2008 University of Minnesota Combined Research and Extension Annual Report of Accomplishments and Results

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I. Report Overview

1. Executive Summary

This report highlights accomplishments of the University of Minnesota's Agricultural Experiment Station and Extension for 2008. The report is organized under seventeen program areas that develop, deliver and evaluate research-based programs in Minnesota.

The Federal FY 2007 Continuing Resolution Allocations, which increased Minnesota's Hatch funding one year by $3,330,562, impact funding totals reported this year.

This is the second integrated UMN Extension/Experiment Station report. MAES funded research is again sorted into Extension's program areas. This allows for clear illustration of how research informs Extension outreach. One emerging research area -- biofuels and renewable energy -- croses several program areas. A new biofuels program has been organized and submitted to the 2009 Plan of Work. This allows more comprehensive reporting of that work.

MAES research addresses broad research arenas.This diversity will continue as globalization of knowledge transfer continues. More often now, MAES research impacts the country and the world. Still, local needs are great and MAES research addresses those needs. For example, recently released general purpose and special purpose MAES soybean cultivars have contributed approximately $1,000,000 of extra income for soybean producers compared with older cultivars. Research on bovine TV due to recent Minnesota outbreaks, and the downgrading of Minnesota's bovine TV status, could impact indemnity payments. Serious economic challenges face Minnesotans, and MAES balances the need for research on near and long-term solutions.

UMN Extension's Enrollment Measures:

a.Demand:There was significant demand for Extension resources in 2008.As a result:

•UMN Extension served 691,092 Minnesotans. This includes federal and state-funded programs, nutrition education (EFNP and FSNP) programs and Farmer-Lender Mediation. •Over five million visitors to UMN Extension's web site made 58,858,320 page views. This is a 50% increase in page views, indicating increased use by viewers. Google's criterion places UMN Extension's web site right after CSREES with a search for "Extension Service". •Planned programs are moving more service on-line. These blend with traditional delivery for good results. b. Outreach to Underserved Populations:Ethnic Minnesotans are 12.8% of the total population. However, ethnic minorities were greater than 12.8% of participants for five of the seventeen planned programs. They are: 1) Nutrition Education (31%); 2) Family Resource Management (31%); 3) 4-H (23%); 4) Community Youth Development (15%); and 5) Family Relations (14%).

c.Multi-State Engagement

•Each of the seven planned programs report formal or informal involvement with other states. •UMN Extension's Distribution Center delivered 141,000 educational materials to fifty states and foreign countries. •A contract with Iowa State Extension provides cost-effective phone service to Minnesotans. In 2008, Iowa supported service to 5,973 Minnesotans. d. Other performance measures, includign integrated service:Integrated research and Extension work is making a difference in Minnesota.The chart below overviews the seventeen programs, their 2008 FTE combined allocations and the type of impact reported for 2008. Impacts include better youth outcomes, reduction of public expenditures for remediation of public problems, conserved natural resources, public safety and increased revenues for agricultural business.

•4-H Programs (41.7 FTE) -- Knowledge, Action •Ag Business Management (32.9 FTE)-- Knowledge, Action and Condition •Leadership and Civic Engagement (11.2FTE) -- Knowledge, Action and Condition •Community Youth Development (7.4 FTE) -- Knowledge, Action and Condition •Family Relations (18.7 FTE) -- Knowledge, Action and Condition •Family

Resource Management (19.2 FTE) -- Knowledge, Action •Environmental Science Education (4.2 FTE) -- Knowledge, Action •Water Resource Management and Policy (30.2FTE) -- Knowledge, Action and Condition •Natural Resource Management and Utilization (136.4 FTE) -- Knowledge and Action •Housing Technology (2.3 FTE) -- Knowledge, Action •Food Safety (23.4 FTE) -- Knowledge, Action •Commodity Crop Production (181.6 FTE) -- Knowledge, Action and Condition •Community Economics (18 FTE) -- Knowledge and Action •Nutrition Education (43.8 FTE) -- Knowledge and Action •Consumer Horticulture (.9 FTE) is not reporting outcomes for 2008. (Note: In 2010, Consumer and Commercial Hort will merge because most staff blends horticultural program responsibilities.) •Commercial Horticulture (65.9 FTE) -- Knowledge and Action •Livestock (75.1 FTE) -- Knowledge, Action and Condition

These 17 programs work for integration and performance measures in a number of ways:

•All demonstrate a research connection in teams and through program business plans. •145 highly specialized Extension educators are at work.44 specialized educators and 206 program coordinators and assistants staff county offices. •A promotion process is now in place to monitor and reward educator performance. •Partnerships with four colleges fund 27 faculty (19 FTE) in academic departments. •The percentage of field educators with Masters or Ph.D.s increased from 51% in 2000 to 81% in 2008. •Since 2004, county investments have increased by 6.29%. Difficult budget cuts in counties lowered county investment only slightly (1.5%) in 2008-2009. However, current investment remains higher now than in 2006. •Grants to Extension increased by 21% in 2008. Income increased 6%. •Extension programs mobilized 17,725 volunteers to leverage 1,338,698 hours of service in 2008. The total value of this service, including 4-H contributions of personal travel and per diem, is $25,259,980.

Total Actual Amount of professional FTEs/SYs for this State

Year:2008	**Extension**		**Research**	
	1862	**1890**	**1862**	**1890**
Plan	367.0	0.0	536.1	0.0
Actual	322.8	0.0	533.3	0.0

II. Merit Review Process

1. The Merit Review Process that was Employed for this year

- Internal University Panel
- Other (Promotions process committee review)

2. Brief Explanation

Extension:

In 2005, a task force was appointed to study Extension's promotion policies and recommend processes that encourage and reward high standards for Extension educators.The new promotion process was approved by Extension Administration for the 2008-2009 promotion year. This objective, systematic and thorough appraisal of campus and regionally-based academic professionals is now in place to appoint, reappoint and promote academic rank.Promotion of UMN Extension staff is neither automatic nor routine, and the decision is made without regard to race, color, creed, national origin, sex, age, marital status, disability, public assistance status, veteran status or sexual orientation.The process does not result in tenure; every Extension Assistant Professor is expected to apply for and receive promotion to the rank of Associate Extension Professor within six years of employment.Promotion decisions rest with the Dean of Extension, based on recommendations from a promotion review committee and Extension Associate and Senior Deans.

The criteria is consistent with the following organizational values:

•Extension's greatest value is to serve Minnesotans by helping them learn to address critical issues. •Scholarship and research provide premise for Extension educational programs. •Extension upholds the land grant mission, providing Minnesotans access to University research and scholarship. •Extension values personal development for staff and organizational learning.

•Extension honors the strength that comes from diversity. •Extension holds itself accountable for making a difference in the lives of Minnesotans. Promotion in academic rank is based on six criteria:

•Program leadership: Extension educators will help to envision, organize and lead educational programs that address priority interests of citizens.

•Extension teaching:Extension teaching will bring relevant content to a current issue.

•Scholarship: Creative intellectual work will contribute to knowledge in the discipline, have impact, be communicated and valued, and is reviewed by peers.

•Engagement: Extension staff will connect with communities and stakeholders to better understand their needs, use their resources and build their capacity.

•Program management:Extension programs will be "done right" through planning, organization, staffing, implementation and evaluation.

•Service:The University and the profession will benefit from staff contributions.

External and internal input during this process is provided by: 1) internal peers or near peers in UMN Extension who comment upon the candidate's performance; 2) external peers or near peers within Extension or the educator's field of interest who comment upon the candidate's promotion portfolio in writing; 3) Promotion Committee members from within the organization who are recommended by the candidate and are ultimately chosen by the associate dean.Ultimately, the Promotion Committee makes a recommendation to an Associate Dean, who makes a recommendation to the Dean.The Dean ultimately decides upon the candidate's promotion.

Experiment Station: For MAES, the merit review process of researchers is managed through collegiate partners that receive MAES funding.This includes the Colleges of:Food, Agricultural and Natural Resource Sciences, Veterinary Medicine, Biological Sciences, Education and Human Development, and Design.The deans and associate deans for research of these colleges are members of the MAES Executive Council.The merit review process is governed by University standards.Within those standards, MAES partner colleges establish their own research peer review process managed by department heads and reviewed for approval by the associate deans for research.

III. Stakeholder Input

1. Actions taken to seek stakeholder input that encouraged their participation

- Use of media to announce public meetings and listening sessions
- Targeted invitation to traditional stakeholder groups
- Targeted invitation to non-traditional stakeholder groups
- Targeted invitation to traditional stakeholder individuals
- Targeted invitation to non-traditional stakeholder individuals
- Survey of traditional stakeholder groups
- Survey of traditional stakeholder individuals

Brief Explanation

In 2008, a stakeholder input process to influence the development of a new strategic plan for agricultural research and extension was completed.A consultant group led seven structured listening sessions, soliciting input from a broad range of University faculty, commodity group representatives, crop and livestock producers, and various industry leaders knowledgeable about the issues faced by Minnesota's agricultural community.Three of the sessions were conducted on the campus of the U of M with research and extension faculty; four were held with industry stakeholders at the University Arboretum over two days; one was held at the Crookston campus of the U of M, and one meeting was held on campus with the Minnesota Agri-Growth Council.In addition, several less formal meetings, visits and conference calls were held with various producers groups,

Stakeholder responsiveness is built into Extension program management with **program business plans** that are maintained by teams of educators and specialists. Teams work to focus their list of targeted audiences, and design outreach processes to engage them in programming and establish two-way communication. In program planning, information gleaned from stakeholder feedback guides the adaptation of research, outreach and educational activities.

As of 2008, Extension's **promotion system** also encourages stakeholder responsiveness and makes it a condition of employee advancement.The promotion process is based on several key values regarding stakeholder involvement:e.g., *Extension's greatest value is to serve Minnesotans by helping them learn to address critical issues.* and *Extension holds itself accountable for making a difference in the lives of Minnesotans.*

Extension also encourages stakeholder participation by managing community **advisory committees** at the county, regional and state level, and organizing opportunities for Extension program participants to discuss programs and services with local county elected leaders and state legislatures.Educational programming, such as *Extension Days at the Capital,* also strengthens the capacity of Extension program participants to interact with elected leaders while creating an Extension presence with key elected leaders.

2(A). A brief statement of the process that was used by the recipient institution to identify individuals and groups stakeholders and to collect input from them

1. Method to identify individuals and groups

- Use Advisory Committees
- Use Internal Focus Groups
- Use External Focus Groups
- Open Listening Sessions
- Needs Assessments
- Use Surveys

Brief Explanation

The MAES Executive Council establishes guidelines and expectations for stakeholder input, such as the listening sessions described here.It also takes the lead in making connections to major stakeholder groups such as governmental relations and agricultural industries.The department heads and Research and Outreach Center heads are responsible for identifying individuals and groups for input into their research areas.There are many ways this is accomplished, including serving on government and agency panels and boards, and similar work with commodity organizations.Advisory boards are convened by Centers or programs.

