develop new programs to increase the understanding of the economic and social issues related to work, retirement, Social Security, Medicare, Medicaid, disability, poverty, and planning for the security of individuals and families throughout their lives.

**Key Program Components:**

3227. Understanding the costs of raising children and the financial issues of parenting with child support (part of the Parents Forever Program available in every judicial district in Minnesota).
3228. Economic literacy (major concept in the High School Financial Planning Program and Dollar Works—the welfare to work program which has been adopted as the basic economic literacy program for Minnesota's Family Assets for Independence -- FAIM demonstration for Individualized Development Accounts with matching federal dollars).
3229. Economic education in planning for work that provides for benefits and family resources in the future -- lifecycle approach to work, retirement, Social Security, and medical care education (Medicare, Medicaid, disability, medical power of attorney and living wills and their implications).
3230. Economic security for long-term elder care (understanding and planning for the impact of the aging population on family resources and public budgets).

**Internal and External Linkages:**

3227. Regional Research Project NC223—Rural Low-Income Families: Tracking Their Well-Being and Functioning in the Context of Welfare Reform (10/1/99-9/30/03)
3228. Minnesota Departments of Human Services, Economic Security, and Children, Families, and Learning (Financing Long-Term Care, Dollar Works, High School Financial Planning Programs and the regional research project)

3229. National Endowment for Financial Education, Denver, CO (High School Financial Planning Program)
3230. Family Assets for Independence (FAIM) Taskforce (community action agencies, selected credit unions, nonprofit agencies, and Native American tribal councils)

**Target Audiences:**

3227. Low income individuals and families needing financial education and economic literacy
3228. Agencies and nonprofit staff working with low income individuals and families
3229. Policy makers
3230. Educators
3231. Scholars wanting to learn about the research and be engaged in the application of knowledge to persons outside the university

**Evaluation Framework:**

3227. Longitudinal evaluation of the High School Financial Planning Program.
3228. Five-year evaluation of Dollar Works to assess changes in knowledge, skills, and behaviors of participant families and linkages to other agencies.

**Output Indicators:**

3227. Number of participants in Parents Forever, Dollar Works, Family Assets for Independence (FAIM), and High School Financial Planning Programs
3228. Number of participants in agency financial education staff development programs.
3229. Number of contacts in lifecycle programming associated with work, retirement, Social Security, and medical care education.
3230. Number of new financial education program and supporting materials developed.

**Outcome Indicators:**

3227. Extent of penetration in eligible community audiences and professional staff in nonprofits, agencies, and other organizations.
3228. Degree of satisfaction with the content and usefulness of financial and economic literacy education materials among helping professionals and staff in nonprofit agencies and organizations, businesses, and members of other groups using these materials.
3229. Extent of increased cooperation among Minnesota service providers in financial management and economic literacy programs (if resources are available to assess this indicator).
3227. Extent of changes in knowledge, skills, and attitudes and behavior changes in program participants.

