University of Minnesota Extension Service

1999-2000 Accomplishments and Results Report

March 8, 2001

St. Paul, Minnesota 55108

I. PROGRAMS

Goal 1. An agricultural system that is highly competitive in the global economy.

Overview:

We reported on eight key themes under Goal 1. They reflect eight of the nine major programs that are under Goal 1 in our 1999-2004 Plan of Work, plus two programs from our POW Goal 4 and one from our Goal 5. Most themes encompass several programs. Three of the key themes were designated by CSREES as joint themes (integrated research and Extension) and the other four were indicated as Extension themes. However, many of the Extension themes could also have readily been termed integrated research and Extension because they do draw upon a research base although it may not always be Hatch-funded research. (The connections to Hatch-funded research in the themes are indicated by the CRIS project numbers in a reference section at the end of each narrative.)

We have also indicated URLs in each theme that will connect the reader to relevant web sites or pages. Often these are entries in our Minnesota Impacts! database that includes descriptions of both Minnesota Agricultural Experiment Station research projects and University of Minnesota Extension Service educational programs. Minnesota Impacts! is accessible by the public and policymakers interested in the University's agricultural and environmental research and Extension educational outreach. Access to it has been promoted via business cards and brochures that are available at the Experiment Station's Research and Outreach Centers and county Extension offices. An effort has been made to encourage access to Minnesota Impacts! by providing demonstrations of the system at the Minnesota State Fair and other events and by handing out the promotional information at county fairs, Experiment Station field days, and the like.

We believe that the research and Extension efforts represented under Goal 1 are truly attempting to accomplish that goal—developing an agricultural system that will keep Minnesota agriculture competitive in the global economy by reducing production costs, identifying new crops and products, and finding new, value-added uses for Minnesota agricultural products. A major portion of research and Extension funds in Minnesota is expended on the projects and educational programs under Goal 1.

Inputs and Outputs: Extension staff estimated that they reached more than 32,500 farmers, commercial fruit and vegetable growers, agribusiness people, and green industry employees via Goal 1 programs during 1999-2000. They invested more than 16,000 hours of their time (7.7 FTEs) and spent more than $177,000 to develop and deliver these programs. These direct program costs were offset by over $20,000 in participant fees charged for some programs (primarily those for agricultural professionals and industry employees) and almost $193,000 in grant funds from various sources.

Delivery methods varied from program to program, but in general Extension staff reported using a mix of individual consultations and group sessions of different kinds. They also put time into preparing/updating publications and teaching materials and putting information on websites. In addition, they used newspapers and newsletters to advantage to reach large numbers of clientele.

Outcomes: Outcomes varied by program, but all programs indicated some degree of success in terms of changes made by program participants—in acquiring and using new marketing skills, new crop and livestock production and management techniques, diversifying and adding alternative crops and livestock enterprises, adding value to existing crops and livestock products, and using technologies to boost their efficiency and effectiveness. In most cases, Extension staff indicated that from 25 to 75% of their clientele either indicated a willingness to adopt/adapt the information they received or actually did been using new skills and practices, adding new crops or animal enterprises, and improving their profitability.

Impacts: Specific impacts are difficult to measure without evaluative research on specific educational programs. Still, Extension staff reported that many of their clientele did improve their profitability, resulting in new jobs and a positive economic impact on individuals, families, and communities. Precise measurement of impact across the variety of programs represented under Goal 1 is very difficult to determine. Some impacts are cited in the various theme statements.

Accomplishments: We believe we are making significant progress in listening to our stakeholders and re-directing our research projects and educational programs so that they deal most directly with the economic, social, and environmental issues of greatest concern to Minnesotans. Goal 1 research is providing answers and recommendations for specific changes that people who make a living in agriculture and the green industry need to make if they are to operate competitive, profitable, sustainable businesses. Extension continues to communicate that information in a variety of ways and locations to the people who most need it and provide the technical advice and other support that is often needed for those receiving the information to implement changes.

Key Theme: Agricultural Profitability (JOINT)

AES Plan of Work: Goal 1: Program 1, Agricultural Production and Business Management; Program 2, Agricultural Marketing and Distribution; Program 7, Understanding Physiological Processes Impacting Production and Quality Traits in Cropping Systems; Program 9, Crop Production and Management Strategies; Program 10, Value-Added Agriculture; and Program 13, Agricultural Information Technology

Extension Plan of Work: Goal 1: Program 1, Agricultural Production and Farm Business Management; Program 2, Agricultural Processing, Marketing, and Distribution; Program 3, International Program 9, Agricultural Information Technology

a. Description

Research and Extension work to improve Minnesota's agricultural productivity encompasses a wide range of activities—from developing and disseminating new disease-control techniques to help Minnesota's crop and animal producers, to developing management systems and providing advice on maximizing returns while minimizing costs, to developing strategies to help stabilize farm income.

For example, a project begun in 1996 carries out both research and outreach dealing with pasture management and ecology. Much applied research is initially carried out under controlled conditions at research facilities. Agronomists, dairy and sheep scientists, an applied economist, and a water quality specialist work together in order to evaluate more integrated systems of agriculture. The research findings are tested on producer farms. Through this process, test farms can be the first to benefit from applying successful methods in their operations and they act as accessible demonstration sites for neighboring farmers and communities.

An Extension program in southeastern Minnesota uses station research information to help dairy farmers increase their profitability. This includes working with families on ways to reduce dairy heifer replacement costs by bringing those animals into the milking herd at a younger age; making sure that feed costs are in line; looking at housing needs and comfort of the cows; providing advice on ventilation systems and ways to reduce somatic cell counts; and making maximum use of manure to reduce commercial fertilizer costs. This program has presented information on various aspects of dairy profitability to more than 1,400 dairy farmers and dairy industry personnel in workshops, barn meetings, seminars and presentation. In addition, much effort is spent in working with individual farmers or with small groups.

The University of Minnesota's Farm Resource Management Program helps equip Minnesota farm operators and landowners with the management perspectives, capabilities and information necessary to manage their farm resources. Machinery and equipment represent a major capital investment for state producers. Extension educators consistently report that the most frequently asked farm management questions are those about machinery operating costs and the going rate for custom harvesting. For more than 70 years the University of Minnesota has been doing research on farm real estate values. Continuing research includes an annual farmland sales study, published report, media coverage, web distribution and frequent Extension presentations on the subject.

Weed management is one of the most costly production challenges facing US farmers. Weed control costs can be dramatically reduced by careful fine-tuning of farm operations, but this must be done on a farm-by-farm basis. Researchers and Extension specialists are developing educational methods that help farmers carry out this fine tuning.

Pea production for processing in Illinois, Minnesota and Wisconsin on over 200,000 acres has a raw product value of about $100 million. Common root rot, caused by a fungus, is the most serous disease affecting this crop, and may account for about $5 to $7 million in raw product losses annually. A major concern with this disease is that it is very persistent and can pose a threat for 10 years or more. Research is ongoing to determine the effects of various crop rotation strategies, and identify and evaluate management practices that reclaim and sustain pea production.

Late blight is one of the most devastating potato diseases worldwide and was responsible for over $30 million of potato crops loss in Minnesota during the 1999-2000 growing/storage season. Currently, all commercially acceptable cultivars have no significant levels of genetic resistance to this disease. Thus, cultural practices and fungicide use are the only viable management practices available to potato farmers. A research and Extension project involving monitoring weather conditions in the potato-producing regions of Minnesota provides valuable information to farmers. When weather conditions are favorable for late blight, potential disease warnings are issued by means of a web page, e-mail service, and toll-free telephone service line. When weather was not favorable for disease last year, potato farmers were able to increase the interval between fungicide applications, thus reducing the amount of fungicides applied to the crop.

A swine program uses a variety of methods—including satellite conferences, training sessions, and publications—to relay research-based information to help pork producers meet the economic challenges that they encounter in their businesses. In many cases, Extension works cooperatively with others with an interest in pork production, such as the National Research Council and the National and Minnesota Pork Producers Associations. The Extension swine program reaches a majority of the state's pork producers. The program holds many "train the trainers" workshops during the year that relay the latest information about nutrients and management practices to veterinarians and feed industry nutritionists. Extension also provides advice for producers in how to cut costs with different management strategies, including split-sex feeding (reducing protein levels for barrows, increasing it for gilts) phase feeding, and "all in—all out" movement of pigs, which gives producers a chance to thoroughly clean barns, thus preventing the spread of any disease organisms to new batches of pigs.

b. Impact

The pasture management project works with approximately 100 producers individually and reaches another 1,000 producers every year through educational events. In addition, it provides training in pasture and forage management for staff from other state and government agencies. This work offers considerable environmental and economic benefits. Using pastures instead of row crops on highly erodible land could reduce soil erosion by at least 5 to 10 tons per acre per year. Even if 100,000 acres of erodible land were converted to pasture, the impact on

Minnesota waterways would be great. There is a sizeable amount of cropland that would be better suited to use as pastures in Minnesota.

Traditionally, Minnesota farmers have grown forage for use as feed on their own farms. However, cash hay production is becoming a large business in Minnesota. Not only does this provide farmers with extra income, but it also adds another crop to their field rotations. Research has shown that a good pasture management can increase pasture productivity by over 2 tons/acre/year. If we assume the value of forage as hay to be $75 to $100/ton, there is the potential to increase the production value of pastureland by over $150/acre.

In the dairy management program, results are shown on individual farms. For example, a dairy farmer was persuaded to reduce his commercial fertilizer purchases because of the amount of manure he was already applying to his corn. The farmer reported that he saved more than $5,000 in one year in fertilizer costs without a drop in yields. Economic advice is especially crucial for beginning farmers. A dairy family whose son was starting in the business with them reported that advice about a ventilation system saved them $3,000.

Although the amount of post emergence herbicide used on sugar beet fields has dropped dramatically over the years, herbicides are still an expensive item for the 3,300 growers in the Red River Valley of northwestern Minnesota and eastern North Dakota. An Extension sugar beet specialist has developed a micro-rate application plan for using post emergence herbicides combined with a seed oil additive. An oil additive makes the herbicide mixture adhere to the weeds better and aids in penetration. The micro-rate can be applied during the day, and the lower cost of the micro-rate of application means that it can be broadcast by aerial spraying. Ninety-seven percent of the growers who used the micro-rate said they planned to continue use.

Research suggests that incorporating oat residue into the soil through tillage has a significant suppressive effect on the root rot disease affecting pea production. Control of root rot disease in processing peas will help to retain crop diversification on 800 farm operations in Minnesota alone. In fields that are significantly affected by this disease, total crop failure is not uncommon. Assuming a slightly above average yield of 3,000 pounds per acre at a value of approximately $8/cwt results in a value of about $240 per acre. At a cost of about $8 per acre to plant oats for green manure, the net economic benefits are over $232 per acre per year.

The Late Blight Disease Forecast gave potato growers a 13-day advance warning in June 2000, which saved them money by eliminating two fungicide applications. This project aims to improve the efficiency of potato-growing operations across Minnesota. Those most likely to use the free service are the smaller farmers who, due to cost constraints, are looking for ways to reduce fixed costs.

References:

AES Research Projects: MIN-01-015, MIN-13-G02, MIN-13-064, MIN-16-064,

MIN-22-024
http://www.extension.umn.edu/mnimpacts/impact.asp?project ID=389
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=1220
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=408
http://www.extension.umn.edu/mnimpacts/impact.asp?projectid=6
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=379
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=238

c. Source of Federal Funding: Hatch and Smith-Lever 3b&c

d. Scope of Impact: Integrated Research and Extension and Multi-State Extension (ND, SD)

Key Theme: Animal Genomics (JOINT)

AES Plan of Work: Goal 1: Program 5, Animal Production and Management Strategies; Program 6, Genetic Enhancements in Animal Systems
Extension Plan of Work: Goal 1: Program 4, Animal Production and Management Strategies

a. Description

Genomic research is providing information for the genetic improvement of cattle, insights into turkey respiratory disease control, and tools for the genetic improvement of poultry. Extension specialists and educators have taken these findings to producers in a variety of ways—via workshops, presentations, on farm consultations, and in the media.

Each year, the dairy cattle industry loses an estimated $1 billion because of mastitis. Experiment Station research has been determining the genetic basis for mastitis and cattle health disorders generally, with the goal of being able to select dairy cows that have improved disease resistance. The genetic cause of ketosis (a post-calving complication that results in loss of appetite) and other metabolic diseases is also being investigated.

Researchers conducted the first national evaluation of testing milk for somatic cell count as the lab indicator of the presence of mastitis. This evaluation process has been replicated throughout the world.

Extension programs using this research include a “Successful Careers in Minnesota Dairies” series that included a two-day training session for milkers. To date, the program has reached over 200 milkers and/or managers from 70 dairy farms. These farms together have a total of 14,000 cows. Another related

program on "Managing the Transition Cow" involved 75 dairy farm operations with a total of 15,000 cows.

b. Impact

The genetic research into general cattle health disorders, particularly mastitis, is expected in the next 5-10 years to result in breeding healthier cows that will yield by at least 250 lbs per cow annually. Cows less prone to mastitis will also produce milk that is higher quality and has less likelihood of antibiotic residues from treatments for health disorders. Genetic evaluations of somatic cells scores for milk tests have already had a meaningful impact on the profitability of Minnesota dairy farms. Research has shown that each one unit reduction in the somatic cell count score results in an estimated increase of 1.5 lbs additional milk per cow per day. Improvements in breeding, health care, sanitation, milking procedures, and cow comfort are a win for the farmer, the cow, and the consumer.

Respiratory diseases in turkeys are responsible for more than $35 million in losses for Minnesota turkey producers annually. Researchers have successfully cloned the nucleoprotein gene in the genome of HVT (Herpes Virus of Turkey). They are now undertaking studies to determine the protective ability of a broad spectrum, live recombinant vaccine against various strains of avian influenza.

Constructing a genetic library of poultry pathogens will provide information for combating disease-causing microorganisms that cost producers hundreds of millions of dollars a year. The gene library will enable the design of new and effective vaccines, drugs, and diagnostics for avian pathogens.

Not all genomic research is done in the laboratory. Some "old-style" genetics research is still useful. For example, since 1966, an applied research project at the Northwest Experiment Station at Crookston has selected and compared small dairy cows with large ones. This research has found that small cows produce about as much milk as the large ones. Many dairy producers prefer large cows, but smaller cows are more efficient. They were found to have a productive life that was 88 days (15.4%) than the larger cows. Results from the cow size study contributed to the development of a new USDA genetic index in 2000. Due to confirmation of the deleterious effects of increasing the body size of Holstein cows, the new national selection goals will emphasize smaller cow size in the future.