As reported last year, multiple methods are utilized by Extension to target audiences, form partnerships and adapt services to audience needs.Moreover, the new merit-based promotion system prioritizes connections with the needs of Minnesota's audiences.

In addition, in 2008 Extension's evaluation coordinators conducted a statewide study of Extension organizationalstakeholders to identify key organizational partnerships across Extension and examine the nature of the engagement with these partners. The resulting data analysis, and ongoing action, will allow all Extension programs to:

•gain a comprehensive view of UMN Extension's networks by type of organization, depth of relationship and geographic presence; •identify network concentrations and holes within regions and position categories; •identify network overlaps between centers and programs; and, •monitor network changes over time.
Programs will also provide evidence of UMN Extension's value to stakeholder groups, and inform the development of future Extension-wide impact evaluations by tapping networks where there is a concentration of effort and service.

Methodology of the Organizational Network Study:The evaluators used social network analysis research studies to guide the development of a statewide examination of Extension's relationships with organizations and networks.Each Extension educator, specialist and administrator was asked to provide information about every organization to which they provided at least eight hours of staff work over the previous twelve-month period.Respondents named each organization and classified the nature and depth of the relationship with that organization in the past twelve months. An impressive 96% of staff completed the survey.The data collected is being analyzed to consider the frequency of interaction in certain networks, the depth of relationship in organizations and networks, and the perceived importance of each organization to Extension.Analysis of the research is being guided by a social networks scholar.The results will be examined and utilized by program centers and administrators in 2009.Full results of that examination will be reported in the 2009 Report of Accomplishments Stakeholder descriptions.

Throughout this report of 2008 activities, descriptions of each planned program's organizational networks, as well as the types of interaction held with those organizations, are described in the "Target Audience" section.

2(B). A brief statement of the process that was used by the recipient institution to identify individuals and groups who are stakeholders and to collect input from them

1. Methods for collecting Stakeholder Input

- Meeting with traditional Stakeholder groups
- Survey of traditional Stakeholder groups
- Meeting with traditional Stakeholder individuals
- Survey of traditional Stakeholder individuals
- Meeting with the general public (open meeting advertised to all)
- Meeting specifically with non-traditional groups
- Survey specifically with non-traditional groups
- Meeting specifically with non-traditional individuals
- Survey specifically with non-traditional individuals
- Meeting with invited selected individuals from the general public
- Survey of selected individuals from the general public

Brief Explanation

Experiment Station: Besides the formal processes to identify stakeholders and gather input, there are other processes in place to elicit this input for research decisions, such as requirements of stakeholder input into Rapid Agricultural Research project funding, Small Grains Initiative research project funding, and research-related committees that bring stakeholders to the table, such as the Agronomic and Horticultural Variety Review Committee.

Extension:1) Program teams with specialized program areas implemented plans to share information and receive feedback from individuals and groups that are most important to their program delivery.Program evaluation methods, implemented by each program area's evaluation director, also provide important information because audiences directly share what program elements made outcomes more or less possible.In 2008, program teams described program changes that were being made directly as a result of evaluations conducted last year.2)Regional directors maintain relationships with county Extension committees and Commissioners, and assess progress through training the investment of individual counties served by Extension.3)The dean, associate deans and government relations staff scan statewide stakeholders, examine current issues and concerns that need a research-based educational response, and identify new opportunities for partnerships to grow or redirect Extension's mission.A dean's designee serves on the University of Minnesota's Public Engagement initiative, which now better engages Extension as a vehicle for the University's outreach to communities.4) A rigorous process to identify stakeholders was conducted through the previously described study of organizational networks.Data from this study will be used to tap previously under-appreciated stakeholders, and to describe the influence of Extension programming statewide.

3. A statement of how the input was considered

- In the Budget Process
- To Identify Emerging Issues
- Redirect Extension Programs
- Redirect Research Programs
- In the Staff Hiring Process
- In the Action Plans
- To Set Priorities

Brief Explanation

The issues identified during the listening sessions to develop a strategic plan for agriculture reflected a wide range of concerns, some of which are already the focus of attention by MAES researchers.One specific result from these sessions has been, in response to the high level of interest in renewable fuels expressed by stakeholders that came out of these listening sessions, our Federal Plan of Work has been modified to report on that body of work beginning in 2009The listening sessions also revealed a number of ways that Extension and the Experiment Station can sharpen its image as a valuable resource to the state's agricultural base.

Program teams used the information to create program changes. For example, a new component of community economic programming is being developed to help communities implement plans; Financial Literacy staff have redirected effort toward individuals (rather than professionals) because professionals said they are not able to meet the demand for financial literacy programming during an economic crisis.And strengthened face-to-face connections with pesticide management programs is changing the research and education agenda of that program team.

Deans and directors use feedback to shape priorities and administrative decisions.Concerted efforts to keep administrative costs below ten percent, for example, are being sustained because of feedback from the regents of the University of Minnesota and state legislatures, and continued efforts to play an important role in disaster mitigation are being sustained at the request of local constituents.As economic conditions continued to worsen in 2008, regional directors redoubled their efforts to listen to local stakeholders, resulting in responsive education and outreach activities for 2009.

Brief Explanation of what you learned from your Stakeholders

Adaptations in program research outreach and educational activities are the primary response to stakeholder feedback.

Feedback from the listening sessions revealed:

- Agricultural commodities and resources have been shifted into an expanding role of providing clean and renewable energy.

- Greater public visibility by university faculty is an important means by which stakeholders can be encouraged to provide input into the research agenda.

- Stakeholders repeatedly emphasized the need for greater and more accessible technical assistance in adopting production practices that could cost-effectively reduce environmental concerns.

- In many cases there is widespread common ground on the issues viewed as critically important, even when the specific interests of different stakeholders would appear to compete.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
7905975	0	5149938	0

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	4537773	0	7886126	0
Actual Matching	8938273	0	42542860	0
Actual All Other	18059897	0	36059540	0
Total Actual Expended	31535943	0	86488526	0

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous years				
Carryover	0	0	0	0

V. Planned Program Table of Content

Program #1

V(A). Planned Program (Summary)

1. Name of the Planned Program

4-H Programs in Minnesota

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
805	Community Institutions, Health, and Social Services	20%		20%	
806	Youth Development	80%		80%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	44.1	0.0	0.0	0.0
Actual	41.7	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
1178416	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
1697539	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
7683938	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

In 2008, Minnesota 4-H is actively engaged in three national mission mandates. Each provides a structure to support and guide program delivery throughout the state.They are:

1) **Science, Engineering and Technology**:These initiatives secured $150,000 from 3M to create and develop a sustainable program for the Power of Wind curriculum, while partnering with five other Extension systems nationwide.

2)**Citizen/Leadership**:A literature review has identified best practices and initial work is focused on developing the Minnesota 4-H Civic Engagement efforts with teens.

3)**Healthy Lifestyle:** This area is in the earliest phase of development, and intends to integrate programs to create "nature-engaged families".

In 2008, club membership growth increased 3.8%.Total enrollment over the past four years has increased 26% from the initial amount of 26,100 in 2004 when the regional system was instituted.In addition, Minnesota 4-H delivered 228,008 total experiences for young people.

(For more information, visit www.extension.umn.edu/4-H.)

2. Brief description of the target audience

The target market for 4-H clubs is youth. In the coming five years, strategic recruitment as well as training for local club leaders, has been designed to double 4-H club membership by 2010 from 26,000 to 52,000. In 2008, membership in 4-H clubs was 32,898.

The 2008 organizational network study described the 4-H programs key relationships with organizations that are important in the lives of youth:public schools were identified as 27.2% of 4-H contacts; community education programs as 16.8%, and local fair boards were 7.3% of contact.Strong partnerships characterize these relationships; 64.9% of the contacts were engaged in apartnership around a joint effort for mutual benefit.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	0	4500	169000	10
2008	0	67569	228008	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	2	0	
2008	4	0	4

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- The number of underserved youth participating in 4-H program activities will increase yearly. (Target expressed as a percentage of youth involved in programs from groups targeted as "underserved.")

Year	Target	Actual
2008	12	23

Output #2

Output Measure

- Participants will be satisfied with the out-of-school activities delivered through the 4-H program. (Target expressed as percentage of those who are satisfied.)

Not reporting on this Output for this Annual Report

Output #3

Output Measure

- Well-trained adult volunteers will work with Minnesota's young people. (Target expressed as percentage of volunteers trained in effective practices for working with 4-H youth.)

Year	Target	Actual
2008	80	87

Output #4

Output Measure

- Learning settings (or point of service) in 4-H will meet the essential elements that promote positive youth development. (Target expressed as scores out of 20 items on the 4-H Youth Program Survey.)

Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Youth involved in 4-H programs will demonstrate skills and knowledge on target with their youth development. (Target expressed as a percentage of 4-H youth showing appropriate skills.)
2	Youth participating in 4-H programs will demonstrate more civic engagement and volunteerism in their communities than a statewide comparison group. (Target expressed as a percentage of difference between the two groups.)
3	Youth participating in 4-H programs will be less likely to engage in risk behaviors (e.g., smoking, drinking, riding in cars with people drinking) than a comparison group of Minnesota youth. (Target expressed as an average of difference among five targeted behaviors.)

Outcome #1

1. Outcome Measures

Youth involved in 4-H programs will demonstrate skills and knowledge on target with their youth development. (Target expressed as a percentage of 4-H youth showing appropriate skills.)

Not reporting on this Outcome for this Annual Report

Outcome #2

1. Outcome Measures

Youth participating in 4-H programs will demonstrate more civic engagement and volunteerism in their communities than a statewide comparison group. (Target expressed as a percentage of difference between the two groups.)

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	21	13

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

A higher percentage of 4-H youth volunteer in their communities than non-4-H youth. Data from 'Exploring the Supply and Demand for Community Learning Opportunities in Minnesota' show that 70.9% of 4-H youth volunteer, compared to 57.6% of non 4-H participants (difference = 13.3%). Compared to youth nationally in the All Work and No Play survey, 10.9% more Minnesota 4-H participants volunteer (70.9% vs. 60%). Longitudinal data from The 4-H Study of Positive Youth Development show that Minnesota 4-H youth sustain and may increase their volunteering over a three-year period.

4. Associated Knowledge Areas

KA Code	Knowledge Area
805	Community Institutions, Health, and Social Services
806	Youth Development

Outcome #3

1. Outcome Measures

Youth participating in 4-H programs will be less likely to engage in risk behaviors (e.g., smoking, drinking, riding in cars with people drinking) than a comparison group of Minnesota youth. (Target expressed as an average of difference among five targeted behaviors.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	15	10

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The high percentage of Minnesota 4-H participants who volunteer in their communities demonstrates their credibility as productive citizens. Further, 4-H participants are more likely than non-participants to be involved in pro-social activities.

What has been done

We report percentages for 4-H participants compared to non-participants using three surveys, the 4-H Study of Positive Youth Development; the Minnesota Student Survey; and Exploring the Supply and Demand for Community Learning Opportunities in Minnesota.