## Appendix
## University of Minnesota Extension Service Faculty with Joint Appointments

Addis, Paul B
Food Science & Nutrition

Adelman, Ira R
Fisheries And Wildlife

Alberts, Lynn D
Human Ecology

Ames, Trevor
Clinical & Population Sci

Anderson, James L
Soil, Water & Climate

Anderson, Robert D
SW Research/Outreach Ctr

Anderson, Terry M
U Of MN Duluth

Angell, William J
Design, Housing & Apparel

Ascerno, Mark E
Entomology

Bailey, Donna J
Human Ecology

Bauer, Jean W
Family Social Science

Baughman, Melvin J
Forest Resources

Becker, Roger L
Agronomy

Behrendt, Chad J
Plant Pathology

Bicudo, Jose R
Biosystems Ag Engineering

Blinn, Charles R
Forest Resources

Brady, Linda J
Food Science & Nutrition

Breitenbach, Fritz R
SE District Extension Office

Brown, Deborah L
Horticulture Science

Buhr, Brian L
Applied Economics

Buschette, Mary F
Mast International

Busta, Francis F
Food Science & Nutrition

Casey, Charles H
U Of MN Extension Service

Cavanaugh, Kevin J
Agronomy & Plant Genetics

Cheng, H. H
Soil, Water & Climate

Christensen, James L
SW Research/Outreach Ctr

Clarke, Steven A
International Programs

Cooper, James A

Fisheries And Wildlife

Craven, Robert H
Applied Economics

Crewdson, Buddy G
Applied Economics

Dahinten, Edgar A
Biosystems Ag Engineering

Daley Laursen, Steven B
Natural Resources Admin

Danes, Sharon M
Family Social Science

Darger, Michael P
Applied Economics

Darling, Mary E
Food Science & Nutrition

Detzner, Daniel F
Family Social Science

Dicostanzo, Alfredo
Animal Science Beef/Swine

Durgan, Beverly R
Ag Food Env Sci

Eidman, Vernon R
Applied Economics

Ek, Alan R
Forest Resources

Emshoff, M. Elizabeth
Human Ecology

Epley, Richard J
Animal Science Beef/Swine

Erwin, John E
Horticulture Science

Farnsworth, Ralph J
Clinical & Population Sci

Feirtag, Joellen M
Food Science & Nutrition

Frederick, Edward C
U Of MN Extension Service

Fritz, Vincent A
So Research/Outreach Ctr

Fruin, Jeremiah E
Applied Economics

Fulcher, R. Gary
Food Science & Nutrition

Gahring, Sherri A
Design, Housing & Apparel

Gardner, Gary M
Horticulture Science

Giebink, Bruce L
Soil, Water & Climate

Gillman, Jeffrey H
Horticulture

Greene, Laurie H
Clinical & Population Sci

Gunsolus, Jeffrey L
Agronomy

Gustafson, David M
Biosystems Ag Engineering

Hahn, Jeffrey D
Entomology

Halbach, Thomas R
Soil, Water & Climate

Halvorson, David A
Veterinary Pathobiology

Hardman, Leland L
Agronomy

Hassel, Craig A
Food Science & Nutrition

Hawton, Jerry D
Animal Science Beef/Swine

Hemmingsen, Richard A
U Of MN Extension Service

Herzfeld, Dean E
Plant Pathology

Hicks, Dale R
Agronomy

Hively, Janet M
College Of Educ/Human Dev

Hogan, M. Janice
Family Social Science

Holen, Carlyle D
U Of MN Crookston

Hoover, Emily E
Horticulture Science

Houck, James P
Applied Economics

Howard, Vikki M
Dept Of Amer Indian Stud

Huelman, Patrick H
Wood & Paper Science

Hutchison, William D
Entomology

Jacobson, Larry D
Biosystems Ag Engineering

Janni, Kevin A
Biosystems Ag Engineering

Johnson, Gary R
Forest Resources

Johnston, Lee J
WC Research/Outreach Ctr

Jones, Roger K
Plant Pathology

Jones, Stephen P
Mast International

Kitts, James R
Fisheries And Wildlife

Klair, Kevin S
Applied Economics

Kooyman, Shirley M
Landscape Arboretum

Krischik, Vera
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Lamb, G. Clifford
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Lamb, John A
Soil, Water And Climate

Lazarus, William F
Applied Economics

Levins, Richard A
Applied Economics

Lime, David W
Forest Resources

Linn, James G
Animal Science, Dairy

Long, Veronica H
NC Research/Outreach Ctr

Loppnow, Rann R
Applied Economics

Love, Patricia A
Applied Economics

Macrae, Ian V
Ag Research Center

Macy, Janet K
Family Social Science

Mahowald, Sherrie A
Design, Housing & Apparel

Marx, George D
NW Research/Outreach Ctr

Massey, Joseph G

Wood & Paper Science

McCannon, Roger S
U Of MN - Morris

Meronuck, Richard A
Plant Pathology

Meyer, Mary H
Landscape Arboretum

Meyers, Susan S
Rural Sociology

Miller, Gerald R
Ag Food Env Sci

Milton, F. Thomas
Wood & Paper Science

Moncrief, John F
Soil, Water & Climate

Morey, R. Vance
Biosystems Ag Engineering

Morrison, Robert B
Clinical & Population Sci

Morse, George W
Applied Economics

Muesing, Barbara J
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Mullan, Louise M
Food Science & Nutrition

Nesse, Philip E
Central Lakes Ag Center

Noll, Sally L
Animal Science, Poultry

Nordquist, Dale W
Applied Economics

Oelke, Ervin A
Agronomy

Olson, Kent D
Applied Economics

Ostlie, Kenneth R
Entomology

Parliament, Claudia
Applied Economics

Pergament, Shannon L
Biosystems Ag Engineering

Petersen, Harlan D
Wood & Paper Science

Pfleger, Francis L
Plant Pathology

Pitzer, Ronald L
Rural Sociology

Ponce De Leon, F. Abel
Animal Science

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Pullen, Michael M
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Ragsdale, David W
Entomology

Rehm, George W
Soil, Water & Climate

Reicks, Marla M
Food Science & Nutrition

Reneau, Jeffrey K
Animal Science, Dairy

Reyes, Maria A
Office For Special Learning

Richardson, D. Wynn
Applied Economics

Robert, Pierre C
Soil, Water & Climate

Rosen, Carl J
Soil, Water & Climate

Rudstrom, Margo
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Sandell, Elizabeth J
Human Ecology

Sands, Gary R
Biosystems Ag Engineering

Schafer, H. William
Food Science & Nutrition

Schermann, Michele A
Biosystems Ag Engineering

Schmitt, Michael A
Soil, Water & Climate

Schneider, Byron J
Dept Of Educ Policy & Adm

Seeley, Mark W
Soil, Water & Climate

Shurson, Gerald C
Animal Science Beef/Swine

Shutske, John M
Biosystems Ag Engineering

Skogen, Geraldine M
Food Science & Nutrition

Smith, Frederick W
Center For Urban Affairs

Smith, Rebekah J
U Of MN Extension Service

Solheim, Catherine A
U Of MN Extension Service

Spivak, Marla S
Entomology

Steuernagel, Gerald R
Animal Science, Dairy

Stevens, Stanley C
Applied Economics

Stinson, Thomas F
Applied Economics

Stonhouse, John F
Wood & Paper Science

Stum, Marlene S
Family Social Science

Taff, Steven J
Applied Economics

Tatini, Sita R
Food Science & Nutrition

Tong, Cindy B
Horticulture Science

Trefry, Carol M
Food Science & Nutrition

Trow, Thomas L
Community/Cultural Affair

Vegoe, Sharon L
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Vogel, Mary C
Arch & Landscape Arch

Vogt, Carl E
Forest Resources

Vreyens, John R
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Warthesen, Joseph J
Food Science & Nutrition

Welsch, Delane E
Applied Economics

Weness, Erlin J
SW Minn Farm Mgt Assn

Westman, Lorin L
SE District Ext Office

Wiersma, Jochum
NW Research/Outreach Ctr

Wilcke, William F
Biosystems Ag Engineering

Woutat, Sybil S
Food Science & Nutrition

Wright, Jerry A
WC Research/Outreach Ctr

Yoho, Carole B
Applied Economics

Yust, Becky L
Design, Housing & Apparel

Zins, Michael E
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