References:

AES Research Projects: MIN-16-028, MIN-63-032, MIN-63-052
http://www.cbc.umn.edu/ResearchProjects/AGAC/Pm/pmhome.html
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=39
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=341
http://www.extension,umn.edu/mnimpacts/impact.asp?projectID=376
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=181

http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=180
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=391
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http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=21
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=107
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=1229
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=22
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=1370
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=389
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=84

c. Source of Federal Funding: Hatch and Smith-Lever 3b&c

d. Source of Impact: Integrated Research and Education and Multi-State Extension (CA, IA, ID, IL, IN, KS, MI, MO, MT, ND, NY, OH, PA, SD, VA, WA, WI, WV)

Key Theme: Diversified/Alternative Agriculture (JOINT)

AES Plan of Work: Goal 1: Program 2, Agricultural Marketing and Distribution; Program 7, Understanding Physiological Processes Impacting Production and Quality Traits in Cropping Systems; and Program 12, Food Crops

Extension Plan of Work: Goal 1: Program 2, Agricultural Processing, Marketing, and Distribution; Program 3, International Agricultural Competitiveness; Program 5, Crop Production and Management Strategies; and Program 6, Value Added Agriculture

a. Description

Experiment Station research and Extension educational programs are exploring opportunities for diversification of Minnesota agriculture on several fronts. An aggressive attitude toward finding ways to enhance farm profitability and develop jobs and tax base has supported ongoing educational and developmental efforts in value-added agriculture. Several Farmers Markets have been started to provide a retail outlet for the many new producers of vegetables and other home grown commodities. Extension educators are helping farmers develop identity-

preserved (IP) crops and change their management skills to match the needs of this market. Research in diversified agriculture includes developing winter hardy varieties of crops such as grapes and blueberries, that offer more opportunities for northern growers. The development of new oat lines is providing badly needed diversification in regional cropping systems.

The Center for Alternative Plant and Animal Products (CAPAP) provides information and business development services to Minnesota farmers. CAPAP organized the Minnesota Grown Opportunities (MGO) collaboration between the Minnesota Department of Agriculture, the Agricultural Utilization Research Institute, and the University to provide support to Minnesota farmers. Extension consultation has been provided for production of Christmas trees, berries, Ginseng for herbicide use, mushrooms, maple syrup, and Hazelnuts.

b. Impact

A web site (http://www.mgo.umn.edu) has over 150 pages of information and links on cropping, livestock, and farming system diversification options. Cultural practices are being developed for weed control in organically grown hard red spring wheat. Researchers and Extension specialists are working with the Minnesota Christmas Tree Growers Association to evaluate the production potential and marketing opportunities for new and exotic Christmas tree species. An Extension program is supporting the Medicinal Herb Network by helping to develop marketing opportunities using the Natural Marketing Institute. In cooperation with the Small Business Development Center, specialists are developing a business plan for a northwestern Minnesota based mint production and processing venture.

Extension educators explained why identity preserved (IP) grains are becoming more common in agriculture. As a result, 10 farmers signed contracts for production of IP grain. Area elevators and farmers discussed plans for working together on IP marketing. Two new cooperatives were formed this year to pursue new markets and products developed by the people involved in this program.

References:
AES Projects: MIN-13-019, MIN-21-016, MIN-21-086
Center for Alternative Crops and Animal Products http://capap.coafes.umn.edu
Rapid Agricultural Response Fund
http://www.rapidresponse.umn.edu/index.html
http://www.smallgrains.org
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=224

c. Source of Federal Funding: Hatch and Smith-Lever 3b&c

d. Scope of Impact: Integrated Research and Education and Multi-State Extension (ND, SD)

Key Theme: Grazing (EXTENSION)

Extension Plan of Work: Goal 1: Program 4, Animal Production and Management Strategies; Program 5, Crop Production and Management Strategies

a. Description

Improved pasture management and grazing have been identified as highly important in reducing livestock production costs, especially for smaller size farm operations. Some sustainable agriculture advocates think that Management Intensive Grazing (MIG) could enable smaller size Midwestern dairy farms (less than 100 cows) to continue to operate competitively with larger size dairy operations in other parts of the U. S., as well as protect the environment.

Grazing has been emphasized and promoted by the Minnesota Institute for Sustainable Agriculture (MISA), especially for smaller size dairy farms. Improved pasture management research is being conducted at the West Central Research and Outreach Center (branch experiment station) in Morris, as well as other, on-farm locations. WROC has been offering on-line grazing workshops to provide farmers with greater access to information based on their grazing research. Economic estimates project that even a modest and attainable increase of $50 per acre from currently under-managed/unmanaged pastureland in Minnesota could result in a $140 million increase to livestock producers and to the economy of Minnesota.

Extension is actively involved in the Minnesota Forage and Grassland Council that holds an annual conference every year. In January 2000, some the topics addressed included “Pasture Management Tips for Small and Large Acreages”, “Forages for Large and Small Producers”, “Inter-seeding Biotechnology”, “Controlling N and P Flow Through Animals, Soil, and Plants”, and “Forages for Northeastern Minnesota”, an area where crop production is more marginal. The conference also featured a Forage Production Workshop for forage crop advisors.

As an alternative to the on-line grazing workshop, Extension educators have developed a six-lesson home study course that is being offered to current and prospective producers. Topics include planning a grazing system, fencing systems, plant species selection, weed management, managing season-long forage production, and grazier arithmetic.

References:
http://www.misa.umn.edu
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=351
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=1205

http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=6
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=11

b. Impact

The impact of these efforts has not yet been measured.

c. Source of Federal Funding: Smith-Lever 3b&c

d. Scope of Impact: Integrated Research and Extension

Key Theme: Home Lawn and Gardening (EXTENSION)
(Replaces Urban Gardening Theme)

Extension Plan of Work: Goal 1: Program 7, Green Industry; Program 8, Food Crops; Goal 5: Program 6, Urban and Rural Landscapes

a. Description

Gardening is one of the most popular pasttimes for people of all ages. The "green industry" that supports home and commercial gardening and landscaping —the garden centers, nurseries, florists, landscaping and lawn care businesses, and their suppliers--is growing rapidly in Minnesota. Food crops are often an alternative enterprise, especially for small farm operations near metro areas.

Providing research information and training for the green industry and home and commercial production of food crops, as well as direct assistance to home gardeners is an important part of Extension work. It would be impossible to provide the volume and variety of information desired by consumers and industry members without Master Gardeners and the use of communications technologies to deliver information.

b. Impact

Educators reported they worked with over 2,800 green industry clients and food crop producers in 1999-2000. A team of horticulture, entomology, plant pathology, soils, and natural resource faculty members trained 325 new Master Gardeners and 51 ProHort participants--67 of them took the training via the Internet in the new web-based Master Gardener credit/non-credit course, HORT 1003. With the addition of the newly-trained Master Gardeners, the number of active horticulture volunteers is now 2,400 in Minnesota.

The Yard and Garden Line continued to be an important means of providing home gardening and landscaping information in 1999-2000. Approximately 21,000 calls

were received. The Yard and Garden Line gives Minnesotan's easy, toll-free access to a variety of University gardening-related resources. Callers can either (1) listen to Info-U tapes on a variety of topics, including gardening, (2) connect to the University's Bell Museum of Natural History for wildlife questions, (3) request a call-back from a Master Gardener with answers for their specific question(s), or (4) connect to the campus-based Yard and Garden Clinic where for a modest fee they can talk directly to someone with horticulture, entomology, plant pathology, or soils expertise. Information on submitting soil samples for analysis or plant and insect samples for identification, diagnosis and recommendations is also available for a fee.

Last year, about half of the Yard and Garden Line callers requested a call back from a Master Gardener; 30% asked to speak to someone in the Yard and Garden Clinic. The rest opted for other fee-based services. Extension educators in county offices also can call the Yard and Garden Clinic directly for assistance in providing answers to their clientele.

The Yard and Garden Line website, http://www.extension.umn.edu/projects/yard and garden, is very popular with people wanting home gardening and landscaping information. It was visited nearly 117,000 times during 2000—about 6.5% of the total visits to the University of Minnesota Extension Service home page. The Gardening and Horticulture home page, http://www.extension.umn.edu/hort, is also popular—it was visited close to 45,000 times in 2000.

Master Gardeners assist Extension educators with answering calls in county offices. They also staff clinics and exhibits, distribute publications, write newspaper and newsletter articles, assist walk-in clients with disease and insect identification, and teach gardening classes. This assistance enables educators to have more time to work with commercial fruit and vegetable producers and green industry members.

Master Gardeners are also increasingly involved in water quality improvement and reduction of the use of pesticides and other chemicals. The theme of their 2001 Annual Conference and the slogan they will use in their press releases and educational presentations is "Clean Water or Green Water: The Choice is Yours". This theme reflects their growing effort in promoting Best Management Practices for home yards and gardens, especially near or at lakeshores.

In addition to responding to consumers and commercial clientele, local Extension staff are sometimes asked by local government officials for assistance with beautification projects. One example reported last year, "Beautify Brainerd", linked area Master Gardeners with people assigned to the "Sentenced to Serve" Program who provided the labor for horticultural improvements in downtown Brainerd. This project enabled STS people to learn landscaping techniques and practices, as well as perform a public service.

References:
Gardening and Landscaping:
http://www.ent.agri.umn.edu/cues/cues.htm
http://www.sustland.umn.edu
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=154
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=250
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=284
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http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=159
Food Crops:
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=224
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=1220
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=1046
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=20
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=408
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=1253

c. Source of Federal Funding: Smith-Lever 3b&c

d. Scope of Impact: State-Specific

Key Theme: Precision Agriculture (JOINT)

AES Plan of Work: Goal 1: Program 13, Agricultural Information Technology
Extension Plan of Work: Goal 1: Program 9, Agricultural Information Technology

a. Description

The Experiment Station and Extension both view the development and implementation of precision agriculture as a key technology in the future of Minnesota agriculture. Farm families are experiencing reduced incomes without clear solutions so new strategies that will enable them to farm more efficiently and effectively are extremely important. One solution is making more effective use of technology to reduce production costs by more precisely applying fertilizer, pesticides, and irrigation to get maximum yields at minimum cost.

b. Investigators in the Biosystems and Agricultural Engineering and Soil, Water, and Climate Departments have been developing and testing dry fertilizer sensors and machinery for precision agriculture. This technology enables both the precise testing and measurement of soil fertility and the delivery of only optimal amounts of fertilizer as needed by the crop in specific areas of the field. Precision applications in corn have been shown to reduce production costs per acre $25-75. These reductions also help to reduce the environmental impact of crop production

and contribute to improving water quality by reducing the leaching of agricultural chemicals into surface and groundwater.

The Precision Agriculture Center in the College of Agricultural, Food, and Environmental Sciences integrates research and Extension educational efforts in this area. The center encourages development of information management systems and promotes their application in agriculture. Center faculty members are developing nutrient and pesticide application methods that use satellites, geographic information systems, and variable rate controllers to provide real-time, site-specific applications.

Net gains using precision agriculture have been shown to be as high as $140 an acre in sugar beets and other high-value crops and up to $20 an acre for corn and soybeans. One cooperating grower documented a 65% reduction in phosphate for a net saving of $3,000 on his production costs.

Agricultural information technology efforts reported by Extension educators during 1999-2000 addressed a potential Y2K computer problem facing farm producers and other small businesses. An estimated 6,000 producers were contacted with information that was prepared by the National Association of County Agriculture Agents. Educators wrote two new publications and published 21 newspaper and farm magazine articles. Livestock producers relying on outside services were provided with the tools to develop contingency plans in the event of Y2K-related problems or other disruptions.
Farmers reported that this information was very timely and helpful. As a result, 20% of the farm families with computers upgraded their systems to avoid glitches when the year 2000 arrived and 60% found that they didn't need to make any changes. Except for a few automated feed and ventilation systems, almost all farm equipment didn't require any modifications.

References:
AES Research Projects: MIN-12-028
http://www.precision.agri.umn.edu
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=1457

c. Source of Federal Funding: Hatch and Smith-Lever 3b&c

d. Scope of Impact: Integrated Research and Extension

Key Theme: Risk Management (EXTENSION)

Extension Plan of Work: Goal 1: Program 1, Agricultural Production and farm Business Management; Program 2, Agricultural Processing, Marketing, and Distribution; Program 3, International Agricultural Competitiveness; Program 5, Crop Production and Management Strategies

a. Farm families face a volatile agricultural economy that's radically different from a few years ago. Changes continue to escalate, resulting in both new opportunities and new challenges. One of the foremost challenges is a risk environment that requires new and improved management knowledge and tools.

The University of Minnesota Extension Service began putting greater emphasis on risk management in the Fall of 1999, in conjunction with the Rural Response Initiative which was addressing the declining rural economic and social situation. The effort began with a staff development program that emphasized five areas of risk—human, production, marketing, financial, and legal. These five areas became the basis for the educational programs that staff then planned and offered to farmers. A total of over 200 farmer meetings on risk management were held from January through April 2000.

A website was developed that served as both a source of public information and a place for Extension staff to obtain educational materials and other resources for presentations. This site also provided a calendar where the dates, times, and locations of the farmer meetings and other events were indicated.

FINBIN, a financial database for risk management, was also available to the staff and the public via a website. FINBIN is designed to provide financial and production information in relation to different peer groups and enterprises. It contains data from over 2,700 producers and 178 million acres of cropland, 55,000 dairy cows, 30,000 sows, and over 550,000 grow/finish pigs.

The National Ag Risk Education Library is another reference for farm families. The library was developed and is maintained by the Center for Farm Financial Management. Recent additions include several sources on genetically modified (GM) crops.

Marketing programs have been a major effort in risk management this past year. One program that Minnesota educators are using is the Master Marketer Program, developed at Texas A & M. It provides 32 hours of intensive marketing training focused on grains and soybeans. MMP is intended for grain producers having some knowledge of futures and options markets and experienced in marketing commodities. The program addresses a wide array of marketing-related topics, all aimed at developing and improving marketing skills. Real world examples are emphasized, with small group discussions used to solve simulated problems. The subjects covered include: Basic and advanced marketing strategies; developing and implementing a marketing plan; fundamental and technical price analysis; crop insurance; and starting and supporting successful marketing clubs.

Another program developed locally has helped farmers develop a grain marketing plan for the next season. The day-long session involves farmers in developing a marketing plan for a sample case farm, then using it as a model for developing a plan for their own farm. Working through this process enables farmers to review many grain pricing tools, including hedging with futures, cash marketing tools, option "fences", etc.

"Marketeer" is the new crop market planning software from the Center for Farm Financial Management (the developers of FINPACK). It is proving to be a very useful tool for developing marketing plans, as well as a means for farmers to track their actions in implementing their plans.

A third important risk management effort has been a one-day seminar, "Winning the Game—Profitable Strategies for Marketing Grain", to help farmers understand how to manage risk and develop their own grain marketing strategies. These seminars were offered at five locations in Minnesota during 1999-2000 and several more were planned for 2000-2001. Seminar participants learn how to utilize seasonal trends and price differences in cash grain marketing decisions and incorporate Crop Revenue Coverage (CRC) and Loan Deficiency Payments (LDPs) in a grain marketing plan. They also get to test their marketing skills using actual seasonal grain market prices in a simulation of acting on a marketing plan. In addition, they learn more about the advantages of forming marketing clubs and using "Marketeer" and other management/marketing resources.

Educational work with marketing clubs continues to be a major effort for Extension staff. A marketing newsletter, "Marketing Tools", is prepared and distributed to club members.

b. Impact

An average Minnesota farm produces 50,000 bushels of corn and 20,000 bushels of soybeans annually. Increasing the average selling price for both of these crops by only 10 cents a bushel would increase gross farm revenue an estimated $7,000 a year. That is a modest estimate of potential impact. Using the combination of marketing strategies and tactics taught in The Master Marketeer Program could result in even higher returns to gross farm income.

Educators reported that nearly 3,400 people participated in risk management and other marketing programs during 1999-2000. Close to 1,400 producers who received assistance from Extension reported that they wrote marketing plans.

On average, 2,500 users per month accessed the National Agricultural Risk Library website. About 1,000 hits per month, on average, were made on the FINBIN Farm Financial Database website.