Results

In each item below, 4-H participants' involvement in positive developmental activities compared positively to percents for youth in the state as a whole:
- Mentorship programs: 4-H youth 21.8% higher
- Academic or hobby clubs: 4-H youth 18.1% higher
- Science and Technology programs/clubs: 4-H youth 13.3% higher
- Fine Arts Programs: 4-H youth 12.2% higher
- Religious groups: 4-H youth 4.7% higher
- Sports and athletics: 4-H youth 3.9% higher
- Community organizations: 4-H youth 1.3% higher

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development
805	Community Institutions, Health, and Social Services

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought,weather extremes,etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration,new cultural groupings,etc.)

Brief Explanation

Reviewers should note that the absence of Experiment Station dollars for research specialists in youth development does not correspond to a lack of research base for 4-H programs. Rather, other dollars and collaborations are utilized to assure that research base.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Comparisons between program participants (individuals,group,organizations) and non-participants
- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.

Evaluation Results

The 4-H Study of Positive Youth Development is a longitudinal study describing youth development of 4-H club participants. The project is funded by the National 4-H Council and began in 2002-2003.Over the course of the study, the project has sampled more than 4,000 youth from 25 states and more than 2,000 parents.In 2008, we completed the **6th wave of this study**, having surveyed 88 youth who were part of the first wave.We can now report data from 350 youth who participated in the third wave of data collection and 88 of those youth who participated in the 6th wave of data collection in 2008.A key advantage of participation in this multi-state longitudinal study is the ability to compare Minnesota with national study results over time to assess how Minnesota 4-H youth compare with youth nationally.Minnesota's sample is comprised only of youth who were 4-H participants and who chose to take part in the study.(To hear this study described by Principal Investigator Richard Learner, view a video at www.extension.umn.edu/appliedyouthresearch.)

The study analyzes the five Cs of youth development. **Confidence** relates to positive identity. **Competence**is measured by three sub-scales of academic, social, and physical competence as well as students' grades in school. **Character** measures how youth value diversity, personal values, social consciousness and conduct behavior. **Connection** asks youth about connections to peers, family, school and community. **Caring**asks youth if it bothers them when bad things happen to any person.

Conclusion:Using the average of all 5 C's, **Minnesota youths total score of positive youth development is 78.2 at wave 3 and 75.2 at wave 6.**Assessment of results should take into account that 14.8% of wave 6 participants were out of high school.Of all wave 6 participants, 45% participate at least monthly in 4-H programs; 57% have attended a 4-H camp.These youth are active in a variety of activities in addition to 4-H:92% play sports; 88% volunteer, 77% have a part-time job, 91% are active in religious activities or instruction. Participants are also often leaders in their activities -- 90% say they have been a leader in a group or organization in the past year.We view these longitudinal results with a bit of caution given the small sample size at wave 6.To that end, we are working on extending the study to 900 additional youth, including a large urban sample.

Key Items of Evaluation

The nationalstudy of 4-H youth nationally demonstrated that 4-H youth were more likely than students in other out-of-school time activities to be engaged in school, get good grades, expect to go to college, and be emotionally engaged in school.This study compared 4-H youth to a comparison group that was alike in gender, race/ethnicity, geographic type, and family demographics.Minnesota's assessment of its youth shows that the outcomes in positive youth development is sustained over time. We want to expand this longitudinal data pool.

Program #2

V(A). Planned Program (Summary)

1. Name of the Planned Program

Agricultural Business Management

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
601	Economics of Agricultural Production and Farm Management	20%		20%	
602	Business Management, Finance, and Taxation	20%		20%	
603	Market Economics	30%		30%	
604	Marketing and Distribution Practices	20%		20%	
610	Domestic Policy Analysis	10%		10%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	8.9	0.0	16.3	0.0
Actual	9.8	0.0	23.1	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
242088	0	949397	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
392084	0	1949537	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
137836	0	1628355	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Extension: Agricultural Business Management programs offer: 1) education for farm transfer and estate planning, 2) FINBIN database analysis and reports (through the Center for Farm Financial Management), and 3) education and information about farm policy, the farm bill and marketing and selling practices pre and post-harvest.In 2008, educational programming to support farm transitions and estate planning continued to be in demand.Escalating land values are changing the types of decisions families need to make about land ownership and transfer, and the aging baby boomer population is continuing the trend of property transfer.

A growing method of service delivery in 2008 convenes marketing groups to discuss issues on pre- and post-marketing decisions based on shifting economic considerations.Moreover, services to families are emphasizing joint decision-making and team-oriented business operations.(For more information about these programs, visit www.extension.umn.edu/AgBusiness.)

Experiment Station: Important business and economic policy research conducted this year included new and emerging challenges and opportunities for Minnesota agriculture, including issues of climate, renewable energy and water quality. The results and impacts of this work is described in relevant program areas, and include:
Water quality impacts of TMDL loading in various watersheds and the role of economic incentives in improving water quality; and

Other key research studies and extension efforts include the following:
•Research to support improved decision-making in farm planning and financing for farmers and lender. •Research to support improved decision-making in financing for agricultural business owners. •Research on the economic interrelationships in both the domestic and foreign food and agricultural industries. •Development and maintainance of an analytical support system that facilitates research and analysis on food, agriucultural and trade policy issues. •Evaluation of supply, demand and policy factors in the U.S. and abroad that influence both short-term and long-term trade prospects and patterns. •Information to help public policy participants and decision makers evaluate issues and increase public understanding of these issues.

2. Brief description of the target audience

The 2008 organizational network survey and anecdotal data has shown that Extension and Experiment Station research has a greater impact on agriculture when it delivers key information to those who can help disseminate it. The 2008 organizational network survey confirms our outreach to these conduits.The ABM team supplies key information and forms key partnerships with: 1)banks and credit companies who help farmers manage business investments; (18.3% of contacts); 2) private businesses, especially farm businesses (15.1%); 3) trade associations (14%) and 4)professional agricultural associations (11.8%).

Substantive information-sharing is the primary activity reported with these partners (44% of responses); followed by partnership around a joint effort for mutual benefit (28%); and ongoing roles where Extension influences the organizations' outcomes and processes (15%).

Other key audiences for Experiment Station research in agricultural business management include policy makers at the state and national level; academic community; and local development community and citizen groups.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	4500	4000	0	0
2008	5807	9402	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	1	15	
2008	3	18	21

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Educational events will deliver agricultural business management content. (Target expressed as the number of events.)

Year	Target	Actual
2008	140	118

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Participants will gain knowledge in business management and risk management practicees. (Target expressed as the number of direct person contacts reporting new knowledge.)
2	Participants will act on university-based research they learned. (Target expressed as the number of direct "person contacts" who acted on or have made plans to act on information associated with their Extension learning.)
3	In post-program surveys, farm owners will report increased net in farm income as a result of actions taken. (Target expressed as an average net income increase for outcomes of any program intervention.)

Outcome #1

1. Outcome Measures

Participants will gain knowledge in business management and risk management practicees. (Target expressed as the number of direct person contacts reporting new knowledge.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2500	3762

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
602	Business Management, Finance, and Taxation
604	Marketing and Distribution Practices
603	Market Economics
601	Economics of Agricultural Production and Farm Management

Outcome #2

1. Outcome Measures

Participants will act on university-based research they learned. (Target expressed as the number of direct "person contacts" who acted on or have made plans to act on information associated with their Extension learning.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2500	3065

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
604	Marketing and Distribution Practices
603	Market Economics
602	Business Management, Finance, and Taxation
601	Economics of Agricultural Production and Farm Management

Outcome #3

1. Outcome Measures

In post-program surveys, farm owners will report increased net in farm income as a result of actions taken. (Target expressed as an average net income increase for outcomes of any program intervention.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	6700	5263

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

For those participants returning follow-up evaluations, results indicated farmer participants changed or modified their post-harvest marketing practices as a result of attending the program. These actions enabled them to increase net farm income by $5,263 per farm, on average. Extrapolating the average increase in net farm income to all 184 participants of that program, the total financial impact of the post-harvest marketing program effort was $968,392 for the 2007-08 programming year.

4. Associated Knowledge Areas

KA Code	Knowledge Area
604	Marketing and Distribution Practices
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought,weather extremes,etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration,new cultural groupings,etc.)

Brief Explanation

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- Time series (multiple points before and after program)

Evaluation Results

Key Items of Evaluation

Program #3

V(A). Planned Program (Summary)

1. Name of the Planned Program

Leadership and Civic Engagement

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
608	Community Resource Planning and Development	50%		50%	
803	Sociological and Technological Change Affecting Individuals, Families and Communities	50%		50%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	11.1	0.0	0.0	0.0
Actual	11.2	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
327463	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
448996	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
622810	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Leadership and Civic Engagement (LCE) programs use multiple program methods to improve the quality of community leadership and the processes that engage the public in decisions.To help communities examine and address a community's present and future, LCE educators and specialists provide: 1) community-based assessments, 2) workshops, 3) consultation, and 4) long-term cohort groups.

In 2008, there was growing demand for leadership education cohort groups. Outreach, marketing and relationship development have all sought to grow this demand, because program evaluation demonstrates that cohort group programs achieve outcomes better than one-time workshops. More than thirty cohort groups were convened this year.Seven cohorts are helping local government consider ways they can change to address new demands.Five of the cohort groups are helping new community leaders emerge in counties and cities. Three supported leaders in soil and water conservation districts, and two supported agricultural and rural leaders.Thirteen mobilized emerging and existing community leaders to address poverty.

In 2008, LCE teams also completed the pilot of a new survey instrument that mobilizes communities to assesstheir social capital --bonds, bridges and links within communities that support the health and well-being of communities.Progress was made in validating the tool and determining what kind of information is most helpful to communities as they make decisions about how to strengthen community life.Other states are interested in using this tool, and a licensing agreement structure has been constructed to facilitate their requests.(For more information, visit www.extension.umn.edu/community.)

Reviewers should note that the absence of Experiment Station dollars for research specialists in youth development does not correspond to a lack of research base for 4-H programs. Rather, other dollars and collaborations are utilized to assure that research base.

2. Brief description of the target audience

Leadership and Civic Engagement programs reach out to five primary audiences: local government agencies, employees and leaders, nonprofit organizations and collaborative associations, foundations and their grantees, the natural resources sector and the agricultural sector.

According to the 2008 organizational network survey, LCE programs most frequently work with county government (24.4% of contacts). Other frequent connections are made with Soil and Water Conservation Districts (12.6%), and community coalitions and networks (9.2%).The remaining contacts are widely dispersed.

Most (32.8%) of the contacts created a partnership around a joint effort with mutual benefit.An additional 23.5% of contacts provided expert advice to the organization; 19.3% provided substantive information to organizations; 15.1% were engaged in an ongoing role to influence the organizations' outcomes/processes.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	**Target**	**Target**	**Target**	**Target**
Plan	4500	4500	0	0
2008	6287	16815	188	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	1	0	
2008	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Community cohort groups will meet to develop leadership skills and create civic connections. (Target expressed as number of cohort groups convened.)

Year	Target	Actual
2008	19	31

Output #2

Output Measure

- Community assessments and research projects will help communities understand their strengths related to civic leadership and social capital. (Target expressed as number of local assessments conducted.)