Educators placed 287 articles in newspapers and 145 articles in newsletters with a total distribution of 31,200. In addition, over 2,600 marketing and price risk management publications were distributed.

Master Marketer Program participants are saying that as a result of participation in the program, they feel "it is easier to start making a marketing plan now". "Winning the Game" Program participants indicated a high level of satisfaction with what they'd learned, especially because of the active participation in the game. Some comments were: "I learned it is important to develop a marketing plan and stick to the plan." "Look at the averages and try to take out some of the emotions." "The resource notebook will be very helpful to me in future marketing decisions." "Very good presentation by all. Proud of the university."

94% of the participants in the "Winning the Game" Marketing Program said they planned to forward price more of their grain as a result of the program. In total, participants planned to increase forward pricing on 32% of their corn, 34% of their soybeans, and 29% of their wheat. 37% of the participants also said they planned to change their crop insurance; another 39% said they were considering making changes.

Websites:
Risk Management Education:
http://www.extension.umn.edu/ruralresponse/rme/index.html
National Ag Risk Library: http://www.agrisk.umn.edu
FINBIN: http://www.cffm.umn.edu

c. Source of Federal Funding: Smith-Lever 3b&c

d. Scope of Impact: State Specific

Key Theme: Small Farm Viability/Sustainable Agriculture (EXTENSION)

Extension Plan of Work: Goal 4: Program 1, Sustainable Agriculture; Program 2, Increasing and Maintaining Diversity in Agricultural Systems

Description

a. Much of the research, teaching, and outreach work specific to sustainable agriculture in Minnesota is determined and implemented through the Minnesota Institute for Sustainable Agriculture (MISA). MISA was organized in 1992 as a joint venture of the College of Agriculture, Food, and Environmental Sciences (COAFES) and the Sustainers' Coalition, a group of individuals and organizations who are interested in strengthening the university's role in sustainable agriculture research and education. This group currently includes the Institute for Agriculture and Trade Policy, the Land Stewardship Project, the

Minnesota Food Association, the Minnesota Project, the Organic Growers and Buyers Association, and the Sustainable Farming Association of Minnesota.

MISA's primary stakeholders and clients are farmers and those who work directly with them on sustainable agriculture issues. In addition, MISA provides a focus for faculty and students interested in sustainable agriculture (including offering a graduate minor), as well as an information exchange (electronic and print) for anyone anywhere wanting more information on sustainable agriculture. MISA works in partnership with farmers and others interested in sustainable agriculture to identify issues for additional research and education and to organize and fund initiatives to address issues. For example, a Farmer Summit is held annually that provides an opportunity for producers from Minnesota and North and South Dakota to discuss possible long-term solutions supporting healthy food and farming systems and thriving rural communities with faculty, students, experiment station researchers, and MISA staff and members.

MISA supported the funding and establishment of five regional sustainable partnerships in Minnesota in 1998. These partnerships are funded by the state legislature and are a joint effort of citizens and the University. They are administered by COAFES, the College of Natural Resources, and Extension. Each partnership operates in a distinct bioregion and the citizen board of each partnership is actively engaged in discussing the issues related to developing sustainable agriculture and forestry systems that are uniquely appropriate to those regions.

The Regional Partnership boards have funded 75 research, education, and outreach projects thus far. Total funding allocated and committed to these projects since 1998 is approximately $1 million. Many of the projects are directly related to sustainable agriculture; others support tourism development and environmental improvements. Examples of the agriculture-related projects include organic blueberry production, grass-legume evaluation, corn population/row width, nitrogen timing on edible beans, and direct marketing of farm products/whole farm cooperative.

b. Impact

Through the ongoing process of partnership and dialog, a number of initiatives —applied research projects and educational programs have been identified, funded (often with SARE grants), and launched. For example, the Alternative Swine Task Force has been in action since 1998. It has established a database of over 230 people with knowledge and expertise in alternative swine production systems and publishes an Alternative Swine Newsletter six times a year. The task force was involved in developing an alternative swine production facility at the Experiment Station's Morris Research and Outreach Center. Other activities during 1999-2000 include a public TV series ("Pigs, Pork, and Prosperity"), an Alternative Swine Marketing Workshop, and publication of a Swine Source

Book—a summary of research and popular press information on alternative swine production systems. In addition, three proposals for external funding of alternative swine production research were written—one to be a multi-state, multi-university, interdisciplinary effort.

Overall, MISA sponsored 27 educational workshops, seminars, and conferences during 1999-2000. Nearly 900 people participated in these events. Topics were varied—e.g., The New Language of Farm Policy: Engaging Consumers, Labor, Environmentalists, and Farmers in Shaping the Future of Food and Agricultural Systems; The World Trade Organization: How Can the WTO Affect Agriculture?; U. S. Farm Policy and Family Farming; Federal Farm Policy and Its Impact on Minnesota Dairy Farmers; Demand-Driven Agriculture: Value-added Labeling and Quality Assurance; and Enhanced Landscape, Human, and Animal Health Symposium.

Four team projects were funded internally during 1999-2000: Assessing the Nutritional Impact of Sustainable Food Systems: Urban and Rural Linkages; Farm Sustainability and Survivability in Minnesota's Red River Valley: Lessons From Adaptive Production and Business Management Strategies for Farmers; PastureLand: Marketing Antibiotic and Hormone-Free, Grass-Based Milk Products; and Medicinal Herbs: Creating a Network of Growers and Herbalist Health Care Providers.

Since MISA was organized in 1992, the less than $250,000 invested annually by COAFES has been leveraged by an additional $350,000 in annual state appropriations, plus $350,000 in grants and endowments for the School of Agriculture Chair in Agricultural Systems and undergraduate research. In addition, MISA played an important role in obtaining $1.2 million annually in new state funding for the Sustainable Regional Partnerships. MISA, in turn, has supported 14 different teams of farmers, faculty members, students, and others who are addressing the issues of sustainability that have been identified. MISA staff have assisted individuals and groups in obtaining SARE grants. In addition, MISA has provided nearly $715,000 in competitive grants to support team projects and 113 faculty members and Extension staff, as well as numerous graduate and undergraduate students, have been involved in developing solutions to specific sustainable agriculture/forestry issues. Much of this information has published in Extension publications which are available to the public.

MISA's impact overall has not yet been assessed, but the testimonials from the wide variety of people who've been involved with or served by MISA indicate that a more formal assessment would likely reveal that knowledge about and development of workable sustainable systems has been greatly enhanced by MISA's efforts in the nine years it has been in existence.

References: For more information, go to the Minnesota Institute for Sustainable Agriculture website http://www.misa.umn.edu

Small farm viability:
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=420

c. Source of Federal Funds: Smith-Lever 3b&c

d. Scope of Impact: Primarily State-Specific but many website "hits" and inquiries come from outside of Minnesota.

Goal 2. A safe and secure food and fiber system.

Overview:

We reported on three themes under Goal 2. We combined the Food Quality and Food Safety themes—although research projects may be designated in such categories, our Extension programs often address both of these topics simultaneously. CSREES designated Food Safety as a joint or integrated research and Extension theme and Food Quality and Food Security as Extension themes.

Much of what we do in terms of Extension programming in food security is actually in nutrition education for low-income individuals and families, i.e., the Expanded Food and Nutrition Education Program (EFNEP) and the Food Stamp Nutrition Education Program (FSNEP). Therefore, this theme reports that work and uses data that was already submitted to the Food and Nutrition Service, USDA.

Inputs and Outputs: Extension staff indicated that they had provided food quality and safety information to more than 14,600 persons during 1999-2000. Some of these persons were consumers (persons not in the EFNEP/FSNEP), some were livestock producers, and some were food and seafood processing entrepreneurs, managers, and employees. Staff indicated that they had invested about 2.5 FTEs of professional time in this effort and spent slightly more than $123,000 to deliver these programs. Fees were sometimes charged for industry programs and $30,500 was obtained in grants to support this programming.

In addition to answering over 4,600 consumer phone calls and providing a large number of other one-on-one consultations (e.g., testing pressure cooker gauges), educators prepared teaching plans and materials (including youth-oriented materials for elementary and secondary students), taught many group sessions of various kinds, trained food preservation volunteers, wrote newspaper and newsletter articles, distributed newsletters, placed exhibits at fairs, field days, and the like, and placed or updated food quality and safety information on websites.

Outcomes: Food quality and safety outcomes are difficult to assess. Oftentimes, they are events avoided, such as incidents of food poisoning, rather than positive economic, social, or environmental changes. Getting homemakers, students, quantity cooks in nonprofit organizations, and food processing managers and employees to recognize dangerous food handling and processing practices and adopt safer ones is extremely important in terms of preventing possible disasters from happening. Educators often indicated a good deal of success in raising the consciousness levels of the audiences that they worked with. The degree of success depended on the specific audience and their motivation to change—whether desirable in terms of quality and/or safety, or required by law, as in the case of food and seafood processing industry people.

Impacts: These are difficult to determine, especially when the intent of the programs is largely preventive. Given the kinds of potential disruptions—illnesses, lost time from school or work, even deaths—from outbreaks of food poisoning, transmission of disease via contaminated or improperly processed foods, the potential impacts of food quality and safety programs could be sizeable, but little attempt has been made to precisely measure them.

Accomplishments: A wide variety of research work is dealing with current food quality and safety issues. Extension educational programs are offered to a wide spectrum of audiences. Program participants have indicated that they do gain awareness and understanding of the importance of using food handling and processing methods that will maintain quality yet avoid the danger of contamination with or growth of dangerous substances that threaten their health and perhaps even their lives. Given public concern about the quality and safety of food, these programs are addressing significant issues.

Key Theme: Food Quality (EXTENSION), Food Safety (JOINT)

AES Plan of Work: Goal 2: To ensure an adequate food and fiber supply and food safety
through improved science-based detection, surveillance, prevention, and education.
Extension Plan of Work: Goal 2: A Safe and Secure Food and Fiber System

a. Description

The quality and the safety of the food we eat is of intense concern to people everywhere. This is also a complex and important issue attracting the efforts of the Minnesota Agricultural Experiment Station and the University of Minnesota Extension Service. The federal government has mandated increased sanitation training and stricter controls for parts of the food processing industry, creating a training component that Extension addresses. New methods are being originated by Experiment Station researchers for detecting and reducing food-borne pathogens on the products being processed and marketed, be they fresh produce, dairy and poultry products, or meats.

b. Impact

Experiment Station funded research is looking at several ways to retard growth of populations of food-borne pathogens. These include testing applications of anti-microbial peptides and proteins on fresh produce and in fruit juices, developing a genetically based vaccine to reduce the incidence of salmonella bacteria in poultry in order to reduce its subsequent transmission to people via eggs and poultry products, feeding non-pathogenic bacteria to cattle to compete with and prevent colonization in cattle of pathogenic *E. coli* bacteria, use of benign bifidobacteria and other microorganisms to deprive pathogenic bacteria of essential growth nutrients, and isolation of new natural food preservatives from sources such as pozal, an indigenous Mexican/Mayan medicinal corn fermentation.

Other Experiment Station research focuses on developing a new differential agar to improve detection of salmonella in foods, and bioluminescence technology to to aid the food industry in rapidly evaluating the sanitary conditions within a processing environment. The latter technique is expected to be widely adopted across the food industry over the next five years, because it is cost competitive but considerably faster and more reliable than traditional methods.

Computer software is being piloted to improve dairy cattle and bulk raw milk management so as to avoid or improve control of pathogens and veterinary medical residues.

Basic research is also being conducted on processed food shelf life, understanding the thermal behavior of proteins in dairy products, such as commercial whey and buttermilk, identifying the genetic source of a bacterial defense that might be used to combat bacterial viruses (phage) in the cheese industry, and methods for encapsulating and extending the shelf life of flavor-carrying esters.

Extension food quality and safety educational activities are conducted via individual contacts, group presentations, food safety certification workshops, on-site visits and facility audits, media releases, etc. Many of the activities have addressed safe food handling practices. The audiences reached include consumers, livestock producers, food entrepreneurs and managers, other food processing industry employees, and "occasional quantity cooks"—nonprofit volunteers who sometimes prepare meals in quantity.

Extension staff estimated that they reached over 14,600 persons with food quality and safety education in 1999-2000. About 48% of the people involved in educational activities changed one or more food safety behaviors as a result. Swine producers participating in the Pork Quality Assurance Program sold about 8% of the hogs marketed in Minnesota last year.

Three courses on seafood hazards were sanctioned by organizations such as the Association of Food and Drug Officials and attended by individual entrepreneurs and personnel from more than a dozen companies. State seafood inspectors and seafood processors received HACCP certification. A Commercial Thermal Processing and New Food Entrepreneur Workshop is held annually for line workers in the canning industry. In all, food safety and quality solutions were taught to 354 food processors, 66 crop producers, 29 fresh produce growers, 517 livestock producers, 482 for-profit food services and retail grocers, and 127 non-profit community organizations.

More than 1,000 articles were written and released or distributed to consumers and over 120,000 copies of newsletters were distributed. 100 exhibits and workshops were presented at county fairs and Research and Outreach Center field days. Over 5,000 food safety publications were also distributed, and more than 4,600 individual consultations were logged by Extension staff. 89 new food preservation volunteers were trained to provide information to consumers.

One follow-up evaluation showed that 56 percent of the participants in one program made the behavior change taught, such as using a food thermometer when processing potentially hazardous foods, some or most of the time. Use of temperature gauges in lieu of subjective observation was initiated as standard practice by nearly 90 percent of participants in another program.

References:

AES Research Projects: MIN-18-G03, MIN-18-G04, MIN-18-018, MIN-18-024, MIN-18-040, MIN-18-042, MIN-18-054, MIN-18-055, MIN-18-062, MIN-18-072, MIN-18-074

http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=385
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=123
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=256
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=88
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=182

c. Source of Federal Funding: Hatch and Smith-Lever 3b&c

d. Scope of Impact: Integrated Research and Extension and Multi-State Extension (AR, CA, FL, IA, IN, KS, MO, NE, ND, PA, SD, TX, WI)

Key Theme: Food Security (Extension)

Extension Plan of Work: Goal 2: A Safe and Secure Food and Fiber System

a. Many low-income families, especially those making the transition from welfare to work, do not have a secure food supply. Paying high rents and the high costs of utilities, transportation to work, child care, etc. all too often mean that there isn't enough money left to buy food, especially a sufficient quantity and variety that provides a balanced, nutritious diet. Helping individuals and families learn to stretch their food dollars so they can afford to eat properly and not run out of food each week or month is critical. Nutritional research has demonstrated over and over that inadequate, unbalanced diets are linked to low productivity and poor health over the long-term. Minnesota has two programs in operation that provide nutrition education to low-income individuals and families—the Food Stamp Nutrition Education Program (FSNEP) and the Expanded Food and Nutrition Education Program (EFNEP).

b. Impact

During 1999-2000, 90,781 households in Minnesota were receiving food stamps. FSNEP made over 772,000 information contacts with food stamp recipients/people eligible for food stamps (via distribution of informational materials) and nearly 72,000 developmental contacts (via brief teaching episodes). 27,237 persons, well over the target of 20,346, were taught all or some of the nutritional program (in a group, one-on-one, or via a staffed exhibit). Over 70% of the program participants (those who taught) were youth up to age 18, 16% were adults in families, and the remaining 13% were seniors 55+ years old. In terms of racial/ethnic group distribution, participants were 13% African-American, 6% Asian, 65% Caucasian, 11% Hispanic, and 5% American Indian.

From 19% to 29% of FSNEP participants during 1999-2000 improved their food security (19% of the seniors, 22% of the youth, and 29% of the adults). From 32% to 41% changed their food shopping behavior (32% of the seniors, 32% of the adults, and 41% of the youth). Between 22% to 54% of the program participants changed one or more food safety behaviors (22% of the seniors, 32% of the adults, and 54% of the youth). In terms of improving diet quality, from 34% to 44% of program participants reported at least one positive change (34% of the adults, 37% of the seniors, and 44% of the youth).

EFNEP enrolled 2,896 new families during 1999-2000, bringing the total number in the program to 3,3ll. These families included 10,343 persons, a high percentage of them children 8 years of age and younger. Over half of the EFNEP participants also were enrolled in one or more other food assistance programs. Fifty-six percent of the EFNEP homemakers completed the program during 1999-2000; 32% dropped out and 13% were still in the program at the end of the fiscal year.

Although the impact of FSNEP and EFNEP in Minnesota hasn't been precisely measured, it is clear from evaluation studies in other states that the benefits of these programs are far-reaching, both in terms of improved health of participants and potential cost savings in Medicaid, Medicare, and other health-related public assistance.

References:

http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=821
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=822
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=1378
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=286

c. Source of Federal Funds: Food and Nutrition Service, U. S. Department of Agriculture, through the Minnesota Department of Human Services Food Stamp Program.

d. Scope of Impact: State Specific

Goal 3. A healthy, well-nourished population.

Overview:

We reported against one joint or integrated research and Extension theme—human nutrition. However, this theme embraces a wide spectrum of nutrition programs, each targeted to a specific type of audience. The commonality is the attempt to get each audience to better understand nutrition and change their eating habits, in order to better maintain their health.

Inputs and Outputs: Nutritional research and educational programming are closely linked. Consumers are often frustrated by the plethora of information on diet and health—much of it contradictory. However, there is growing public recognition of the connection between a well-balanced diet and maintaining good health/preventing disease, so many consumers are interested in new information. Extension is generally viewed as a reliable source of information—especially when it is linked to university research.

Educators estimated that they'd reached close to 25,000 people with nutrition and health information during 1999-2000. In order to do this, they invested about 2.5 FTEs of time and about $22,500 in program costs. Extension staff also reported receiving $238,000 in grant funds to support their work. They also collaborated with a number of organizations and agencies, e.g., the Childcare Providers Association, tribal colleges (in Minnesota and Wisconsin), technical colleges, churches, hospitals, human service and public health departments, community education programs, the Minnesota Council on Aging, and numerous others.

Outcomes: Outcomes varied with the specific program. For example, 80% of participants in a program on reducing fat, salt, and sugar in favorite recipes made plans to reduce the amount of fat in their recipes or use substitutes, such as yogurt or applesauce, instead. In another program on increasing fruit and vegetable intake, participants indicated practice changes in the range of 44% to 76%. Educators also reported that they had acquired new nutrition knowledge and skills themselves from variety of sources—professional conferences and seminars, reading professional journals and newsletters, websites, Extension staff development, etc.

Accomplishments: Continuing to provide credible research information and Extension programming in nutrition and health is extremely important. Several Extension staff indicated that they'd been contacted in their localities to conduct programs, sometimes in offices and workplaces during lunch breaks and the like. This indicates that Extension is viewed as a resource for credible, research-based information. Likewise, the connection between campus-based faculty and tribal colleges has opened the door to providing training for Native Americans in nutrition and health, thus enabling them to better address critical issues, such as the high incidence of diabetes, in the cultural context of the Native American community.

Key Theme: Human Nutrition (JOINT)

AES Plan of Work: Goal 3: Through research and education on nutrition and development of more nutritious foods, enable people to health promoting choices.
Extension Plan of Work: Goal 3: A healthy, well-nourished population

a. Description

Americans are simultaneously obsessed with physical appearance yet beset with poor eating habits that lead to obesity and/or insufficient nutrition, which may also contribute to human disease. Educating people to make appropriate and nutritious food choices is an important focus of University of Minnesota Extension Service programming. The Minnesota Agricultural Experiment Station provides current information for these

educational efforts and funds several areas of research that push the boundaries of our current knowledge base on healthy, life sustaining nutrition.

b. Impact

Significant Extension effort has been made to promote healthful eating among many population segments: Seniors, diabetics, adult women, parents, child care providers, Native Americans, young children, pre-teens, low-income families, new immigrants, etc. During 1999-2000, close to 25,000 people were participants in workshops and other group sessions on nutrition, diet, and health. In addition, educators provided more than 3,400 personal consultations to people who wanted assistance with health and nutrition issues. Overall, an estimated 18% of the group or individual participants changed at least one significant health-related behavior as a result of the information they gained.

However, one program, "Boost Your Fruit and Vegetable Intake", reported that 56% of the participants increased their consumption of fruits from 1-2 servings per day to 2-3 servings per day. 44% increased their consumption of vegetables from 1-2 servings per day to 2-3 servings per day. As a result, 44% of these participants are eating more vitamin A-rich fruits and vegetables daily; 50% are eating more vitamin C-rich fruits and vegetables daily; 76% are eating more high-fiber fruits and vegetables daily; and 65% are eating more cabbage-cruciferous vegetables every week.

Educators also reported placing 625 columns in newspapers, more than 21,300 articles in newsletters, and nearly 400 pieces of nutritional information in other kinds of publications during 1999-2000. They distributed nearly 200,000 copies of newsletters and over 9,500 publications containing information on nutrition, diet, and health.

One of the newer nutrition, diet, and health programs is called "Woodlands Wisdom". The food science and nutrition faculty member who leads this program is collaborating with eight Tribal Colleges in Minnesota and Wisconsin to increase awareness of diabetes care and prevention through diet among Native Americans. Part of the effort involves establishing academic degree programs in food and nutrition at each Tribal College.

An Experiment Station research project is attempting to identify culturally appropriate interventions to prevent diet related obesity. The research is specifically aimed at the rapidly increasing rates of obesity among minority populations. Another intervention study is finding some positive results from nutrition education provided within an outpatient cardiac rehabilitation program involving 104 adults. Significant increases in fruit and vegetable consumption by 250 suburban first graders from a 5-A-Day Challenge nutrition education effort have also been documented.

Specific Experiment Station funded research projects looked at the relationship between nutrition and important diseases. The link between cardiovascular disease, the leading cause of death in the U.S., to specific dietary substances is being examined in its relationship to the development of high blood pressure. The impact of conjugate linoleic acid, a component of ordinary butter, on reducing the risk of colon cancer is being examined with the possible goal of concentrating the compound to achieve effective dietary levels. A novel dietary fiber that can be easily incorporated into drinks is being studied, as well as the potential for whole grain fibers to alter antioxidant measures in the body.

Research is looking at the interactions between diet and reproductive hormones that contribute to chronic diseases, such as breast cancer, osteoporosis, and heart disease, with the goal of formulating specific dietary recommendations for their prevention.

Basic research is trying to understand how non-pathogenic bacteria can be maintained and encouraged as a way to limit pathogenic bacteria's ability to colonize the intestine. Another project is trying to establish measurement methods that can be used to

examine how the synthesis of body fat from dietary sugars differs from that created from the consumption of less processed carbohydrates such as starches and fats.

References:
AES Research Projects: MIN-16-024, MIN-54-G01, MIN-54-026, MIN-54-029, MIN-54-034, MIN-54-048, MIN-54-060, MIN-54-064, MIN-54-069
http://www.extension.umn.edu/listing.html?topic=9&subcat=68
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=381

c. Source of Federal Funding: Hatch and Smith-Lever 3b&c

d. Scope of Impact: Integrated Research and Extension and Multi-State Extension (MO, ND, WI)

Goal 4. Greater harmony between agriculture and the environment.

Overview:

We reported on four key themes under Goal 4, one Extension theme (Pesticide Application) and three joint themes (Soil Erosion, Soil Quality, and Water Quality). The Sustainable Agriculture key theme was covered under Goal 1, in conjunction with Small Farm Viability.

Four of our 1999-2004 Plan of Work Goal 4 Programs appeared to fit with the four CSREES Goal 4 key themes: Program 4, Soil Nutrient and Water Management; Program 5, Improving Water Quality in the Minnesota River Basin; Program 6, Sustainable Natural Resource Management and Stewardship; and Program 7, Environmental Learning and Leadership. Programs 1 and 2, Sustainable Agriculture and Increasing and Maintaining Diversity in Agricultural Systems, respectively, were reported under Goal 1 key themes. Program 3, Animal Waste Management, Program 8, Fisheries and Wildlife Habitat Management, and Program 9, Natural Resources Information Service are reported in the "Other" category. Again, at the end of each theme description we have indicated URLs that connect the reader to relevant websites and/or research or Extension program entries in the Minnesota Impacts! database.

We believe that the programs reported under Goal 4 are truly aimed at achieving "greater harmony between agriculture and the environment. In Minnesota, agroforestry is a growing form of production with considerable economic and environmental potential so we have reported this effort as well. We are also are pleased with the degree of involvement of the non-farm public, including children in schools and 4-H clubs, in environmental learning and leadership. Agricultural producers and timber industry managers and employees appear to be progressing toward a better balance between economics and taking care of the environment. And water quality improvement efforts focus not only on reducing contamination of Minnesota's streams and 10,000+ lakes from crop and livestock production, but from lakeshore residents and suburban/urban dwellers as well. While specific impacts of many programs have yet to be measured, they appear to be accomplishing what they were designed to do, in terms of outcomes and impacts.

Inputs and Outputs: More than 45,000 persons participated in the programs related to the key themes under Goal 4. They included elementary/secondary students and their teachers, 4-H members and their leaders, livestock producers, sustainable agriculture farmers, private woodland owners, and representatives of a wide spectrum of organizations and agencies with a stake in the relationship between agriculture and the environment. The total direct costs of delivering the programs related to Goal 4 themes was estimated at over $174,000 but these costs were offset by participant fees for some professional development programs and nearly $179,000 in grants.

Outcomes: Outcomes varied by program. For livestock producers, a significant outcome was adopting new animal waste management practices—989 did. In soil nutrient and water management, 544 farmers adopted nutrient management and other Best Management Practices and 350 consumers began to better control their use of fertilizer and other chemicals on their lawns. In water quality, the major outcome was also adoption of Best Management Practices by farmers in the Minnesota River Basin (over 3,000) and lawn care BMPs by consumers (over 1,200), but also the number of businesses and municipalities that buffered parking lot and street run-off (21), began using other than salt-based ice removal products (31), and the number of local governments that reviewed their use of herbicides on road right-of-ways (8). In environmental learning and leadership, outcomes were the number of teachers and other youth educators encouraging their students to learn about environmental issues (320), the number of students who did gain knowledge and change their attitudes, and the number of students, especially minority youth and young women who became sufficiently interested in natural resources and environmental education to consider this field for a future career (488).

Impacts: In most programs impacts weren't measured but the outcomes that were indicated that these programs appear to be having a significant positive environmental impact. A greater effort will be made in subsequent years to measure impacts.

Accomplishments: Progress is being made in getting agricultural producers to be more aware of the impact of their operations on the environment. Likewise, progress is being made with consumers of lawn care products and lakeshore residents, teachers and students, businesses, and municipalities and local governments. Collaborations are being organized or strengthened to call attention to environmental issues and to work together more effectively to avoid duplication of effort. Outcomes indicate that Extension programs are effecting positive change, although greater effort will have to be made to measure the impacts of these programs.

Key Theme: Pesticide Application (EXTENSION)

Extension Plan of Work: Goal 1: Program 5, Crop Production and Management Strategies; Program 8, Food Crops. Goal 4: Program 4, Soil Nutrient and Water Management; Program 5, Improving Water Quality in the Minnesota River Basin

a. Description

Pesticide Applicator Training is an important Extension educational contribution in terms of keeping applicators—commercial and private—aware of the dangers associated with pesticide use and application, both for themselves and others. Extension develops training materials for private applicator workshops, offers private applicator training workshops in all Minnesota counties, and conducts the testing for certification or re-certification. Extension also assists in re-certifying commercial pesticide applicators by offering workshops, correspondence courses, and other educational efforts.

In addition to applicator certification, Extension in Minnesota has developed the MN: HELPS (Minnesota Health, Environmental, and Pesticide Safety Program) to reach a variety of public audiences of all ages. MN: HELPS is a partnership effort--Extension working with other parts of the university, several state government agencies, school districts, and others to provide information on pesticide use and management in Minnesota's K-12 public and private schools. This collaborative effort has facilitated discussions and has been a significant resource to members of the State Legislature in addressing the issue of pesticides and the environment, in addition to developing a statewide educational program.

b. Impact

MN: HELPS/PAT has designed a new private applicator, stored grain fumigation endorsement program which will be implemented in March 2001. A new PAT mosquito manual was published in March 2000 and significant work was accomplished toward creating new national wood treatment and structural/building pest PAT manuals. A competitive Agricultural Distance Education Consortium (ADEC) grant furthered a multi-state effort with Extension Services in Arizona, Washington State, and Virginia to design and deliver PAT via distance education. This effort is working towards creating a national level consortium with industry, Extension services, state and federal government agencies, tribal governments, and Canada to create and deliver internet-based PAT. Minnesota is providing leadership for this effort which now has been granted a second year of funding from ADEC.

Another significant PAT effort in 2000 emphasized lakeshore/wetland vegetation management. This program was targeted to workers engaged in professional

landscape services. Another key audience is farmers and others involved in stored grain management. These workshops addressed pesticide drift as well as toxicology and other critical topics.

This also was the third year for the nationally unique Local PAT for commercial turf and landscape pesticide applicators. This program continues to receive the highest evaluation ratings of any targeted PAT. Local PAT is taught by specially-trained Master Gardeners who teach prepared training modules to small, learner-friendly groups. Local PAT is highly successful because it utilizes a sophisticated cooperative adult learning and discussion instructional design. As a result, over a third of the commercial turf and ornamental applicators now choose to re-certify via Local PAT.

A total of 8,775 of the 23,626 private pesticide applicators in Minnesota were initially trained or re-certified in 2000. Commercial pesticide applicator certifications in 2000 totaled 18,424 across all licensing categories (most commercial applicators are licensed in more than one of 18 different specialized categories).

References:
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=828

c. Source of Federal Funds: Smith-Lever 3d

d. Scope of Impact: State Specific, but potentially multi-state because of Lake Superior and multi-state river basins subject to degradation from pesticides and other chemicals.

Key Theme: Soil Erosion (JOINT)

AES Plan of Work: Goal 4: Program 5, Water Resource Management
Extension Plan of Work: Goal 4: Program 4, Soil Nutrient and Water Management; Program 5: Improving Water Quality in the Minnesota River Basin; Program 6, Sustainable Natural Resource Management and Stewardship

a. Description

a. Soil erosion and water quality are major issues in Minnesota. Several research projects and Extension educational programs are addressing soil erosion/water quality issues. Research includes looking at management of eroded soils for enhancement of productivity and environmental quality and the impact of land and water management decisions on people and their environment.

Researchers have learned that fall no-till after soybeans and chisel plowing after corn, followed by light secondary tillage in the Spring is an effective system for minimizing sediment and nutrient losses in lake-draining watersheds. They also discovered that corn and soybeans managed with an aggressive soil and water conservation approach resulted in pollution levels comparable to those from permanent cover alfalfa.