Year	Target	Actual
2008	8	17

Output #3

Output Measure

- Workshops and other structured gatherings will provide communities with increased skills, knowledge and behaviors related to leadership and civic engagement. (Target expressed as number of events.)

Year	Target	Actual
2008	200	229

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Community leadership cohort members will increase the intensity of their leadership. (Target expressed as the percentage of cohort group members who change their level of organizational involvement from "inactive" to "active" or "leader" positions.)
2	U-Lead cohort members will increase leadership skills and knowledge. (Target expressed as percentage of U-Lead participants reporting pre-to-post improvement in civic engagement, community commitment, community knowledge, personal growth and self-efficacy and shared future and purpose.)
3	Structured community gatherings are more productive. (Target expressed as percentage of participants who report in follow-up surveys that participation in LCE programming led to improvements in the process and product of structured community gatherings.)
4	Findings generated from community-based social capital assessments guide communities to informed action. (Target expressed as percentage of participants who report in follow-up surveys that social capital assessment led to actions designed to strengthen trust, networks or civic engagement.)
5	Community decision-makers improve the quality and quantity of engagement with those who have a stake in public decisions. (Target expressed as percentage of participants who report in follow-up surveys that collective decision-making has effectively engaged relevant stakeholders.)

Outcome #1

1. Outcome Measures

Community leadership cohort members will increase the intensity of their leadership. (Target expressed as the percentage of cohort group members who change their level of organizational involvement from "inactive" to "active" or "leader" positions.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	45	47

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Leaders available in communities affect the quality of public decisions made, and the links that communities have to helping institutions outside themselves. Yet, the complexity of accepting leadership roles in a time of devolution, civic skepticism and work and family stress limits the number of leaders available.

What has been done

Leadership education cohort groups are convened by and with local communities of interest and place.

Results

In 2008, evaluators studied nine cohort groups that involved 204 participants. Of these participants, 47% increased and deepened their leadership involvement after program completion. Another way to understand the data is to examine changes in organizational roles by cohort members. Cohort program participants reported a total of 960 organizational roles held during the program. At baseline, 28.6% of these were leadership roles. At program end, these had increased by 9%. Upon deeper analysis, we found that the percentage of increase was strongest for increased new leadership roles in county, regional, state and national organization roles. For county roles, there was a 16% increase; for regional roles, 22%; for state roles the increase was 14% and for national roles the increase was 35%.

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development

Outcome #2

1. Outcome Measures

U-Lead cohort members will increase leadership skills and knowledge. (Target expressed as percentage of U-Lead participants reporting pre-to-post improvement in civic engagement, community commitment, community knowledge, personal growth and self-efficacy and shared future and purpose.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	85	89

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

The vast majority of U-Lead cohort program participants reported improvement in the five domains of community leadership (as defined by research on community leadership: Civic Engagement (88.4%); Community Commitment (84.4%); Community Knowledge (92%); Personal Growth and Self-efficacy (95%) and Shared Future and Purpose (84.8%).

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development
803	Sociological and Technological Change Affecting Individuals, Families and Communities

Outcome #3

1. Outcome Measures
Structured community gatherings are more productive. (Target expressed as percentage of participants who report in follow-up surveys that participation in LCE programming led to improvements in the process and product of structured community gatherings.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	55	95

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

LCE educators guided local decision-makers in creating effective public forums. They guided meetings themselves and/or helped local leaders more effectively engage their public. The program's evaluation coordinator conducted an electronic survey with community organizations that received this technical assistance during 2008 to learn how they viewed the success of the meetings, as well as the success of the decisions made at those meetings.

Results

Of 19 respondents, 95% said the meetings facilitated by Extension educators were successful in achieving anticipated goals. 75% felt the meetings resulted in successful formulation of action plans to address community / organizational goals, and 80% of those surveyed reported that their organizations had been successful in following through on these action plans.

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development
803	Sociological and Technological Change Affecting Individuals, Families and Communities

Outcome #4

1. Outcome Measures

Findings generated from community-based social capital assessments guide communities to informed action. (Target expressed as percentage of participants who report in follow-up surveys that social capital assessment led to actions designed to strengthen trust, networks or civic engagement.)

Not reporting on this Outcome for this Annual Report

Outcome #5

1. Outcome Measures

Community decision-makers improve the quality and quantity of engagement with those who have a stake in public decisions. (Target expressed as percentage of participants who report in follow-up surveys that collective decision-making has effectively engaged relevant stakeholders.)

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	35	92

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Successful public participation strategies allow community government and civic groups to make decisions that are more informed while holding more true to the ideals of democracy.

What has been done

Extension consults with community groups regarding the authentic engagement of community members in decisions, utilizing principles of public engagement as researched and taught at the UMN's Humphrey Institute, as well as others in the field of community development.

Results

In an electronic survey with community organizations that received technical assistance that engaged the public (n = 13), 92% responded that the process they used was effective in engaging relevant stakeholders.

4. Associated Knowledge Areas

KA Code	Knowledge Area
803	Sociological and Technological Change Affecting Individuals, Families and Communities
608	Community Resource Planning and Development

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Appropriations changes
- Public Policy changes

Brief Explanation

Reviewers should note that the absence of Experiment Station dollars for research specialists in youth development does not correspond to a lack of research base for 4-H programs. Rather, other dollars and collaborations are utilized to assure that research base.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)

Evaluation Results

In 2007 and 2008, Extension conducted an evaluation study to determine whether the Connecting Rural Communities program could create sufficient outcomes to be replicated statewide. Connecting Rural Communities uses web resources provided by the Northeast Rural Development Center as well as programming in leadership, civic engagement and community economics, to mobilize communities to utilize high-speed technology to revitalizetheir community.The Northeast Center frames the Connecting Rural Communities program as an opportunity to address three "legs" to the work of creating a technology-rich community. Through pre-post community surveys in the two communities where the program was piloted, we measured change in those three domains of community internet use. The domains are:1)Access and Infrastructure -- which measured the amount of affordable broadband service had available to them (e.g., at home, work, school, library). 2) Training and Skill Development -- describing opportunities for people to learn about the internet, and support services available to users; and 3) Online Productivity -- which refers to use of the internet to work, create online content or produce and distribute goods and services.

Two separate surveys were conducted one year apart for purposes of baseline and follow-up comparison.An organizational survey was conducted to measure organizational uses of the Internet, while an individual survey was conducted with community residents.The findings from the organizational survey show large changes in the three domains of Internet activity, most notably in the domain of community-based training and skill development:

- Access and Infrastructure score increased 25.8%.
- Training and Skill Development Score increased 77.5%.
- Online productivity score increased 18.6%.

The West Central Telephone Association credits this initiative for the installation and stronger utilization of high-speed technology in two key community organizations.

Key Items of Evaluation

This study demonstrated that a blend of public participation processes and internet education will help communities enrich their use of high-speed technology.In Minnesota, we hope to use this information to guide and support Broadband initiatives developed through America Revitalization and Recovery Act.Some of the direct outcomes of the Connecting Rural Communities project in Minnesota included: 1) new high-speed internet availability within a senior citizen's home; 2) use of the internet to put museum holdings on line; 3) a "Seniors-Helping-Seniors" program that brings high school seniors to senior citizens to help them use the internet; and 4) a community vision of attracting at-home entrepreneurs and workers to become new community residents.

Program #4

V(A). Planned Program (Summary)

1. Name of the Planned Program

Community Youth Development

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
805	Community Institutions, Health, and Social Services	30%		30%	
806	Youth Development	70%		70%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	12.8	0.0	0.0	0.0
Actual	7.4	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
102507	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
652107	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
805897	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

(Note:In 2007, Community Youth Development programs changed its name to **The Youth Work Institute (YWI).)**Institute staff are sought after for partnerships to strengthen the youth development field, advance policy and advocacy, conduct training and infuse new research and ideas into daily practice.Efforts in 2008 strengthened outreach to the youth development field through increased use of webinars, a digital outreach center, and online courses designed to advance the field.Also, a survey of workforce issues was done this year to learn more about the needs and concerns of YWI's target audiences. (See results in the Description of Target Audience.)The Institute was successful this year in piloting and beginning the evaluation and dissemination of six signature programs. These programs aim to be accepted and valued by practitioners, and are based on bodies of research and knowledge put forth by, for example, Community Networks for Youth Development in San Francisco, UMN's Howland Endowed Chair Terri Sullivan and others.

The Quality Matters program, which focuses on change strategies at the program and organizational level, was widely utilized this year, with successes in deepening the commitment to quality youth development programming among key Minnesota organizations. (For more information, visit www.extension.umn.edu/YouthWorkInstitute.)

2. Brief description of the target audience

The audience for Youth Work Institute programs is all persons working with and on behalf of youth.According to the 2008 organizational network studies, primary contacts for the YWI are Youth Program Organizations (18% of contacts), Minnesota's social service organizations (11.5%) and public schools (10.3%).A majority of these contacts (51%) work to provide substantive information to youth-serving organizations and their staffs.

Collaborative work with the national Next Generation Youth Work Coalition's Career Pathways Project prompted a survey of workforce issues in the fall of 2007 and the winter of 2008.Two findings of this audience analysis are important to the Youth Work Institute's agenda moving forward:

•Rewards:There is a substantial group of Minnesota youth workers that are well-educated, have been in youth work for a considerable period of time, continue to work directly with youth and intend to stay in the field. This group seeks rewards and recognition for the investments they are willing to make in professional development.

•Entry and Retention:New, younger youth workers need to see a tangible career pathway that encourages artful youth workers to stay in the field, and guides new youth workers in their understanding and core knowledge around the fundamentals of positive youth development work.A certificate program linked to credit-bearing college credits will create a sense of belonging and progression in youth work that ranges from direct service to middle management to system leaders.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	**Target**	**Target**	**Target**	**Target**
Plan	2250	4250	0	0
2008	5705	13766	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	2	0	
2008	1	0	1

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Youth Work Institute products and publications will be disseminated statewide

Not reporting on this Output for this Annual Report

Output #2

Output Measure

- The number of educational events offered to professionals will increase. (Target expressed as the number of events, classes, workshops, etc. offered.)

Year	Target	Actual
2008	175	179

Output #3

Output Measure

- The number of organizations participating in capacity building consultation and technical assistance will increase. (Target expressed as number of participating organizations.)

Year	Target	Actual
2008	75	86

Output #4

Output Measure

- Individuals representing diverse organizations will participate in networks and collaboratives supported by Youth Work Institute Staff. (Target expressed as number of organizations involved.)

Year	Target	Actual
2008	115	182

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Participants at public educational offerings will report that they increased their knowledge of current research and effective program practices. (Target expressed as a percentage of participants.)
2	Youth Development organizations participating in consultation and technical assistance will report that their participation increased their ability to effectively serve youth. (Target expressed as percentage of those in agreement.)
3	Youth-serving organizations across the state will become aligned with research-based standards of youth quality.
4	Research based work with local youth and youth workers will result in supporting youth in addressing youth gang violence.