In addition, other researchers are looking at the soil erosion/water quality impacts of agroforestry versus cultivated crops. They have found that the water yields from forested systems are generally lower than from cultivated crops or open fields. Young hybrid poplar stands were particularly effective in reducing water flow and also export fewer nutrients to groundwater and streams. Streambank stability was higher, too, in comparison with crops or grasses, reducing erosion and sediment loads in rivers.

Extension has incorporated research information in crop production and management programs and promoted the use of Best Management Practices in agriculture and

agroforestry. For example, The "River-Friendly Farmer" Recognition Program has been highly effective in making farmers more aware of the environmental impact of their operations and getting them to adopt Best Management Practices to reduce soil erosion and improve water quality.

b. Impact

During 1999-2000, nearly 8,500 farmers participated in 158 educational events and activities that featured soil nutrient and water quality management, manure management, irrigation management, conservation tillage, and agroforestry, etc. In addition, educators reported consulting individually with over 3,300 farmers on soil erosion and water quality-related issues. One hundred and twenty-two training sessions were held for crop consultants and other agricultural professionals who work with producers. Nearly 650 newspaper and newsletter articles were published and close to 250 radio broadcasts made. An estimated 3,000+ Minnesota River Basin farmers have adopted best management practices that reduce soil erosion and agricultural non-point pollution as of this year.

References:
AES Research Projects: MIN-25-023, MIN-25-035, MIN-42-035
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=1394
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=190
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=28
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=236

c. Source of Federal Funds: Hatch and Smith-Lever 3b&c

d. Scope of impact: Integrated Research and Extension

Key Theme: Soil Quality (JOINT)

AES Plan of Work: Goal 4: Program 5, Water Resource Management
Extension Plan of Work: Goal 4: Program 4, Soil Nutrient and Water Management

a. Description

Improving soil quality but avoiding soil erosion and degraded water quality is a delicate balancing act that researchers are exploring. They found that incorporating high levels of plant residue in artificially drained clay/loam soils resulted in increased sediment and sediment associated nutrient (particulate P) losses via surface runoff. Tillage systems that don't incorporate surface residues and amendments, including manure applications, are more vulnerable to soluble nutrient losses in both surface runoff and subsurface drainage. These opposing impacts of minimizing sediment and associated soluble nutrient losses while also striving to reduce surface and groundwater pollution may pose a dilemma when considering high residue tillage alternatives for artificially drained soils, in place of conventional tillage systems.

Research and Outreach Center Field Days and Extension Programs continue to emphasize adopting/adapting conservation tillage systems and Best Management Practices that will help to improve soil quality and reduce erosion and water pollution from runoff. However, research demonstrates that especially in artificially-drained soils, the choices that crop producers have to meet multiple goals may not be completely clear when conflicting outcomes are considered.

b. Impact
During 1999-2000, nearly 8,500 farmers participated in 158 educational

events and activities that featured soil nutrient and water quality management, manure management, irrigation management, conservation tillage, and agroforestry, etc. In addition, educators reported consulting individually with over 3,300 farmers on soil erosion and water quality-related issues. One hundred and twenty-two training sessions were held for crop consultants and other agricultural professionals who work with producers. Nearly 650 newspaper and newsletter articles were published and close to 250 radio broadcasts made. An estimated 3,000+ Minnesota River Basin farmers have adopted Best Management Practices that reduce soil erosion and agricultural non-point pollution as of this year.

References:
AES Research Project: MIN-25-034
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=1029
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=3

c. Source of Federal Funds: Hatch and Smith-Lever 3b&c

d. Scope of Impact: Integrated research/Extension

Key Theme: Water Quality (JOINT)

AES Plan of Work: Goal 4: Program 1, Maintaining Forest and Natural Resources; Program 5, Water Resource Management.
Extension Plan of Work: Goal 4: Program 4, Soil Nutrient and Water Management; Program 5, Improving Water Quality in the Minnesota River Basin; Program 7, Environmental Learning and Leadership

a. Description

A number of Minnesota research efforts are addressing various facets of the water quality issue, e.g, pollution causes and mechanisms, biodegradable organisms to deal with chemical pollutants, micro-irrigation and other management strategies, remote sensing as a means of updating forest cover and land use maps and assessing storm damage, software for land use decision making, environmentally friendly paper making processes, and policy options to promote desirable environmental goals. For example, researchers are modeling preferential flows in soils and in groundwater aquifers to determine how rapidly chemicals that are intentionally or accidentally spilled move in the environment. Knowledge of preferential flows and their inclusion in pollution models will enable better prediction of what happens to chemicals when spills occur. Studies of biodegradable plasmids and other microorganisms are determining whether these substances might be useful for cleaning up environmental contamination of surface and groundwater from pesticides and other chemicals.

Other researchers are searching for cost-effective policy approaches for reducing nonpoint agricultural pollution from soil sediment, nutrients, and chemicals in the Minnesota River Basin, a critical agricultural production and environmentally-sensitive region. They found that a targeted approach to selecting production practices and specific regions could be effective in minimizing the social costs of reducing phosphorus levels by 40% in the Minnesota River. Social costs can be cut by $50 million annually if practices and regions are targeted for the greatest returns. Tradeable permits are another policy option that might be used locally to control nitrate pollution of ground and surface water. And with the large proportion of forested land in Minnesota, management of forest water quality via an ecosystem approach to the development and testing of Best Management Practices and policy

options, including decision making tools, is critical to facilitating more localized policy decision making.
As useful information is generated from the research, it is incorporated in Extension programming in sustainable natural resource management that reaches a wide variety of audiences. For example, Best Management Practices are taught to agricultural producers and woodland owners. Shoreland workshops train local natural resource professionals, lake association leaders, nursery and landscape professionals, local government officials, Shoreland Volunteers, and Master Gardeners in practices that minimize runoff/pollution. Youth are involved in learning about natural resource management and stewardship via 4-H/Youth Development activities—resident camps, day camps, and natural resource-related demonstrations and projects. People engaged in timber harvesting are taught newer resource-conserving harvesting technologies and techniques.

Partnerships with other agencies and organizations are crucial in planning and delivering natural resource management information. An estimated 43 such partnerships with entities such the Natural Resources and Conservation Service, the Minnesota Department of Natural Resources, county governments, local Soil and Water Conservation Districts, lake associations, and numerous natural resources and conservation organizations have been organized.

Nearly 3,700 adults participated in 120 different natural resource management workshops and other activities during 1999-2000 and 56 Shoreland and Master Gardener volunteers contributed to the effort. Close to 2,100 youth were involved. Extension staff provided over 3,100 individual consultations on natural resource management. Staff also used newspaper and newsletter articles, radio broadcasts, publications, and the Internet to disseminate information.

b. Impact

Extension staff estimates that 85% of the participants in storm recovery and tree planting workshops have adopted one or more recommended practices. About half of the participants in Sustainable Forest Management workshops have adopted at least one new practice. An estimated 40% of the agricultural producer workshop participants are now using one or more recommended Best Management Practices.

References:
AES Research Projects: MIN-12-047, MIN-14-G04, MIN-14-089, MIN-25-G04, MIN-25-019, MIN-25-055, MIN-42-025, MIN-42-037, MIN-42-040, MIN-42-042, MIN-43-065
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=1374
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=1412
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=2
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=190
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=236
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=28
http://www.extension.umn.edu/mnimacts/impact.asp?projectID=419

c. Source of Federal Funding: Hatch and Smith-Lever 3b&c

d. Scope of Impact: Integrated Research and Extension, but anything related to water quality in Minnesota impacts the entire Mississippi River basin, the Red River basin, and other states bordering Lake Superior, etc.

Other:

Extension Plan of Work: Program 3, Animal Waste Management

a. Description

Animal waste management is a critical issue for the livestock industry in Minnesota. Enforcement of a state feedlot ordinance has increased the need for education and the development of manure management plans for livestock operations. Odors and the impact of livestock production on water quality are concerns of neighbors and environmentalists. Recognizing the importance of these issues, researchers and Extension staff have been working to develop new programs and tools to assist livestock producers in complying with state and federal regulations.

b. Impact

In order to determine needs for applied research and to develop new programs, Extension staff have been partnering with livestock producer organizations (the Minnesota Cattlemen's Association, Minnesota Pork Producers, etc.) and government agencies and their local representatives (e.g., Natural Resources Conservation Service, Farm Service Agency, Minnesota Pollution Control Agency, soil and water conservation districts, county environmental services departments, feedlot officers, and private consultants). As a result, close to 200 local programs on animal waste management and cropping systems were offered during 1999-2000. Composting of dead animals was also addressed in some programs. Participation in all programs and activities related to animal waste management totaled nearly 6,000.

In addition, educators reported providing individual waste management/manure disposal plan consultations with 945 livestock producers. Tools that faculty developed—a farmstead odor database and Center for Farm Financial Management software for developing manure application plans—were used. In addition, staff prepared five animal waste management-related publications and distributed over 2,600 copies. They also published 70 newspaper articles and 17 newsletters on animal waste management topics. Over 20,000 copies of newsletters with animal waste management information were distributed. Eight items of Internet accessible information were prepared.

Educators indicated that 989 livestock producers prepared new manure management plans and adopted new animal waste management practices as a result of program participation and/or personal consultations.

References:
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=1029
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=211
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=358
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=255

c. Source of Federal Funding: Smith-Lever 3b&c

d. Scope of Impact: Multi-State Extension (MO, NE)

Extension Plan of Work: Program 8, Fisheries and Wildlife Habitat Management

Although this program was placed in the 1999-2004 Extension Plan of Work, in reality it is an Agricultural Experiment Station research project (MIN-41-090). This project was

designed to address the pressing nuisance of dealing with Canada geese, especially in the metro area. The "outreach" aspect addresses the problem of migrant goose management at the Minneapolis-St. Paul International Airport.

Extension Plan of Work: Program 9, Natural Resources Information Service

a. Description

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 assistants answer phone inquiries about resource management and direct callers to sources of materials that will provide additional information. Factsheets and other non-copyright protected materials are sent to callers when appropriate.

b. Impact

Only one department, Forest Resources, kept records on the volume of calls received and answered. During 2000, 1,283 phone calls were received—an increase of 459 calls from the previous year--and 3,138 visits were recorded on the Forest Resources website. Most calls were answered directly; a few were referred to the Yard and Garden Line or to other sources within the University. The nature of the calls reflect a variety of interests, e.g., from construction damage to trees to diseases and insect infestations to Christmas tree production. In addition to answering phone calls, the graduate assistants also supported Forest Resources Extension specialists with Extension program development activities.

c. Source of Federal Funding: Smith-Lever 3b&c

d. Scope of Impact: State-Specific

Goal 5. Enhanced economic opportunity and quality of life.

Overview:

We reported on eight key themes under Goal 5, although we did not have a program or any information to provide on one that we were assigned, Workforce Preparation—Youth and Adult. We also had one program (1. Financing and Providing Public Services) in our 1999-2004 Extension Plan of Work that was inactive during 1999-2000. The faculty member who developed that program left the University of Minnesota and was only recently replaced. We expect that program activity will resume on Financing and Providing Public Service. Of the seven key themes where we have active programs to report, five are Extension themes and two are joint themes.

Goal 5 themes and programs cover a broad spectrum of activities focused on the broad and nebulous goal of "enhanced economic opportunity and quality of life". Nevertheless, a number of the programs we've reported are indicating outcomes that ultimately will achieve that goal although their major weakness at this point is a lack of defined impact. For example, the agricultural finance management area continues to provide essential assistance and tools for families who are trying to stay viable in the risky business of farming and the professionals who are trying to help them. Likewise, the Family Resource Management Program is making a major effort to assist individuals and families transitioning from welfare to work. The Rural Response Intiative (ended 6/30/00) that was reported under "Impact of Change on Rural Communities" was a major effort in responding to the rural social and economic situation in Minnesota. Rural Response was recognized nationally in 2000 as an example of an outstanding program. In sum, Goal 5 encompasses some of our best efforts to truly extend the resources of the University to work with individuals, families, and communities on their most critical issues.

Inputs and Outputs: Because Goal 5 is so broad and the programs it encompasses so diverse, these themes account for a lot of inputs and outputs. Over 100 FTEs of professional and paraprofessional time are invested in these programs. Program costs are estimated at over $994,000 and partially offset by participant fees which brought in nearly $480,000, plus grants totally over $204,000. Program participation is estimated to be nearly 352,000 during 1999-2000. Other major outputs are reflected in numbers of educational events and activities, numbers of publications prepared or revised and distributed, number of newsletters prepared and distributed, etc., etc.

Outcomes: Outcomes are also diverse—ranging from critical financial decisions made by farm families (close to 4,100) provided with FINPACK analyses and consultations to number of new businesses (3) and new jobs created (330), and numbers of communities (34) making community-wide intentional plans to provide positive opportunities for their youth.

Impacts: Again, our weakness is in being able to report impacts of these programs. Very little impact evaluation has been conducted as yet. We will be putting greater emphasis on this in 2000-2001 and thereafter. Nevertheless, when the figures on the numbers of farm families and businesses assisted are totaled and the economic impact of retaining these existing operations and adding new businesses and jobs is considered, the potential impact is substantial. Assessing the impact of parent education, youth development, and leadership development is more problematic, especially in the short-term, but the direction toward long-term impact is unmistakable from the outcomes that program participants are citing.

Accomplishments: We have made greater effort this year to collect data on inputs, outputs, outcomes, and at least anticipated impacts for all of the programs in our Plan of Work. We will continue this effort in the future and also put greater emphasis on using the logic model to design programs so that we can better evaluate them in the future. Although we aren't able to report specific impacts for the programs represented under Goal 5 key themes, the information that we do have is indicating that many of these efforts are building toward

accomplishment of major economic and social impact on Minnesota citizens and their communities.

Key Theme: Agricultural Financial Management (EXTENSION)

Extension Plan of Work: Goal 1: Program 1, Agricultural Production and Farm Business Management

a. Description

Farm families in Minnesota continue to grapple with the complexities of managing their operations, as well as the vagaries of weather, commodity markets, plant and animal diseases, international trade, and the various other challenges that make agriculture a highly volatile business to be in. The Center for Farm Financial Management (CCFM), farm management associations, and Extension specialists and educators with competence in farm business analysis, risk management and marketing, and other farm management expertise continue to develop the decision making tools needed and use them in a variety of programs and one-on-one consultations with farm operators. CFFM staff also play a critical role in training other agricultural professionals—e.g., farm management instructors, agricultural lenders, agricultural consultants, and farmers—to use FINPACK and other software to assist farm families with financial decision-making.

b. Impact

During 1999-2000, Extension educators and farm management association coordinators estimated that they served over 22,000 individuals in 117 short courses, workshops, conferences, and over 4,000 one-on-one consultations with individual farmers and/or family members. A wide variety of topics were covered in group sessions, e.g., agricultural production and farm business management, farm economics, dairy profitability and management, improving the farm business, marketing and management, risk management, land rental costs and returns, FSA Farm Storage Facility Loan Program, and estate planning and transfer. In addition, farm financial management specialists and educators wrote and published over 300 newspaper articles on farm financial management and more than 400 newsletters. Close to 150,000 copies of newsletters containing financial management advice were distributed. Nearly 600 financial and other decision analysis worksheets and related materials were developed and close to 37,000 copies of them were distributed. Over 600 more detailed publications were prepared and more than 42,000 copies of them distributed. Educators also reported placing 470 farm financial management information items on websites for Internet distribution.