Outcome #1

1. Outcome Measures

Participants at public educational offerings will report that they increased their knowledge of current research and effective program practices. (Target expressed as a percentage of participants.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	90	97

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

Evaluation summary averages for all Youth Work Institute classes in 2008 demonstrated high levels of learning and application. On a four-point Likert Scale -- with 4 being strong agreement and 1 being strong disagreement, participants reported the following:

1) I will be able to apply what I learned to my work. (3.53)
2) My understanding of the research related to this topic was enhanced. (3.38)
3) My understanding and knowledge of this topic increased. (3.48)

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development
805	Community Institutions, Health, and Social Services

Outcome #2

1. Outcome Measures

Youth Development organizations participating in consultation and technical assistance will report that their participation increased their ability to effectively serve youth. (Target expressed as percentage of those in agreement.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	80	98

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The National Research Council has convened experts in research, policy and practice to examine effective community youth development programs. They identify these key features as essential: 1) physical/psychological safety, 2) appropriate structure, 3) supportive relationships, 4) opportunities to belong, 5) positive social norms, 6) support for self-efficacy, 7) opportunities to build skills, and 8) integration of family, school and community efforts. Programs with more features are likely to better support for young people's positive development.

What has been done

In 2005, the Youth Work Institute piloted a program, Quality Matters, focused on infusing change strategies at the program and organizational level of youth programs in order to make these key features consistently present in youth development programs. In 2006-07, the Minnesota Department of Education offered Quality Matters to grant recipients. In 2008, thirty-four 21st Century sites continued to access the Quality Matters training, support and consultation services.

Results

Quality Matters shows signs of increasing quality. We discovered the following improvement scores.

Safe Environment: 4% increase
Supportive Environment: 20% increase
Interaction: 17% increase
Engagement: 28% increase

4. Associated Knowledge Areas

KA Code	Knowledge Area
805	Community Institutions, Health, and Social Services
806	Youth Development

Outcome #3

1. Outcome Measures

Youth-serving organizations across the state will become aligned with research-based standards of youth quality.

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Institutions that demonstrate the key features essential to quality programs are more likely to provide better support for young people's positive development. In order to make a difference in youth development, core youth development systems must be reached.

What has been done

The Quality Matters program focused on infusing change strategies in the programs, organizations and systems that serve youth to make these key features consistently present. The Minnesota Department of Education offered Quality Matters to its grant recipients, leading to ongoing work to integrate the key features.

Results

Institutional changes have been made in Minnesota's organizations, grant networks and polity initiatives: 1) Three regional Initiative Foundations use Quality Matters (QM) training and assessment for its grantees. 2)Four nationally affiliated organizations are using the QM assessment across their systems -- two city-wide YMCAs, Boys and Girls Clubs across the Twin Cities and a Beacons program in Minneapolis. 3) The Duluth YMCA has created a new 'quality director' position to increase improvement efforts. 4) The Minnesota Department of Education now requires use of a valid quality assessment tool in grant reporting for all grantees. 5) A large percentage of 2008 youth program grant proposals noted use of the QM assessment and the United Way is framing quality as a priority in new RFPs. 6) Quality was a core topic at the National Governor's Summit this year. 7) A Governor's initiative will embed quality in multiple policies.

4. Associated Knowledge Areas

KA Code	Knowledge Area
805	Community Institutions, Health, and Social Services
806	Youth Development

Outcome #4

1. Outcome Measures

Research based work with local youth and youth workers will result in supporting youth in addressing youth gang violence.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Youth gang activities in some central St. Paul neighborhoods is a difficult problem. Any meaningful and lasting remedy must involve the youth themselves.

What has been done

Ongoing joint training of young people and youth workers in democratic civic engagement strategies has involved six youth, five adult youth workers and the municipal director of St. Paul's recreation centers.

Results

There has been both an increase and then a decrease in youth gang violence and murders in the neighborhood where the recreation center is located, with the decrease a result in part of how the trained youth workers worked with youth gang members, including facilitating a truce between gangs. As a result of the success of the project, the St. Paul Parks & Recreation Department has created a special space for the new mentoring project and is beginning to use youth engagement strategies in training other workers in program development city-wide.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development
805	Community Institutions, Health, and Social Services

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Appropriations changes
- Public Policy changes

Brief Explanation

Reviewers should note that the absence of Experiment Station dollars for research specialists in youth development does not correspond to a lack of research base for 4-H programs. Rather, other dollars and collaborations are utilized to assure that research base.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- Before-After (before and after program)
- Case Study

Evaluation Results

Key Items of Evaluation

Program #5

V(A). Planned Program (Summary)

1. Name of the Planned Program

Family Relations

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
802	Human Development and Family Well-Being	100%		100%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	9.2	0.0	5.7	0.0
Actual	9.0	0.0	9.7	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
505826	0	124507	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
58927	0	836578	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
72688	0	221398	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Research examined characteristics of family systems to identify the impact of environment and decision-making on quality of marriage and family life.Specific research addressed positive family development and effective services that support families.Research effort included study of processes and patterns of community adaptation, acceptance of youth and frail elders and various minority groups in Minnesota, i.e. Latino, Hmong, Vietnamese, Native American and Somalian.

Extension:Curriculum, training and research updates continue to be offered to professionals in the field of family relations as well as parents themselves.In 2008, the Family Relations team began an initiative to addresseducational disparities in the school system. This initiative is a collaborative effort ofthe Children, Youth and Family Consortium at the University of Minnesota and the McKnight Foundation. The goal is to connect parents to schools.

The program design began in 2008 with structured focus groups that involved 126 parents from four cultural groups -- Latino, African American, Somali and Hmong.These cultural guides will help us to determine how to address school success through parent/school partnerships.A program is being designed and will be piloted in 2009.(For more information, visit www.extension.umn.edu/family.)

2. Brief description of the target audience

The 2008 organizational network study demonstrated a wide range and reach of relationships between the Family Relations programs and organizations that reach parents.They range from social service organizations (12.1% of contacts), to coalitions and networks (12.1%), professional associations (10.3%), media organizations (8.6%), community/cultural organizations and health organizations (6.9% each).This wide reach assures that the group is able to reach parents where they have current connections, and accomplishes wide diversity among program participants.In 2008, 14% of family relations program participants were from Minnesota's ethnic minority population.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	3000	1200	50	0
2008	3504	1476	29	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	2	22	
2008	3	19	22

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Publications will be distributed.

Year	Target	Actual
2008	25000	13155

Output #2

Output Measure

- Professionals will be trained.

Year	Target	Actual
2008	300	317

Output #3

Output Measure

- Parents will participate in Extension trainings.

Year	Target	Actual
2008	2700	3187

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Professionals who work with parents and families will increase their knowledge regarding up-to-date research on parenting practices, positive child development and family functioning and well-being. (Target expressed as a percentage of participants who report knowledge gain.)
2	Parents will increase their knowledge regarding up-to-date research on parenting practices, positive child development and family functioning and well-being. (Target expressed as a percentage of participants who reported knowledge gain.)
3	Professionals who work with parents and families will improve their skills in working with parents and families (e.g., utilizing best practices for improving parenting skills). (Target expressed as a percentage of participants who report improving skills.)
4	Parents will improve their parenting skills. (Target expressed as percentage reporting improvement.)
5	Parents who are mandated to participate in Parents Forever because of contentious divorce situations will reduce conflict in front of their children following divorce. (Target expressed as percentage of parents who report reducing conflict.)
6	Parents mandated to participate in Parents Forever because of contentious divorce situations will increase their children's access to both parents following divorce. (The lower percentage reflects that these cases often occur where having access to both parents is not in the best interest of the children.)
7	Research on family systems and family realities will help professionals involved in end-of-life care provide more culturally competent care.
8	Analysis of the National Longitudinal Study of Adolescent Health will inform parents, teens and teachers about the characteristics and contexts that predict substance use among young people.

Outcome #1

1. Outcome Measures

Professionals who work with parents and families will increase their knowledge regarding up-to-date research on parenting practices, positive child development and family functioning and well-being. (Target expressed as a percentage of participants who report knowledge gain.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	80	95

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being

Outcome #2

1. Outcome Measures

Parents will increase their knowledge regarding up-to-date research on parenting practices, positive child development and family functioning and well-being. (Target expressed as a percentage of participants who reported knowledge gain.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	80	89

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being

Outcome #3

1. Outcome Measures

Professionals who work with parents and families will improve their skills in working with parents and families (e.g., utilizing best practices for improving parenting skills). (Target expressed as a percentage of participants who report improving skills.)

Not reporting on this Outcome for this Annual Report

Outcome #4

1. Outcome Measures

Parents will improve their parenting skills. (Target expressed as percentage reporting improvement.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	60	76

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Parenting education and prevention curricula need to address the priorities and circumstances of the cultural groups in their target audiences. Concern for culturally-specific parenting curriculum brought together a strong collaboration between UMN Extension, UMN Medical Center, and three community-based Latino service agencies. This collaboration worked to adapt a widely used and evidence-informed UMN curriculum, Positive Parenting, for Latino parents of adolescents.

What has been done

First, the team added information from evidence-based tobacco and substance abuse prevention models to its parent education materials. Then, the group used a Community Based Participatory Research process to build a culturally competent curriculum usable by community agencies. Latino parents served on focus groups to draw information from parents. This effort resulted in an eight session curriculum about: 1) parenting styles, 2) adolescent development and parenting across two cultures, 3) communication, 4) discipline, 5) conflict, 6) monitoring, 7) connection, 8) substance use.

Results

Over 4 months, a study of the curriculum involved 156 Latino parents of youth aged 10-14--largely immigrant Mexican mothers. Controls (n=31) were also recruited. Results suggest the program impacts parenting outcomes. Paired T-Test show participants experienced significant changes in positive attachment (p =.001); consistent discipline (.001); parental acceptance (.001); harsh parenting (.002); parent-child conflict (.015); personal involvement (.001) and efficacy (.001). (Parental monitoring showed no change.) Paired T-Test results showed the control group had no significant changes. Comparing differences in parenting practices showed participants had significantly or nearly significant change for attachment (p=.05), discipline (.05), acceptance (.007), harsh parenting (.02) and personal involvement (.05).

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being

Outcome #5

1. Outcome Measures

Parents who are mandated to participate in Parents Forever because of contentious divorce situations will reduce conflict in front of their children following divorce. (Target expressed as percentage of parents who report reducing conflict.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	75	75

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Parents who had completed Parents Forever post-divorce education programs within six months and within about twelve months were randomly selected to complete phone interviews. 44 parents from the six month group and 45 parents from the twelve month group completed phone interviews.

Results

Results indicated parents use what they learned six and twelve months after program participation. At the start of the program, 33% used children to carry messages to the other parent; 38% put down the other parent in front of children, and 27% quizzed children about the other parent. After, 48%, 52%, and 8% of these groups (respectively) reported using these behaviors less often and 21%, 36% and 71% (respectively) reported using these behaviors not at all. Improvements in parent cooperation (58%), communication with children (52%) and parents' emotional well-being (79%) were also reported. No significant differences were indicated six months or one year prior to the study, indicating these changes do not erode over time.

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being

Outcome #6

1. Outcome Measures

Parents mandated to participate in Parents Forever because of contentious divorce situations will increase their children's access to both parents following divorce. (The lower percentage reflects that these cases often occur where having access to both parents is not in the best interest of the children.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	35	30

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Parents who had completed Parents Forever post-divorce education programs within six months and within about twelve months were randomly selected to complete phone interviews. 44 parents from the 6 month group and 45 parents from the twelve month group completed phone interviews.

Results

Regarding conflict, 75% reported making changes to avoid conflict with the other parent; nearly half (43%) reported handling anger by talking it out with the other parent, and 30% reported increasing time the children spent with the other parent.

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being

Outcome #7

1. Outcome Measures

Research on family systems and family realities will help professionals involved in end-of-life care provide more culturally competent care.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

End-of-life care decisions are stressful and professionals need better understanding of how different cultural attitudes shape those decisions to provide better family support.

What has been done

Family systems research on this topic led to the development of a guide for the culturally competent practitioner involved in end-of-life care.

Results

This resulted in consultation and collaboration with the Hospice Foundation of America in developing a teleconference for hospices on the topic of culturally competent care, and development of print material to go with the conference.

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being

Outcome #8

1. Outcome Measures

Analysis of the National Longitudinal Study of Adolescent Health will inform parents, teens and teachers about the characteristics and contexts that predict substance use among young people.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Though there is general concern about substance abuse among young people, not enough is known about the relationships between risk-taking and substance use.

What has been done

An ongoing national study of adolescents and young adults, with an emphasis on youth attitudes towards alcohol and drugs, has provided information on the characteristics and contexts that predict substance use and non-use among young people who are high risk-takers.

Results

Results have been disseminated through four primary avenues:
--An online course for parents of college students to help them in talking with their student about alcohol.
--A series of eleven research updates for professionals conducted across Minnesota.
--Teen Talk newsletters focusing on parent-teen communication about challenging topics.
--Take and Teach lessons on CDs for educators, professionals and volunteers to facilitate a parent group or parent/teen group.

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Public Policy changes
- Populations changes (immigration,new cultural groupings,etc.)

Brief Explanation

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- Retrospective (post program)
- Comparisons between program participants (individuals,group,organizations) and non-participants
- Other (Cost-benefit study)

Evaluation Results

Parents in Minnesota are court-ordered to attend parent education classes in cases where custody or visitation is contested.Minnesota statute 518.157 orders parents with contested custody and visitation to attend an approved parenting education program.The University of Minnesota Extension Parents Forever program is an approved program. It consists of twelve-hours of education that operates in 65 of Minnesota's 87 counties. The program educates parents around issues regarding impact of divorce on adults (two hours), impact of divorce on children (four hours), money issues in divorce (two hours), legal issues, the role of mediation in divorce (two hours), and Pathways to a new life (two hours).In 2008, approximately 2,700 parents across Minnesota participated in the program.

While ongoing program evaluation indicates that the program has an overall positive effect, there is also a cost to run the program.Whether Parents Forever is "worth the cost" was an appropriate question being asked by UMN Extension and key stakeholders. During the past year, a cost-benefit study was employed. Results of the evaluation indicated that the total benefits of the Parents Forever program is $350,480.38, of which $315,432.34 (90%) accrues to the participants and $35,048.04 (10%) accrues to the rest of society. The conceptual framework also shows the total costs of the program as $26,020, of which 25.75% is shouldered by participants and 74.25% is shouldered by society. This generates net benefits in general of $324,460.38, of which $308,732.34 accrues to participants and $15,728 accrues to society.

In terms of benefit cost ratio, the criterion reveals that for every dollar spent on the Parents Forever program, benefit of $13.45 is realized by society overall.Broken down, the participants realize the greatest benefit of $47.08 for every dollar spent on the program while the rest of society realizes $1.81.

Key Items of Evaluation

In terms of benefit cost ratio, the criterion reveals that for every dollar spent on the Parents Forever program, benefit of $13.45 is realized by society overall.

Program #6

V(A). Planned Program (Summary)

1. Name of the Planned Program

Family Resource Management

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
801	Individual and Family Resource Management	90%		90%	
806	Youth Development	10%		10%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	12.1	0.0	3.1	0.0
Actual	10.2	0.0	9.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
279202	0	226942	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
419037	0	519449	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
295139	0	18155	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Family Resource Management program efforts increased in 2008, responding to demands placed because of the weakened economy and Minnesota's growing unemployment rate.To preventfuture poor credit behaviors, educators and specialists have formed collaborations with eight colleges statewide -- public and private -- to bring financial literacy programming to college-age students in the "teachable moment" when they begin to manage their money.As a result, direct contacts with youth (aged 18 and under) almost matched the contact with adults this year.Overall, the number of persons who received family literacy programming in 2008 grew by 11%.

Another significant effort in 2008 created a statewide database to collect information about financial literacy programming from UMN Extension-trained family literacy educators employed by other organizations.The goal is to provide strong baseline and ongoing data collection and evaluation to the field of financial literacy in Minnesota.(For more information, visit www.extension.umn.edu/family.)

MAES family resource mangement research has informed social science professionals, education and policy makers on constraints and challenges to family finanacial management in these times of economic difficulty, including studies on financial strategies for later life stages, the economic well being of families in transition, and understanding family resource decisions through multi-cultural lenses.

2. Brief description of the target audience

Financial literacy programming is targeted at people throughout the life cycle.Youth and Money programs reach adolescents moving into independent living; teachers k-12, professional staff-credit union representatives, college staff and faculty, college students and youth.Financial Security in Later Life reaches employees at work sites, community non-profit groups and individuals who utilize on-line website resources and self-study modules.

In 2008, in response to community demands, the Financial Literacy team shifted much of its work from training of professionals and workplace education programs to programs for families and youth.

The 2008 organizational network survey results demonstrated that Financial Literacy programming in Minnesota is reaching diverse audiences through relationships with many trusted organizations. **In 2008, this resulted in 31% of its program service reaching ethnic Minnesotans.** Significant relationships have been developed with social service organizations (11.6% of contacts), housing and economic development organizations (10.4%), public schools (8.1%), Community Action Agencies (6.9%) and many more.A majority of these relationships are partnerships around a joint effort to improve the financial health of youth, adults and the elderly (47.4% of effort).

The target audiences of family resource research includes family professionals, policy makers and educators, and the legislative and judicial branches of state and federal governments.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	6000	6000	75	2050
2008	7418	19588	6228	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	12	15	
2008	7	10	17

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Training will be held for trainers in other organizations so that they can deliver education to their constituents. (Target expressed as the number of events delivered.)

Year	Target	Actual
2008	100	89

Output #2

Output Measure

- Community-based workshops will be held for individuals and families. (Target expressed as the number of events delivered.)

Year	Target	Actual
2008	150	250

Output #3

Output Measure

- Curricula and guides will be distributed to practitioners.

Year	Target	Actual
2008	2000	4790

Output #4

Output Measure

- Outreach efforts will educate employers about financial security needs of employees and provide opportunities for on-site workshops. (Target expressed as number of employing businesses reached.)

Year	Target	Actual
2008	175	20

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Individuals, families and employees who participate in Resource Management programming will report they have increased knowledge related to the targeted financial management goals. (Target expressed as a percentage of participants who report increasing knowledge.)
2	Individuals, families and employees who participate in Resource Management programming will report they have increased confidence (increased efficacy) in financial management, decision-making and planning for later life. (Target expressed as a percentage of participants who report increasing efficacy.)
3	Individuals, families and employees who participate in Resource Management programming will report they have used the knowledge/materials gained from the program to change behaviors related to targeted financial management goals. (Target expressed as a percentage of participants who reported making behavior change.)
4	Research on family business theory will help teachers and practitioners better understand ethnic family businesses.

Outcome #1

1. Outcome Measures

Individuals, families and employees who participate in Resource Management programming will report they have increased knowledge related to the targeted financial management goals. (Target expressed as a percentage of participants who report increasing knowledge.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	60	98

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development
801	Individual and Family Resource Management

Outcome #2

1. Outcome Measures

Individuals, families and employees who participate in Resource Management programming will report they have increased confidence (increased efficacy) in financial management, decision-making and planning for later life. (Target expressed as a percentage of participants who report increasing efficacy.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	70	95

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Dollar Works 2 provides practical materials for those who assist families with education, tools, and strategies for managing resources, attaining personal goals and increasing financial stability. Train-the-trainer workshops help educators and service providers learn how to use the materials in programs, classes and one-on-one settings. In 2008, Dollar Works 2 train-the-trainer workshops were delivered by eight instructors to 114 trainers at eleven locations.

Results

Participants gained knowledge around innovative education strategies (85%), subject matter (88%), and gained valuable tools to enhance their work (90%). However, trainers indicated that the MOST important concept they learned was to connect elements of culture to financial education. Thus, this workshop particularly helped trainers work with diverse populations. In terms of use of the materials, 95% of the trainers reported they felt comfortable using the Dollar Works 2 curriculum with their participants. Trainers reported plans to increase their use of all twelve lessons with their participants, especially in terms of making and managing a spending plan (80%), making decisions about money (78%), managing debt (65%) and savings and investing (64%).

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management
806	Youth Development

Outcome #3

1. Outcome Measures

Individuals, families and employees who participate in Resource Management programming will report they have used the knowledge/materials gained from the program to change behaviors related to targeted financial management goals. (Target expressed as a percentage of participants who reported making behavior change.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	50	62

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Dollar Works 2 provides practical information for those who educate and serve community members about financial issues. In turn, they assist families with education, tools, and strategies for managing resources, attaining personal goals and increasing financial stability. Train-the-trainer workshops help educators and service providers learn how to use Dollar Works 2 in their programs, classes and one-on-one settings. In 2008, Dollar Works 2 Train-the-Trainer workshops were delivered by eight instructors to 114 trainers at eleven locations.

Results

Trainers reported plans to increase their use of all twelve lessons with their participants, especially in terms of making and managing a spending plan (80%), making decisions about money (78%), managing debt (65%) and savings and investing (64%).

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

806	Youth Development

Outcome #4

1. Outcome Measures

Research on family business theory will help teachers and practitioners better understand ethnic family businesses.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

It is no longer possible to depend solely on human capital theory and household characteristic descriptions to understand the complex and interdependent relationships between the ethnic owned family businesses.

What has been done

MAES family financial research had previously developed the Sustainable Family Business theory. Revising the theory and applying it to ethnic family businesses showed it is a flexible and inclusive theory for researchers, teachers and practitioners.

Results

Empirical results show that Korean American and Mexican American entrepreneurs have greater role demands, and subsequently, higher levels of difficulty in managing work-family conflict than African Americans and White. Furthermore, difficulty in managing work-family conflict negatively impacts business performance whether performance is measured through the perception of the business owner, or through more objective financial measures. Training small business owners in a holistic approach to quality management would increase the annual revenue of the average firm by close to $500,000 a year. Given the size of the average family firm, these firms could potentially increase their revenue up to 48.7 percent using a more holistic quality framework.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy

Brief Explanation

The Family Resource Management Team's response to the current financial conditions demanded program delivery changes in 2008.