The Center for Farm Financial Management continued to refine existing software and issue new software decision aids. During 1999-2000, they distributed 1,644 copies of FINPACK, 291 copies of Marketeer, 44 copies of Dairy Champ, 49 copies of Manure Application Plan, 15 copies of their Risk Rating software, and 48 copies of a program to complete FSA forms. CCFM staff trained 134 people in the use of FINPACK—including 50 Extension staff (46 from states other than Minnesota), 13 agricultural educators, 59 lenders, 4 other professionals, and 8 farmers. In addition, CCFM trained 52 people in the use of "Marketeer"--their new risk management software—4 Minnesota Extension educators and 48 agricultural educators.

The CCFM also conducted a number of "Winning the Game" Marketing Workshops. A total of 390 trainees participated, including 345 farmers, 24 Minnesota Extension educators, and 21 other agricultural professionals. Participants were surveyed regarding how much they planned to increase forward marketing as a result of their new knowledge and skills. The projected net return just for soybeans from the 169

producers who responded totaled nearly $408,000. If corn and wheat has been included, this return likely would be doubled.

CCFM continued to expand the on-line National Risk Education Library in 2000. It now contains 1,100 documents, including factsheets, articles, presentations, and software. The NREL was accessed nearly 30,000 times in 2000. Users downloaded almost 109,000 documents. CCFM also added FINBIN, a financial database, to provide high quality information from more than 3,200 farms for use with FINPACK. About 3,800 financial reports were downloaded from FINBIN during the first four months it was available.

Educators and farm management association coordinators estimated that they assisted 1,400 individual farm operators in developing financial plans during 1999-2000. They also estimated that nearly 1,800 farm businesses improved their financial situation as the result of FINPACK analyses and/or the personal consultations they provided. 340 farm operations were able to re-organize or expand, 62 were able to bring family members or other partners into the business, and 148 new jobs were created as a result.

References:
National Agricultural Risk Library: http://www.agrisk.umn.edu
Center for Farm Financial Management/FINBIN: http://www.cffm.umn.edu
http://www.extension.umn.edu/mnimpacts/internal/impact.asp?projectID=171
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=430
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=1427

c. Source of Federal Funding: Smith-Lever 3b&c

d. Scope of Impact: Multi-State Extension (AZ, CA, DE, IA, MD, ND, SD, WI)

Key Theme: Children, Youth, and Families at Risk (EXTENSION)

(We did not have a program devoted entirely to CYFAR in our 1999-2004 Plan of Work. Part of this work will be reported under Program 5, 4-H/Youth Development, which follows, and under the *Family Resource Management* and *Parenting* themes which appear later in this Goal 5 section.)

Extension Plan of Work: Goal 5: Program 5, 4-H/Youth Development

a. Description

Approximately 260,000 youth across Minnesota participated in 4-H related activities and projects last year. Based on 1999 State Demographic Data, that figure accounts for nearly a quarter (23%) of all youth living in Minnesota who were between the ages of 5 to 19. These youth participated in one or more of the nearly 3,000 projects and opportunities provided by MN 4-H.

In addition, over 28,000 youth participated in 4-H clubs which offer intensive, on-going connections with adults and peers throughout the year. MN 4-H offers opportunities for youth to experience the following key outcomes: (1) Feel a sense of safety and structure; (2) experience participation, membership and belonging; (3) develop self-worth through meaningful contributions; (4) experiment to discover self; (5) develop significant relationships with peers and adults; (6) discuss conflicting values and formulate their own; (7) feel pride and the accountability that comes with mastery of new knowledge and/or skills; and (8) expand the capacity to enjoy life and know that success is possible.

In addition to the opportunities provided our state's youth, as noted in our Federal Plan of Work, MN 4-H with the Center for 4-H Youth Development, a university-based

outreach unit within the University of Minnesota Extension Service, has specifically targeted the following goals: (1) Support quality, research-based volunteer and professional development opportunities; (2) conduct and disseminate practical evaluation and research studies to support 4-H efforts; and (3) expand 4-H programming to under-represented and under-served communities.

b. Impact

Volunteer and Professional Development Opportunities

Last year, approximately 1,900 new adult volunteers and youth workers in the state of Minnesota were trained through MN 4-H efforts. Of this total, 552 (29%) volunteers and youth workers were from under-represented groups and under-served communities (those living or working in high-risk communities). The adults increased their knowledge and skills for working with youth around topics of civics and citizenship, positive youth development, science education, multi-cultural education, technology literacy, and environmental education.

Practical Evaluation and Research Studies to Support 4-H Efforts

Last year, MN 4-H invested heavily in new statewide database software for accountability purposes. For the first time, specific connections can be made between 4-H programs and key demographic information. For example, not only do we know that creative and expressive arts has the highest number (8,726) of youth participating of any project area, but more girls (69%) are involved in expressive arts. If looked at proportionately by ethnicity and place of residence, greater proportions of youth of color and urban area youth are involved in Arts In programs.

The ability to connect key variables has also provided us with the ability to track key trends. For example, it appears that 4-H is able to retain girls better than boys, especially youth ages 13-19. These, and other findings will ultimately help MN 4-H better target the needs of youth in Minnesota and also help us improve our programs.

In addition, several statewide and county surveys were conducted with a variety of audiences to assess needs and outcomes and improve the quality of specific programs. For example, a "Building Relationships in 4-H" survey of youth leaders (n=113) and adult advisors (n=97) was conducted in a county to better understand the relationships among youth leaders, adult advisors, and Extension staff and also to explore ways to improve efforts on behalf of youth. Some findings include: Most youth (89%) and adults (80%) indicated that they are excited about continuing their work with 4-H; 90% of youth agreed that they can count on adults to support them; youth indicated to improve future 4-H efforts in their county, they would like to see (1) new activities to bring in new members, (2) less emphasis on the competitive atmosphere that sometimes exists in 4-H, and (3) more voice given to youth. Other counties are currently looking at the possibility of conducting the survey in their counties.

The "MN Arts-In Experience" statewide survey was conducted with 167 youth participants, parents, and Extension professionals to explore questions such as "Did the Arts-In experience meet the needs of youth participants?" and "Was Arts-In successful in meeting two program goals—(1) sending a message about valuing diversity and (2) forming meaningful youth-adult partnerships? The results indicated that last year's Arts-In Experience met four of the top five expectations that youth had when joining Arts-In, including "working with other youth as a team", "having fun", "meeting new friends", and "showing the skills that I have". However, the data indicated that both youth and adults felt that the message of "valuing diversity" and forming meaningful youth-adult partnerships needed more work. 80% of youth and

90% of adults surveyed were excited about future Arts-In Experiences and would encourage others to participate.

Lastly, a statewide random sample of 4-H volunteers (n=289) and Extension educators (n=81) were surveyed to examine outcomes and needs of volunteers. A great majority of volunteers (from 98-99%) indicated that as 4-H volunteers they are "making a difference in a child's life" and "making a difference in their communities" and that volunteering has "made a difference in their own lives". The volunteers also feel supported by Extension to do their work.

A research team at the Center for 4-H Youth Development began last year to develop an instrument to assess impact of 4-H participation. The survey addresses: Key opportunities provided by 4-H; whether youth experience the eight keys to quality youth development in 4-H; and the extent to which these experiences are related to key impact areas such as self-worth, self-identity, quality relationships, positive future orientation, etc.

Expand 4-H Programming to Under-Represented and Under-Served Communities

MN 4-H is involved in multiple efforts in targeting under-represented and under-served communities. The following reports are a sample of such efforts:

Student Court: 120 youth (90% youth of color) from high-risk urban areas in Minneapolis and St. Paul participated in an alternative approach to juvenile justice in which juvenile offenders are sentenced by a jury of their peers. In addition to handling minor juvenile cases, youth gain hands-on positive experience with the legal system.

Jump Into Fitness: A partnership between 4-H Youth Development and the "Simply Good Eating" (EFNEP/FSNEP) Program, where short-term educational programs are conducted at community centers, schools, and other locations (in the St. Paul area) on nutrition, fitness, and general health. This program served 3,741 participants at 12 contact hours/participant, amounting to 44,892 total program hours. The race/ethnicity breakdown is as follows: 25% Asian/Pacific Islander; 25% Black; 7% Hispanic; 1% American Indian; and 42% White.

White Earth Reservation "Reaching for the Stars" Project: 30 youth from the White Earth reservation are involved in learning about aerospace and other sciences. The goal is to increase their science and math grades and to increase the number of Native American youth choosing to go to college. Results from nationally normed tests indicated that this group achieved the greatest improvement in math and science scores among reservation schools across the country.

Youth Legislative Summits: 850 Youth from all walks of life (including 50% youth of color from high-risk urban neighborhoods) were involved in the law-making process by studying bills and ordinances that are aimed at problems that directly concern youth. They developed deeper understanding of the problems, analyzed the impacts of the solutions on their communities, and made recommendations, becoming part of the solution, rather than part of the problem. Through this program, young people developed skills needed to be participating citizens in their communities and schools.

Cass County State Strengthening Project: The target audiences for this project are at-risk children, youth, and families. Last year, 296 youth and 85 parents participated in the project. The race/ethnic breakdown for youth was follows: 69% White; 27% American Indian; 2% Hispanic; 2% Black. The race/ethnic breakdown for parents was as follows: 74% White; 20% American Indian; 4% Black; 2% Hispanic. 55% of all youth in the program live in poverty or on reservations. The program also includes 95

adult and 19 youth volunteers who provided over 550 volunteer hours. 16% of adult volunteers and 29% of youth volunteers were American Indian.

The preceding examples are just a sampling of the different ways that MN 4-H Youth Development, in collaboration with other partners, is targeting traditionally under-served, under-represented groups. In addition to delivering programs, the Center for 4-H Youth Development hired a multi-cultural educator to help 4-H staff increase their skills working with and expanding programming to under-represented and under-served communities. Last year, MN 4-H began developing a Multi-Cultural Youth Corps with diverse youth from across Minnesota to make multi-cultural work even more explicit in MN.

References:
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=368
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=383
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=820
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=410
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http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=212
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=927
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=366
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=926

c. Source of Federal Funding: Smith-Lever 3b&c

d. Scope of Impact: State-Specific

Key Theme: Family Resource Management (EXTENSION)

Extension Plan of Work: Goal 5: Program 8, Individual and Family Financial Management

a. Description

There are a variety of specific programs offered in the family resource management category that are targeted to specific audiences. For example, "Dollar Works: ABCs of Financial Literacy" was designed to assist families making the transition from welfare to work. The "Home Stretch: Homebuyer Education Program" helps families learn what is needed financially to afford their own home and helps them to clean up their credit records and save toward a down payment and closing costs, etc. The American Association for Retired People (AARP)'s "Women's Financial Information Program" is aimed at helping woman learn more about personal finance so they can hopefully avoid being impoverished when they are older. Extension has been using this program extensively in Minnesota. The "High School Financial Management Program" is used to teach high school age youth the basics of personal finance. One facet of the "Parents Forever" program for divorcing parents has a section about parents teaching children about money. Other locally-designed programs provide financial management education for dislocated workers, people on probation, people dealing with debt, and people nearing retirement. Educators who are specialized in family financial management also frequently provide financial counseling one-on-one for individuals and families needing assistance.

Partnerships with other agencies and organizations are very important in determining the needs for family financial management education and working together to provide it. Partners involved with this type of programming in Minnesota include the Minnesota

Departments of Human Services and Commerce, the Minnesota Housing Finance Agency, the Minnesota Attorney General's office, local community action agencies and housing authorities, family social services, banks, credit unions, attorneys, probation officers, Job Service and Training and workforce centers, school districts, community education, Habitat for Humanity, Lutheran Social Services, and the Upper Sioux Community.

b. Impact

An estimated 7,500 individuals participated in about 200 specific financial management programs in Minnesota in 1999-2000. Educators also reported that 127 items of financial management education material were prepared or revised, including 18 Extension publications. More than 200 newspaper articles were written and published and 68 newsletter articles appeared in nearly 2,600 newsletters that were distributed locally. In addition, educators discussed family financial management in 266 radio and other media broadcasts and placed 60 items financial management items on county and state websites. Family financial management educators also partnered with colleagues in North and South Dakota and Wisconsin to deliver local personal finance programs.

As a result of these efforts, overall, approximately 37% of the 7,500 participants in personal and family finance programs reported that they had made specific plans to deal with spending and debt, improve family communications, and enhance major purchasing decisions. 70% indicated they'd strengthened their financial management knowledge and skills.

Educators also reported that in many communities Extension is viewed as the primary community resource for family financial management education. One local survey of helping professionals and staff in other nonprofit "partner" agencies and organizations and local businesses indicated that respondents were either "very satisfied" or "satisfied" with Extension's individual and family financial management programs and teaching materials.

Campus-based faculty members are also viewed as important resources in family financial management education in Minnesota. One family resource management specialist has studied welfare reform for several years and is providing training for "Family Assets for Independence in Minnesota" (FAIM) program staff in the Department of Human Services. FAIM provides program participants with legislatively mandated economic literacy education and encourages them to save money for designated goals—home ownership, post-secondary education for family members, and/or capital to start a business.

References:
AES Research Projects: MIN-52-055, MIN-52-078
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=838
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=1377
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=553

c. Source of Federal Funding: Smith-Lever 3b&c

d. Scope of Impact: State-Specific (but educators in "border" counties are working with colleagues in ND, SD, and WI)

Key Theme: Impact of Change on Rural Communities (EXTENSION)

Extension Plan of Work: Rural Response Initiative (Ended 6/30/00)

a. Description

Change is a continuous process, but unfortunately one that is often unkind to rural communities. This has certainly been the case in rural Minnesota, particularly in the last 3 or 4 years. In addition to major weather-related problems—drought and then the flooding in southwestern, west central and northwestern Minnesota and eastern North Dakota during the winter/early spring of 1997--continued low prices for farm commodities have plagued residents in many rural communities, especially those whose economic base is still largely agriculture-dependent.

The situation in Minnesota in 1998-99 called for an extra effort to address the deteriorating rural economic and social situation. Extension declared the rural crisis its number one priority and formed a Rural Response Coalition in partnership with the Association of Minnesota Counties, the Minnesota Bankers Association, the Minnesota Department of Agriculture, and the University of Minnesota College of Agricultural, Food, and Environmental Sciences. The coalition established five goals: (1) Giving leadership to the rural response; (2) raising awareness about rural issues; (3) assisting rural families in crisis; (4) helping people and communities manage change; and (5) facilitating rural policy discussions.

The resulting program was multi-faceted. Farm families were provided with stepped-up assistance with financial planning, risk management, legal planning, marketing, and stress management. Crop and livestock diagnostic teams were formed to assist farmers who wanted to stay in farming. Special programs assisted those families who needed to leave farming with change and transition and career exploration. The Farm Credit Mediation Program helped farmers and their creditors resolve financial issues.

Extension immediately arranged and publicized a toll-free 800-number Rural Response phone line to enable people to quickly get help. A website was developed as a central point for obtaining information (including publications and news releases that could be easily printed) and making quick connections to other sources of information and assistance. Resources were found throughout the University of Minnesota, e.g., in medicine, public health, law, and other fields, that proved useful in providing assistance. Connections with the media were used to quickly release a lot of important information about crops and livestock, finances, marketing and risk management, family finances, dealing with stress—the whole spectrum of useful information readily available. An exhibit and materials that could be handed out were developed and widely used at county fairs and major agricultural events. Campus-based faculty reviewed research and developed "white papers" summarizing information about alternative crops and livestock, risk management, financial management, rural policy and other topics for the Rural Response website.

Information was also made available to assist communities and small non-farm businesses. Extension educators formed local coalitions with helping agencies and organizations and worked with county government officials to coordinate rural response efforts. Nearly 400 local meetings were held to alert communities to the issues and facilitate organizing local response efforts. An estimated 4,200+ people participated in these meetings. Presentations about the rural crisis and the Rural Response Program were made at over 1,100 meetings of community groups, civic clubs, faith-based organizations, etc. A acclaimed dramatic presentation—"Farm Alarm"—was developed and widely presented to encourage farm families to realize they weren't alone and should seek help with the issues they faced.

Over 1,000 radio and TV programs addressed the rural crisis and the Rural Response effort. More than 1,300 articles were placed in newspapers. Nearly 8,000 Rural Response-related publications were distributed directly from the campus; some 43,500 Rural Response print items were distributed through county Extension offices. Extension staff provided personal consultations to close to 3,800 farm family members and others. Nearly 9,400 consultations were provided via the Rural Response Hot Line.

b. Impact

The Rural Response Program was recognized in 2000 by CSREES/USDA as an outstanding effort to address the short-term rural economic and social situation. The impact of Rural Response is difficult to assess. Many farm families in Minnesota and elsewhere left farming in 1999-2000 and many continue to be forced to leave because they cannot earn a living farming. The underlying economic conditions haven't changed. A much deeper, wider effort to engage the public in understanding what is happening in rural Minnesota and elsewhere and how it impacts them is needed before real changes in rural policy can/will occur.

Rural Response did once again demonstrate that an Extension service can take a leadership role in mobilizing and organizing resources in a land grant university to address an issue. University administrators—the president, the provost, and others—recognized and appreciated the leadership that Extension demonstrated. The Rural Response Coalition demonstrated the value of working in partnership with others concerned about the same issue. Likewise, local coalition-building helped in quickly organized community support systems. Communications technology was again used to great advantage to provide rapid dissemination of information and has enabled the information to be stored for quick retrieval in case it is needed again. But the longer-term, deeper issues remain. Addressing them is far more difficult and complex than organizing a short-term, rapid-response effort.

References:
AES Research Projects: MIN-14-094, MIN-52-035, MIN-52-073, MIN-53-066
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=816
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=1375
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=432
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=818
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=400

c. Source of Federal Funding: Smith-Lever 3b&c

d. Scope of Program: State-Specific

Key Theme: Leadership Training and Development (EXTENSION)

Extension Plan of Work: Goal 5: Program 2, Leadership Development; Program 9, Supporting Community Diversity Leadership

a. Description

Leadership is a important issue, especially in many rural communities in Minnesota that have experienced considerable population out-migration, largely young adults who are the future leaders. Communities all too often are finding that fewer people are available to take community leadership roles, serve on committees addressing community issues, seek elected and appointed public offices, etc.

In addition, a good many communities in Minnesota have been receiving sizeable numbers of new immigrants whose cultures and social customs are very different from long-time residents. This sometimes results in strained relationships and even conflict, when newcomers and longer-term residents don't see eye to eye on issues of mutual concern.

Extension offers a variety of leadership development programs for youth and adults, depending in part on local situations and needs. These programs are in addition to the adult and youth volunteer training provided at the state and local levels through the 4-

H/Youth Development Program. In addition, a new effort has begun to train community facilitators who, based on the Master Gardener model, agree to use their skills in their communities to assist all kinds of volunteer groups and non-profit organizations. Another program trains Master Internet Volunteers who also agree to help others learn to more effectively use the Internet to advance their community work and entrepreneurial efforts.

b. Impact

During 1999-2000, educators reported that over 2,000 Minnesota youth and adults participated in community-based leadership development programs. In addition, over 4,100 youth and 5,100 adults were trained as 4-H/Youth Development leaders and volunteers who assisted with various projects and club or community activities. A significant number of leadership development program volunteers were racial/ethnic minority persons.

Community collaborations played an important role in supporting and helping to fund leadership development programs. A wide spectrum of non-profit organizations and other entities, such as Minnesota Rural Futures and the Minnesota Agri-Women, regional development commissions, community education programs, local chambers of commerce, public school systems, technical colleges, work force centers, county government departments, and Soil and Water Conservation Districts, were involved. In addition, connections were made with leaders trained in other leadership development efforts, such as the Blandin Community Leadership Program.

Youth and adults reported having significantly increased their leadership skills as a result of Extension program participation. They improved their understanding of leadership traits and learned how to constructively manage conflict and their time. Volunteer facilitators are now providing their skills to community groups and non-profits. Participants reported such diverse outcomes such as organizing groups and elected officials in their communities to meet regularly to identify common concerns and issues and take action on them. Some had conducted community visioning processes with citizens to identify issues to be addressed. Several communities had engaged in a community-based planning process to address water quality and sewage treatment issues.

Educators estimated that 517 adults who had completed leadership development programs were applying their skills to local, regional, or organizational issues. 222 community service projects involving adults and youth trained by Extension were being conducted in 1999-2000. Six new community-based initiatives had been planned and implemented by Extension leadership development program alumni. 129 new volunteer facilitators had been trained and 87 were actively engaged in assisting non-profit groups.

Community diversity leadership programs involved 208 participants in 1999-2000. One of these efforts pilot tested the Minnesota State League of Women Voters "Community Circles" Program. Depending on the specific program, a variety of partners and collaborators was involved, e.g., the Minnesota International Student Center, the Minnesota Council of Churches, the Jewish Council of Minneapolis, the Minnesota Department of Human Rights, and local banks and businesses, law enforcement, hospitals and clinics.

Participants in diversity leadership training had the opportunity to assess their own attitudes and beliefs about differences, diversity, oppression, privilege, and leadership. Many participants reported changing their attitudes and behaviors. Attitudes became more open toward the experiences of other people different from themselves; behaviors shifted toward practicing more social kindnesses toward newcomers and building bridges of understanding between different cultures. As a result, 113 of the 208 participants reported finding opportunities to use their leadership capacities and

address inclusivity in their own communities. Ten teams had been formed to assess community and institutional barriers and/or community readiness to support diversity and inclusivity. These teams also reported that as a result of their Extension leadership training, they had built relationships and networks of support with other communities facing the same or similar issues. One community reported having hired a translator to help bridge a language barrier.

References:
AES Research Projects: MIN-52-077, MIN-55-048
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=950
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=954
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=896
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=982
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=1052

c. Source of Federal Funding: Smith-Lever 3b&c

d. Scope of Impact: State Specific

Key Theme: Parenting (EXTENSION)

Extension Plan of Work: Goal 5: Program 7, Personal and Family Health and Well-Being

a. Description

Parents face formidable challenges today. Families often lack extended family and community support systems. Most mothers are in the work force, many out of economic necessity because they are separated, divorced, or widowed. The environment for children is often unsafe, especially if affordable, quality daycare is unavailable. As a result, parenting skills are needed now more than they have ever been.

Minnesota is fortunate to have several high-quality Extension parent education programs, e.g., "Positive Parenting", "Positive Parenting for Teens", "Parents Forever" (designed for separated or divorcing parents), "Dads Make a Difference" (for teen males), and most recently, "Helping Youth Succeed: A Parenting Guide for Southeast Asian Families" which is available in six different languages.

b. Impact

Educators reported that 4,245 Minnesota parents and teens participated in Extension parenting education programs during 1999-2000. Nearly 350 group training sessions were held and about 150 personal consultations were provided. In addition, 65 "train the trainer" group sessions were held for professional staff who are, in turn, teaching programs developed by Extension. In many communities, various other agencies and organizations collaborated to fund, promote, and deliver these programs. Examples of these partners include Family Service Collaboratives, Early Childhood Family Education, Headstart, Children's Defense Fund, school districts, community education programs, court service units, attorneys, churches and other faith-based organizations, Private Industry Councils, Exchange Clubs, Community Action Councils, county public health service, mental health service, and human services departments, and family crisis centers. Nearly 200 such collaborative arrangements supported parent education program during 1999-2000.

Some of the positive outcomes reported included strengthening family support systems, increasing communication within families, and enhancing decision-making

skills (Positive Parenting). Having parents and teens participate in community activities together enabled them to learn more about each other, thus strengthening their relationships (Positive Parenting of Teens). More families sought help from other providers which enabled them to transition successfully from welfare to work (Positive Parenting of Teens). More professional staff became aware of Extension resources that they could use and adopted them.

Parents Forever participant evaluations have shown that they made significant progress toward each of the program goals. For example, 76% reported putting the best interests of their children first as a result of program participation. 77% have provided their children access to both parents. 72% are trying to keep their children out of the middle of parental conflict.

References:
AES Research Projects: MIN-52-054, MIN-52-065, MIN-52-066, MIN-52-072, MIN-55-049
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=1108
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=827
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=756
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=928
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=982
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=374
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=1349
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=553

c. Source of Federal Funding: Smith-Lever 3b&c

d. Scope of Program: Multi-State Extension (AL, LA, NE, OH, WI)

Key Theme: Promoting Business Programs (JOINT)

AES Plan of Work: Goal 5: Empower people and communities, through research-based information and education, to address the economic and social challenges facing our youth, families, and communities.
Extension Plan of Work: Goal 5: Program 3, Business Retention and Expansion Strategies Program; Program 4, Tourism Development Program

a. Description

Business and industry, tourism, and forest resources are all major contributors to Minnesota's economy. Therefore, research and educational programs that strengthen these economic sectors play an important role in promoting economic growth and job development.

The Business Retention and Expansion Strategies Program has been underway in Minnesota for about 10 years. Program staff in the Applied Economics Department train and support BR&E consultants (some are Extension educators; others are private consultants) who, in turn, train and support a cadre of volunteers in communities concerned about what is happening in their economic structure. The consultants train the volunteers to conduct surveys of local businesses and industries in order to learn about their challenges and needs. Recommendations for strengthening the local climate for business and industry and improving the community generally are generated from analysis and discussion of the survey results. The end result is usually a number of community economic and structural improvement projects but the long-term results are often even more far-reaching, in terms of continued leadership and engagement of volunteers, as well as local economic growth through retention and expansion of local businesses and industries.

There were seven active BR&E Strategies Programs in operation in Minnesota in 1999-2000. Four of them are looking at "mixed" businesses, one is specialized in manufacturing, one in tourism, and one in agriculture. 40 other agencies and organizations are involved, in addition to University of Minnesota faculty and staff. 234 volunteers were involved in planning these programs and conducting community business and industry surveys. 557 firms were interviewed.

In addition, 58 new BR&E Strategies Program consultants were certified via the on-line BR&E Consultant Certification Course during 1999-2000. These new consultants are located in 15 states, 2 Canadian Provinces, and Romania. These consultants are the resource people to the communities and volunteers who carry out BR&E Visitation Programs.

Tourism Center programs support the further development of the tourism industry in Minnesota. A variety of workshops and individual consultations are offered to tourism business owners, managers, and employees or people interested in starting a tourism business. The Center's acclaimed "Quality Customer Service" workshop was delivered in Hawaii, Iowa, Michigan, North and South Dakota, and Wisconsin during 1999-2000.

Forest resources are another specialized economic sector in Minnesota. A variety of research efforts are aimed at finding ways to improve forest productivity, e.g., developing a genetically improved aspen and developing larch as an alternative conifer for reforestation—both significant varieties for the paper industry. Researchers are also developing economic modeling methods for forestwide planning and timber supply analysis in the Chippewa and Superior National Forests and examining the environmental impacts and alternatives of the forest industry.

b. Impact

An estimated 311 community leaders and local officials adopted new business and retention strategies as a result of participating in a BR&E Strategies Program last year. Approximately 251 existing businesses were retained and three new ones created, creating 330 new jobs. Volunteers in all seven currently active BR&E Strategy Programs had accomplished at least half of the business and community improvement projects they had planned. One community obtained $5,000 in grants to fund some of their projects.

Many new business projects in rural communities are attempting to add value to existing agricultural products produced there, while others are exploring new alternatives. For example, in Swift County nine farmers formed a new cooperative and are exploring the export of IP grains. Two grants totaling $5,000 are funding the planting of plots to test local production of food-grade soybeans that are desirable in Asian markets. In another locality, farmers are entering into contracts to produce high oil corn and specialty small grains. Other BR&E participants are seeking to become certified to produce organic crops and one is starting an e-commerce business over the Internet.

BR&E has also helped to make rural Minnesotans more aware of the implications of the farm crisis in their communities. The Women's Farm Forum has played a vital role in raising community awareness and providing a support system for farm families who are struggling to stay in business. They also have increased awareness at the state level about inequities in the "Minnesota Care" medical insurance program. As a result, a bill was introduced but defeated in the last legislative session. Although the bill was not initially successful, proponents have vowed to continue to work to amend the legislation that created "Minnesota Care" so that it is more readily available to farm families.

Tourism development programs were also highly effective in helping to strengthen that sector. Nearly 3,700 people participated in one or more programs during 1999-2000 and more than 70% of them indicated that they'd changed one or more business practices or procedures as a result of what they learned. Eighty-nine tourism businesses reported that they'd increased their profitability as result of their participation in tourism development education. One hundred and sixty communities reported expanding their tourism development activities last year.

In some instances, it's too early in the game to actually measure the impact of the forest resource research but the potential is significant. Timber and pulpwood consumption in the Lake States and the U. S. has steadily increased since the mid-1980s and is expected to double by 2040. So, development of improved aspen and larch for reforestation and ultimate harvest as pulpwood has a strong possibility for high rate of return on the investment in the research.

Much Minnesota forest land is privately owned. Therefore, encouraging the development of Forest Stewardship Plans is critical to improving the management and use of these resources. A random sample survey of 3,000 private landowners in six north central states revealed that developing Forest Stewardship Plans significantly increased these owners' implementation of 13 recommended forest management practices. In addition, 53% were committed enough to recommend that a friend or neighbor also develop a Forest Stewardship Plan.

References:

AES research projects: MIN-42-070, MIN-42-086, MIN-42-089, MIN-43-054, MIN-52-073

http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=237
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=409
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=1089
http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=1110

c. Source of Federal Funds: Hatch and Smith-Lever 3b&c

d. Scope of Impact: Integrated research/Extension, Multi-State Extension (CA, CO, DE, FL, HI, IA, ID, MI, MO, NC, SC, SD, WA, WI, WV, VA)

Key Theme: Workforce Preparation—Youth and Adult (EXTENSION)

(We have nothing to report in relation to this theme—we didn't have a program on workforce preparation in our 1999-2004 Plan of Work.)

Other:

Goal 5: Program 1. Financing and Providing Public Services

(This program was in our 1999-2004 Plan of Work but the faculty member who conducted it left the University of Minnesota. Therefore, nothing was done or reported on this program in 1999-2000. A new applied economics faculty member has been hired and we expect to resume program activity and report in subsequent years.)