1)Effort was strengthened to reach college students in the "teachable moment" of money management in an effort to prevent future poor credit decisions.

2)Effort was shifted from building the capacity of financial literacy professionals to direct service to parents.This shift responded to demands from partners for immediate service this year to individuals in need.

As a result, our plans about where service would happen-- as well as the amount of service delivery -- changed.

We do not know at this point whether this is a one-time change or whether it will continue.So changes in plan of work are pending new knowledge.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Retrospective (post program)
- Before-After (before and after program)
- Time series (multiple points before and after program)

Evaluation Results

Key Items of Evaluation

Program #7

V(A). Planned Program (Summary)

1. Name of the Planned Program

Environmental Science Education

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
135	Aquatic and Terrestrial Wildlife	20%		20%	
136	Conservation of Biological Diversity	20%		20%	
903	Communication, Education, and Information Delivery	60%		60%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	4.4	0.0	0.0	0.0
Actual	4.2	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
47182	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
186163	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
151256	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Extension: Through education and support to science teachers and students, and through Master Naturalist programs that recruit volunteers to teach about the natural world, the Environmental Science Education team energizes and stimulates science education in Minnesota.In 2008, new evaluation tools for science educators were completed and disseminated by the team.The new evaluation tool, which is consistent with best education practices, allows Field Day organizers to evaluate the potential their events hold for stimulating educational outcomes.To further advance the cause of effective field day events, the team created an online site where field days organizers can submit information about their event, and ask for tools and resources to make them more effective.The Master Naturalist program, now in its third year, has now infused the state with 345 new volunteers who help Minnesotans understand the natural world, and work effectively to preserve it. Both programs have shared their learning nationally, with instructor training to help other states develop Master Naturalist programs and integrate Best Practices in Field Days into their environmental programming.(For more information, visit http://www.extension.umn.edu/Environment/.)

Reviewers should note that the absence of Experiment Station dollars for research specialists in youth development does not correspond to a lack of research base for 4-H programs. Rather, other dollars and collaborations are utilized to assure that research base.

2. Brief description of the target audience

Environmental Science Education programs reach citizens, environmental professionals, science teachers and Native American youth on the White Earth Reservation in Northwest Minnesota.

According to the 2008 network study, the primary organizations that were providedsubstantive environmental science programs were: 1) Natural Resource Conservation Organizations (23% of contacts); higher education institutions (14%); professional associations and state government (11.6%). The largest area of effort with these organizations was passing along substantive information (46.5%), followed by partnerships around a joint effort with mutual benefit (25.6%) and providing expert advice (18.6%).

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	680	3150	210	4775
2008	5501	7854	3157	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	4	0	4

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Through training and other communications, volunteers, educators and natural resource professionals will be prepared to deliver research-based environmental science education programs. (Measure expressed as number of Minnesota Master Naturalist volunteers trained and supported.)

Year	Target	Actual
2008	445	563

Output #2

Output Measure

- White Earth Reservation youth will graduate from a four week summer program that includes environmental science education. (Target expressed as a percentage of students graduating.)

Not reporting on this Output for this Annual Report

Output #3

Output Measure

- Recruitment strategies for Environmental Science Education programs for adults will reach under-represented audiences. (Target expressed as a percentage of total audiences served.)

Year	Target	Actual
2008	10	10

Output #4

Output Measure

- All ESE modules and trainings will be developed, tested and finalized. (Target expressed as number of modules and trainings completed that year.)

Year	Target	Actual
2008	2	3

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Within a year of environmental science education instructor training (i.e., Master Naturalist and Best Practices for Field Day Trainings), educators and community-based instructors will use the research-based educational methods in environmental science education delivery. (Target expressed as a percentage of participants.)
2	Minnesotans will have increased opportunities to participate in natural history learning activities. (Target measure reflects increases in number of events available.)
3	Master Naturalists will become more knowledgeable about natural history. (Measure expressed as a percentage of knowledge gain.)
4	Native American youth will increase their academic performance on standardized achievement tests following the four week ESE program. (Target expressed as a percentage of increase.)

Outcome #1

1. Outcome Measures

Within a year of environmental science education instructor training (i.e., Master Naturalist and Best Practices for Field Day Trainings), educators and community-based instructors will use the research-based educational methods in environmental science education delivery. (Target expressed as a percentage of participants.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	140	90

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity
903	Communication, Education, and Information Delivery

Outcome #2

1. Outcome Measures

Minnesotans will have increased opportunities to participate in natural history learning activities. (Target measure reflects increases in number of events available.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	50	52

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
903	Communication, Education, and Information Delivery

Outcome #3

1. Outcome Measures

Master Naturalists will become more knowledgeable about natural history.
(Measure expressed as a percentage of knowledge gain.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	20	20

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
903	Communication, Education, and Information Delivery
136	Conservation of Biological Diversity
135	Aquatic and Terrestrial Wildlife

Outcome #4

1. Outcome Measures

Native American youth will increase their academic performance on standardized achievement tests following the four week ESE program.
(Target expressed as a percentage of increase.)
Not reporting on this Outcome for this Annual Report

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Public Policy changes
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration,new cultural groupings,etc.)

Brief Explanation

Reviewers should note that the absence of Experiment Station dollars for research specialists in youth development does not correspond to a lack of research base for 4-H programs. Rather, other dollars and collaborations are utilized to assure that research base.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Retrospective (post program)
- Case Study
- Comparisons between program participants (individuals,group,organizations) and non-participants

Evaluation Results

Key Items of Evaluation

Program #8

V(A). Planned Program (Summary)

1. Name of the Planned Program

Water Resource Management and Policy

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
111	Conservation and Efficient Use of Water	25%		25%	
133	Pollution Prevention and Mitigation	30%		30%	
403	Waste Disposal, Recycling, and Reuse	25%		25%	
605	Natural Resource and Environmental Economics	20%		20%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	9.7	0.0	8.9	0.0
Actual	9.1	0.0	21.2	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
178117	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
405914	0	1590430	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
103073	0	1341434	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Extension:Shoreland education, onsite sewage treatment programs and stormwater education all work together to enable Minnesotans to keep Minnesota's water systems clean and safe.In 2008, Shoreland Education educators taught more than 2,600 Minnesotans through 69 locally-sponsored workshops in 27 counties.Two research efforts--shoreline bioengineering and rain garden effectiveness--were expanded in 2008.Environmental Protection Agency funding supports assessment of bioengineering practices used across Minnesota. Side-by-side planting of native and cultivar species in Minnesota rain gardens demonstrated differences in survival, and support accurate and timely outreach on stormwater management.

New State of Minnesota laws about sewage treatment, and new funding for communities needing sewer upgrades, stepped up activities of the on-site sewage treatment team.Extension and the Water Resource Policy team created new trainings, in collaboration with the State of Minnesota's Pollution Control Agency, to trainindustry professional required to meet new certification requirements.With changes in laws, major revisions were made in the manual written for all industry professional to support compliance with new laws.Moreover, nine communities have used Extension consultation to create new sewer plans for their communities; triple the number in past years. (For morenformation, visit http://www.extension.umn.edu/Environment/.)

Experiment Station:MAES research reported this year has informed water ressource managers and policy makers on ways to improve the quality of Minnesota's lakes, rivers and streams.Specifically this year, researchers made progress on addressing problems of invasive fish and aquatic plant species on water quality; on basic and applied aspects of bacterial source tracking; as well as agricultural impacts on water quality.

A number of research projects that link land use in agricultural areas of Minnesota and water quality continue to inform land managers and policy makers on new ways to keep land in production while protecting water quality.For example, artificially drained agricultural lands in the upper Midwest have come under public scrutiny because of exacerbated nitrate-nitrogen loads to surface waters and the Gulf of Mexico.Studies have investigated the efficacy of two engineering measures for mitigating these nitrate-nitrogen losses.Results are helping drainage practitioners and policy experts make decisions about where to invest state water quality program dollars.

2. Brief description of the target audience

According to the 2008 organizational network study, Water Resource Management efforts effectively engaged a wide range of groups who are supportive in reaching homeowners and improving outcomes for Minnesota's water systems.Primary efforts were directed at soil and water conservation districts (18%), followed by state government (15.8%), county government (14.8%), natural resource conservation organizations (13.7%) and city government (9.3%).Water resource management educators reported partnering with these organizations aroundjoint efforts with mutual benefit (43.7% of contacts), providing expert information (31.7%) and finally playing a role to influence the organization's outcomes and processes (13%).

Target audiences for the results of MAES research include the aquatic ecology scientific community; lake managers; the Minnesota Department of Natural Resources; state conservation district managers; scientists and managers in watershed management; agency personnnel involved with TMDLs; decision makers and policy makers dealing with water quality, land and water management.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	11000	19500	2500	0
2008	24715	24319	2347	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	7	69	
2008	4	59	63

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Place useful information about shoreland management into web links, printed products and media. (Target expressed as numbers of products created per year.)

Year	Target	Actual
2008	10	22

Output #2

Output Measure

- Workshops, seminars, and presentations will educate community members and professionals about strategies that provide wastewater treatment for their community at a reasonable cost in a way that is consistent with community values. (Target expressed as number of events.)

Year	Target	Actual
2008	125	145

Output #3

Output Measure

- Provide workshops on water quality, stormwater issues and shoreland management, revegetation and use of plants to maintain shoreland structures. (Target expressed as number of events.)

Year	Target	Actual
2008	30	30

Output #4

Output Measure

- Coordinate shoreline demonstration projects that provide hands-on learning opportunities and add to educational goals.

Year	Target	Actual
2008	8	3

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Residents will know: 1) Where stormwater goes; 2) Major stormwater pollutants and their impact and 3) Three things they can personally do to prevent pollution. (Measure expressed as percentage of residents in targeted communities.)
2	Workshop participants will use information from shoreland education programming to provide education to 25 additional people, creating a multiplier effect. (Target expressed as a percentage of workshop participants.)
3	Shoreland education workshop participants will practice one or more of five lake/river friendly landscaping behaviors. (Target expressed as a percentage of workshop participants.)
4	Homeowners will modify or change their habits regarding home water and product use to better protect their onsite septic systems. (Measure expressed as a percentage of those evaluated.)
5	Small communities will develop a viable plan for onsite sewage treatment--plans that are affordable and address onsite sewage treatment. (Target expressed as number of communities per year.)
6	Research on biological control of invasive fish species will provide scientists and professionals with better information and management strategies for control.
7	Research will provide models to allow state agencies and water quality managers to maintain healthy fish populations.
8	Research on the influence of drainage design and drainage water management on water quality will help improve drainage practices.