Reference:

http://www.extension.umn.edu/mnimpacts/impact.asp?projectID=392

A. *Actions taken to seek stakeholder input that encourages their participation.*

In December 2000, the deans of the Colleges of Agriculture, Biological Sciences, Human Ecology, Natural Resources, Veterinary Medicine, and the University of Minnesota Extension Service conducted "listening sessions" with twenty groups in various locations throughout the state of Minnesota. Over 1,200 invitations were sent to a cross-section of Minnesota residents. In addition, open invitations were placed in local newspapers and announced on local radio stations.

Also in December 2000, the College of Agricultural, Food and Environment Sciences conducted eight listening sessions throughout Minnesota. Approximately 600 people were involved in them.

During Summer 2000, each of the eight Extension Administrative districts conducted a trend analysis process. Extension educators collected and organized existing data on trends in their districts. Data was organized under eight dimensions of a healthy community--Demographics/Diversity, Economic Opportunity, Safety and Security, Life Long Learning, Environmental Stewardship, Recreational and Cultural Opportunities, Infrastructure and Services, and Community Leadership. Stakeholders were engaged in reviewing and discussing the data. Based on those discussions, 5-7 priority trends were identified in each district as having the most influence on the economy, environment, and quality of life over the next three years.

In addition to the preceding recent processes for gathering stakeholder input, identification of research and educational needs comes from the Regional Sustainable Partnerships in Minnesota. These entities were established in 1997 when the Minnesota Legislature dedicated a $1.2 million recurring appropriation to sustain, through a unique citizen/University partnership, the state's natural resource-based industries. The Regional Sustainable Partnership Program has established boards of directors and program development processes in five regions. These boards make monetary awards that support research (including applied on-farm research) and educational outreach projects in their respective regions.

There are direct ties between the citizen-driven regional partnership structures and the University of Minnesota. Faculty members serve on regional boards of directors and are engaged in projects that use their expertise. Deans in three collegiate units (Agriculture, Food, and Environmental Sciences, Natural Resources, and the Extension Service) provide administrative oversight and increasingly, projects are identified in common.

In sum, the addition of these Regional Sustainable Partnership Boards to the circle of input guiding Extension priorities provides a perspective and a citizen base that is more representative of the interests of citizens than in the past.

Unique stakeholder input processes have been used with other audiences, e.g., Native Americans. The USDA-Superior Service Award-winning Pathways to Educational Partnerships Program that is working with all residents on all of the Indian reservations in Minnesota has used the Planning Circle approach to involving people in determining what should be done in terms of educational programs and overseeing the progress being made. The major focus of PEP has been on food and nutrition and gardening programs to promote health and wellness among reservation residents.

The Planning Circle is a gathering of American Indian community members, Extension educators, and representatives of other agencies with a "stake" in the work to be done. Led by multicultural leaders, Planning Circle members identify wellness goals for the community and the best pathways to achieve those goals, integrating research-based health, nutrition, and food production information, as appropriate, into

traditional systems. Trust, understanding, cultural sensitivity, and open communication are the cornerstones of the Planning Circle.

B. *Brief statement of the process used to identify individuals and groups who are stakeholders and to collect input from them*.

For research, a cross-section of citizens from communities around our Research and Outreach Centers (outstate Experiment Stations) were selected, in addition to individuals from special interest and commodity groups. These open meetings were also announced on local radio stations and in local newspapers. Citizens were asked to respond to specific questions about their needs and how the University of Minnesota could best serve them.

For Extension, a worksheet was provided for each district team to encourage diverse stakeholder engagement. Categories included: Internal university linkages: Research and Outreach Centers, coordinate campus, Regional Partnerships, and County Extension Committee members; External Linkages such as school systems, professional groups, justice system; and Residency from various locations in the district. We sought sector balance: Agriculture, business, government agencies, education, organizations/nonprofits, health, and others. We also encouraged sex/gender balance, as well as representation by race/ethnicity, age, disability and social/economic class. In addition to these categories, we asked people to think about diversity in terms of national origin, religion, marital status and sexual orientation.

Each district team determined the process they would use to engage a cross-section of people from the preceding stakeholder categories. Examples included one-one interviews or small group interactions at county fairs, engagement of existing community coalitions and advisory groups, telephone surveys, and focus groups.

C. *Statement of how the collected input was considered.*

For Extension, after stakeholders examined the collected data, they discussed it and rank ordered the trends they thought would be most influential over the next three years in their district.

For research, the six deans mentioned previously, plus the associate deans for research from each of the colleges, spent many hours identifying priority areas for Experiment Station research. These areas include: (1) Enhancing Minnesota's Environment (Water Quality, Land Use Management, Ecosystems, Agriculture Waste Management); (2) Food and Health (Food Safety, Biotechnology and Risk Management, Nutrition, Foods for Prevention and Treatment of Human Diseases); and (3) Building Vital Communities (Human Capital, Value Added Resources, Technology, Entrepreneurship).

The input is also being used in strategic planning processes underway in each of the colleges.

D. Statement regarding the usefulness of the stakeholder input process in refocusing and reaffirming priorities or in identifying emerging issues.

Stakeholder input was critical to identifying and reaffirming priority trends in each Extension district. The process grounded and reaffirmed Extension educators' knowledge of priority trends and resulting issues in their districts. District trends were presented in October 2000 at the annual Extension Program Summit to 470-field and campus faculty. At the same time, leaders from the four Extension Capacity Areas-- Agriculture Food and Environment, Natural Resources and Environment, Youth and Family Development, and Community Vitality-- presented priority trends from a discipline perspective. (Field and campus faculty affiliate with a Capacity Area, which

supports Extension work via resources, expertise, and staff and program development.)

Capacity Areas had conducted trend analysis processes similar to those in the Extension districts. They engaged stakeholders by preparing white papers summarizing the trends and related research information for discussion that were shared with stakeholders at the state or regional levels.

At the Program Summit, trends identified in the districts and through the disciplines were compared and contrasted. The process surfaced eleven key trends with five of the eleven showing strong representation in the district and the discipline or Capacity Area. District and Capacity Area Teams proceeded to hone issues resulting from the priority trends in order to identify Extension's niche or work within those issues. Capacity Areas each identified 3-4 priority issues in which to invest their resources over the next several years. District plans of work reflect 5-7 priority issues important to the district over the next several years. Approximately 70% of the district work aligns with Capacity Area priorities; 30 % of the plans represent work unique to a district.

The stakeholder input from the listening sessions will have direct input into the colleges' strategic planning processes. It will directly influence the use of resources and the direction of programs.

d. Program Review Process

a. What is our process?

b. Have there been any significant changes in it during 1999-2000?

In 2000, we re-created a system-wide program development process. In the preceding stakeholder input section, we identified the process we used to realign field and campus faculty around critical work needed in the state. We are also developing strategies to identify and evaluate learning within and without the organization. The plan to date includes the following strategies:

i. Each Capacity Area will evaluate at least one of their priority issues on a statewide basis.
ii. Each Capacity Area and District team will update/incorporate census data into their trend analysis summary as it becomes available. Where there are significant changes, stakeholders will be engaged in discussions of the census data and its implications for Extension programs.
iii. Program planning will be adjusted to address any unanticipated changes.

We are also making plans to evaluate the statewide program development process launched with the trend analysis process spring of 2000. Stakeholders, within and outside of the organization, will be engaged in the review of the system-wide goals, mapping of strategies, evaluation of the strategies, what emerged that wasn't anticipated, what adjustments were made, and what was learned? We will track each system-wide goal using these criteria.

We continue to review county plans of work and programs as we've done in the past. County Extension Committees are required by Minnesota law to review the county plan of work. Program development involving a number of counties is advised in some parts of the state by cluster (multi-county) advisory committees. Most Extension work is done in partnership with other organizations and agencies served by advisory committees. We also continue to receive programmatic input on a regular basis from commodity groups, farm organizations, and volunteers.

The statewide Extension Citizen's Advisory Committee advised the trend analysis process and provided thoughtful input at developmental stages. The Association of Minnesota Counties (AMC) Extension Committee also plays a significant role in identifying issues and advising us on programs. This committee's role and communication between them and Extension administration has been enhanced since we created the AMC Extension Fellow position three years ago. This position was based on and is similar to the National Association of Counties' Extension Fellow position where an Extension staff member is assigned to work as a liaison between the two organizations.

e. Evaluation of the Success of Multi-State and Joint Activities

Did the planned programs address the critical issues of strategic importance, including those identified by the stakeholders?

We believe that our planned programs did address critical issues and in a timely fashion. The Rural Response Program cited under Goal 5, Key Theme: Impact of Change on Rural Communities, is a good example. The need for this effort was identified by the Association of Minnesota Counties' Extension Committee, the Minnesota Bankers Association, the Minnesota Department of Agriculture, and other entities external to the University. The coalition that gave direction and support to the effort testifies to the involvement and commitment from external stakeholders. Every program has a unique group of stakeholders that provide direction and support—some program descriptions under Key Themes mention these external partners. The substantial amount of external financial support received for many programs also indicates that programs are based on critical issues that are identified by external stakeholders and that when they can, they also provide funding, or support the search for external funding.

Did the planned programs address the needs of under-served and under-represented populations in Minnesota?

Yes, we think they did. We have a sizeable number of programs that are targeted to minority groups, new immigrants, etc. Some of these programs are

mentioned under various Goal 5 key themes, e.g., the description of 4-H/Youth Development activities under the Children, Youth, and Families at Risk theme, the individual and family financial management programs under the Family Resource Management theme, the Community Diversity Leadership Program under the Leadership Training and Development theme, and the Helping Youth Succeed: A Parenting Guide for Southeast Asian Families Program mentioned under the Parenting theme. Much of the work in Food Security under Goal 2 and Human Nutrition under Goal 3 is with audiences in the "under-served, under-represented" category. And while not specifically cited, an Immigrant Farmer effort that began nearly 20 years ago to assist Hmong farmers in growing food crops has been expanded to also include Hispanic, Somali, and Sudanese families who want to grow vegetables to feed themselves and perhaps ultimately provide family income as well.

We also track the involvement of under-served/under-represented groups in terms of numbers participating in our programs. These statistics indicate that in terms of the standard classifications of ethnic/racial groups, we are serving slightly more people in these categories than they represent in the total population in Minnesota.

Did the planned programs describe the expected outcomes and impacts?

Yes, they did, but we realize that we need to do a better job of specifying indicators of expected outcomes and measuring them, as well as doing more impact evaluation. We are planning to provide more staff development in program evaluation beginning this year (2000-01) and we are shifting other resources to provide more funding and support for impact evaluation. Also, some programs simply haven't been in place long enough yet to be able to measure meaningful impacts.

Did the planned programs result in improved program effectiveness and/or efficiency?

Yes, we think they did. We hear a lot of concern from state and county governments in Minnesota about "duplication of effort". Putting greater emphasis on (1) identifying stakeholders/potential collaboraters/partners through trend analysis/issue identification and then engaging with them to plan programs, (2) seeking external funding (which often requires "sharpening" program designs by being more specific about expected outcomes and impacts and getting the support of collaborators), and (3) seeking to more fully extend the resources of the whole University helps to "build better programs from the ground up" and therefore to be both more effective and more efficient in terms of using the resources available.

Was research integrated in the Extension activities?

The University of Minnesota Extension Service and the Minnesota Agricultural Experiment Station have long had a close working relationship. All campus-based faculty in academic departments that have Extension appointments also have research appointments. Subject-matter staff development for Extension educators typically includes updating on research activities. Extension educators have been encouraged to affiliate with academic departments in disciplines appropriate to their academic training and the focus in their educational work.

The MAES branch experiment stations have transitioned into regional Research and Outreach Centers (located at Crookston, Grand Rapids, Lamberton, Morris, and Waseca). The offices of Extension District Directors are located at four of these locations. Each ROC has a cadre of academic faculty with joint Extension and research appointments located there.

The Research and Outreach Centers are intended to serve as "gateways" to the University of Minnesota. They provide venues for addressing community concerns facing rural Minnesotans while continuing their mandate to conduct and disseminate agricultural and natural resources research based on regional-specific results via Extension. Extension and research faculty and Extension educators participate in field days and other ROC activities. Extension staff often use ROC facilities for their meetings and educational events and they call on ROC faculty for specific information on a variety of agricultural, natural resource, economic and social topics that they need to enhance educational programming. The effort to strengthen the MAES and Extension relationships is resulting in nearly "seamless" collaboration at the regional level.

Many ROC-based faculty were involved last year in the trend analysis and issue identification process described in Part II, Stakeholder Input Process. Many of them also participated in the Fall 2000 Extension Program Summit when the trends identified regionally were further refined into programmatic issues and prioritized for each Extension administrative district. These regional issues became the core of new District Plans of Work, which in turn, became the basis for identification of major issues at the state level and the new 2001-2004 University of Minnesota Extension Service Plan of Work.

f. Multi-State Extension Activities (See Form CSREES-REPT 2/00)

We deliberately set our Multi-State Extension Activities target low because (1) we did not have FY97 data on which to base a target and more importantly (2) we are not sure that what we class as "Multi-State Extension Activities" meet your definition of such. Furthermore, much of what is being done between or among states is collegial in nature, i.e., not documented by formal memoranda of agreement between institutions indicated as necessary proof for an audit.

Many of our campus-based faculty do work in other states or collaborate with their colleagues in other Extension Services. A good many of our Extension educators, especially those in "border" counties adjacent to Wisconsin, Iowa, North and South Dakota, and the Canadian Provinces of Manitoba and Ontario, do work with their colleagues across borders and share information about programs, invite each other and each other's clientele to programs, etc. But there is still the question of whether such sharing meets the definition and would be so considered in an audit of such activities.

We are now asking our staff to report any multi-state activities and which states were involved, so we do have some data on who is involved and what states are involved. But the problem remains that these arrangements are rarely documented, at least not to the extent that you have indicated is necessary to meet the definition of multi-state.

g. Integrated Research and Extension Activities **(See Form CSREES REPT 2/00)**

We believe that most of our Extension programs do show evidence of the input of research information. That "evidence" is partially indicated by the CRIS numbers for research projects and the Minnesota Impacts! database citations shown at the end of program descriptions—often those with Extension themes, as well as joint themes. We cannot always show a research-Extension connection because MAES does not conduct research on some of the issues on which we program—research is used where available, but from other sources.

Appendix C

U.S. Department of Agriculture
Cooperative State Research, Education, and Extension Service
Supplement to the Annual Report of Accomplishments and Results
Multistate Extension Activities and Integrated Activities
(Attach Brief Summaries)

Institution University of Minnesota
State Minnesota

Check one: ____ **Multistate Extension Activities**
____ **Integrated Activities (Hatch Act Funds)**
__X__ **Integrated Activities (Smith-Lever Act Funds)**

Title of Planned Program/Activity	Actual Expenditures FY 2000	FY 2001	FY 2002	FY 2003	FY 2004
See attached list of joint themes	$930,761				
Total	$930,761				

Charles H. Casey — 3/08/01
Director — **Date**

Form CSREES-REPT (2/00)

Appendix C

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Institution University of Minnesota
State Minnesota

Check one: X **Multistate Extension Activities**
Integrated Activities (Hatch Act Funds)
Integrated Activities (Smith-Lever Act Funds)

Title of Planned Program/Activity	Actual Expenditures FY 2000	FY 2001	FY 2002	FY 2003	FY 2004
GOAL 1:					
Program 5, Crop Production	$58,500				
Program 8, Food Crops	93,267				
Total	$151,767				

Charles H. Casey
Director

3/08/01
Date

Form CSREES-REPT (2/00)