Outcome #1

1. Outcome Measures

Residents will know: 1) Where stormwater goes; 2) Major stormwater pollutants and their impact and 3) Three things they can personally do to prevent pollution. (Measure expressed as percentage of residents in targeted communities.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	80	50

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
133	Pollution Prevention and Mitigation
111	Conservation and Efficient Use of Water

Outcome #2

1. Outcome Measures

Workshop participants will use information from shoreland education programming to provide education to 25 additional people, creating a multiplier effect. (Target expressed as a percentage of workshop participants.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	50	20

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

The Aquatic Invasive Species-Hazard Analysis and Critical Control Point program (AIS-HACCP) is a Great Lakes Sea Grant Network Program led by Minnesota Sea Grant to prevent the spread of AIS by the aquaculture and baitfish industries. During the grant, 540 private, state, and federal fish producers from at least sixteen states and the Province of Ontario were trained. About 20% conducted their own workshops, training an additional 2,260 people.

Results

Trainings led to an estimated 1,035 plans put in place by businesses and agencies. These plans address points in the fish and bait handling business that are critical for AIS contamination or release. Addressing these points, fish farmers and hatchery operators reduce or eliminate the risk of spreading AIS. In the policy arena, AIS-HACCP training led Minnesota's Department of Natural Resources (DNR) to change regulations for harvesting bait fish in two important infested harvest areas. The DNR allowed bait harvesters to harvest out of these lakes if they were trained in the AIS-HACCP process, thus preventing a negative impact on earnings by harvesters.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
133	Pollution Prevention and Mitigation

Outcome #3

1. Outcome Measures

Shoreland education workshop participants will practice one or more of five lake/river friendly landscaping behaviors. (Target expressed as a percentage of workshop participants.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	50	97

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

Five rain gardens, totaling 14,600 feet, were installed through hands-on workshops and local partnerships in four counties. Eleven filter strip projects were installed along more than 1500 foot of shoreline, protecting over 31,486 foot of sensitive shoreland, helping reduce erosion, provide habitat and filter pollutants to improve water quality. As part of the Stop Aquatic Hitchhikers! campaign, program evaluation showed that 97% of boaters and anglers in Minnesota, Wisconsin, and Iowa took action at water accesses to prevent the spread of aquatic invasive species.

4. Associated Knowledge Areas

KA Code	Knowledge Area
133	Pollution Prevention and Mitigation
111	Conservation and Efficient Use of Water

Outcome #4

1. Outcome Measures

Homeowners will modify or change their habits regarding home water and product use to better protect their onsite septic systems. (Measure expressed as a percentage of those evaluated.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	60	75

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
605	Natural Resource and Environmental Economics
403	Waste Disposal, Recycling, and Reuse

Outcome #5

1. Outcome Measures

Small communities will develop a viable plan for onsite sewage treatment--plans that are affordable and address onsite sewage treatment. (Target expressed as number of communities per year.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	3	9

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
133	Pollution Prevention and Mitigation
403	Waste Disposal, Recycling, and Reuse
605	Natural Resource and Environmental Economics
111	Conservation and Efficient Use of Water

Outcome #6

1. Outcome Measures

Research on biological control of invasive fish species will provide scientists and professionals with better information and management strategies for control.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The carp population has ballooned to troublesome proportions and threatens the water quality and fish habitat of Minnesota lakes. Attempts to rid waters of the bottom-feeder have not been successful. Because one female carp can spawn up to two million eggs, recruitment must be suppressed to keep eggs from hatching or young carp from surviving.

What has been done

Researchers have determined the identities and function of male and female sex pheromones in the carp. This work builds on previous work on pheromones in fish, reported in last year's Accomplishment Report. A large experimental carp program was begun in six Minnesota lakes to determine when, where and how carp move and what determines their reproductive success.

Results

Research on carp pheromones has now clearly revealed that this species employs phenomenal mosaics--complex mixtures that are perceived as single entities. These cues can be diluted close to 100-fold and still attract only this target species. Studies using food odors in the laboratory and field have demonstrated that common carp have long memories and be classically conditioned to enter traps at certain positions in the lakes. Meanwhile, studies of predatory fish abundance in the lakes showed that it is the abundance of these fish (which are especially sensitive to winter hypoxia) which drive survivorship of invasive carp. This is a very important discovery because it suggests means exist to control this, the world's most damaging invasive fish species. This progress has stimulated new applied research and public interest.

4. Associated Knowledge Areas

KA Code	Knowledge Area
133	Pollution Prevention and Mitigation

Outcome #7

1. Outcome Measures

Research will provide models to allow state agencies and water quality managers to maintain healthy fish populations.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Minnesota's streams and rivers are under pressure due to development, and the resulting higher temperatures of those streams are threatening the viability of trout habitat.

What has been done

Researchers have validated species sensitivity distribution models they have developed for six trout streams in the Minneapolis/St. Paul metropolitan area that relate taxonomic composition of Chironomidae to water temperature at time of emergence. The models allow users to determine the percent of the total species that are considered at risk if specific temperature and dissolved oxygen conditions are not attained in the streams at different times during a year. The Chironomidae are a major food source for trout so conservation of their populations is critical for high trout productivity.

Results

These models are used in development of Total Maximum Daily Loads (TMDL) by the state for addressing deficiencies of dissolved oxygen in trout streams, and help predict the potential consequences of increasing development. They are now part of the analytical toolbox of data assessment techniques that are being used by the Minnesota Pollution Control Agency in developing a TMDL for dissolved oxygen and thermal pollution in streams. The models have been used to designate portions of a stream that are not presently able to sustain trout populations relative to other stretches where thermal conditions enable trout to reproduce and have sustainable populations.

4. Associated Knowledge Areas

KA Code	Knowledge Area
605	Natural Resource and Environmental Economics
133	Pollution Prevention and Mitigation

Outcome #8

1. Outcome Measures

Research on the influence of drainage design and drainage water management on water quality will help improve drainage practices.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Nonpoint pollution of chemicals in runoff from agricultural lands can negatively affect watersheds, rivers and lakes in Minnesota and downstream all the way to the Gulf of Mexico.

What has been done

Field experiments and modeling techniques were used to evaluate the influence of drainage design and drainage water management on water quality, quantity and crop production. Eight years of field data have been collected and analyzed to determine best practices to mitigate nutrient losses on benchmark soils for Minnesota.

Results

Reduced drainage flow volumes and nitrate-nitrogen losses were observed from both the shallower depth and lower intensity drainage systems, as compared to the deeper and more closely spaced drains. These results support the researchers' optimism that these practices can become part of the solution to Gulf of Mexico Hypoxia. The research results are helping state agency officials make decisions regarding the allocation of conservation program funds toward improved drainage practices.

4. Associated Knowledge Areas

KA Code	Knowledge Area
133	Pollution Prevention and Mitigation

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought,weather extremes,etc.)
- Government Regulations
- Competing Public priorities
- Populations changes (immigration,new cultural groupings,etc.)

Brief Explanation

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- Retrospective (post program)
- Case Study

Evaluation Results

Key Items of Evaluation

Program #9

V(A). Planned Program (Summary)

1. Name of the Planned Program

Natural Resources Management and Utilization

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
123	Management and Sustainability of Forest Resources	50%		50%	
124	Urban Forestry	25%		25%	
125	Agroforestry	15%		15%	
133	Pollution Prevention and Mitigation	10%		10%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	7.1	0.0	75.0	0.0
Actual	6.9	0.0	129.5	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
157441	0	1034201	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
246812	0	7921823	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
122731	0	8812571	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

MAES research in natural resources spans a wide variety of studies, from prairie restoration studies to forest management and forest product development.This work provided policy and management research that supported Extension outreach efforts to woodland owners.Tree disease research has provided information for the health of Minnesota's urban forestsLong-term research into forest genetics and best management practices support, field and laboratory studies and computer modeling, support Minnesota's ecosystem,Specific impacts are described under outcomes.

Extension:In 2008, this program team changed its name to "Forestry".In 2008, three major initiatives were undertaken by the Forestry Team: 1) detection and proactive handling of Minnesota's risk of the invasive emerald ash borer in Minnesota's ash trees; 2) proliferation of carbon sequestration among wooded landowners; and 3) proliferation of biomass harvesting guidelines.The first twoinitiatives are described in behavioral and condition outcomes described here.Biomass harvesting guidelines aim to protect ecosystem functions where biomass is harvested. UMN Extension conducted four workshops and field demonstrations on the guidelines, reaching 426 loggers, natural resource managers and landowners.To reach a still larger audience, and recognizing that some people prefer computer-based learning, Extension staff produced a CD-ROM and Web-based course on the Biomass Harvesting Guidelines.The CD-ROM has been widely distributed to loggers in Minnesota. (For more information, visit http://www.extension.umn.edu/Environment/.)

2. Brief description of the target audience

Primary audiences for natural resource management programs are farmers and woodland owners, loggers, wood processors and marketers; natural resource and green industry professionals; volunteer educators; and local and state government personell engaged in forestry, parks and recreation, soil and water conservation.According to the 2008 organizational networks study, these audiences were reached through strong relationships with natural resource conervation organizations (20.1% of contacts), state government (19.5%); federal government (12.6%) and professional associations (7.5%).With and for these organizations, natural resource educators formed partnerships around a joint effort with mutual benefits (48.4% of interactions), provided expert advice (22%)and played an ongoing role to influence the organizations' outcomes and processes (18.2%).

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	4700	30000	150	500
2008	2896	16948	195	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	1

Patents listed

Culturing Anaplasma (Patent #7,361,504)

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	5	70	
2008	3	98	101

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Workshops, tours, and demonstration projects will increase awareness of landowners, volunteers, loggers, natural resource professionals and businesses involved in forestry, agroforestry, urban forestry and forest products. (Target expressed as the number of events.)

Year	Target	Actual
2008	190	66

Output #2

Output Measure

- Print and digital publications will provide answers to questions about sustainable management of Minnesota's natural resources. (Target expressed as number of publications distributed.)

Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Landowners will implement new forestry, agroforestry and urban forestry management practices. (Target expressed as number of acres on which new land management was improved.)
2	Landowners that implement new management practices will improve management of a significant number of acres. (Target expressed as number of acres on which management was improved.)
3	Natural resource-based businesses will become more profitable. (Target expressed as dollars earned or saved by natural resources enterprises.)
4	Research in lignin biodegradation will provide knowledge to advance biofuels.
5	Research will provide knowledge to help prevent the spread of invasive forest pathogens.
6	Research on economic strategies to promote forest stewardship will inform policy-makers.

Outcome #1

1. Outcome Measures

Landowners will implement new forestry, agroforestry and urban forestry management practices. (Target expressed as number of acres on which new land management was improved.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	300	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Emerald ash borer (EAB) is an exotic invasive insect known to kill ash trees of all species. In states surrounding Minnesota, the emerald ash borer has already killed millions of trees.

What has been done

To delay EAB introduction and spread to ash trees in Minnesota, a First Detector Program was created by UMN Extension. An inter-agency team trained over 180 volunteers at six sites. Volunteers are looking for the first signs of the insect and its damage by investigating dying ash trees they see or that are reported by citizens. An Extension-led EAB Science Advisory Committee drafted guidelines to slow the spread of EAB after detection. A public information campaign asked citizens to collect seed from all ash species from all parts of Minnesota.

Results

The public information campaign resulted in the collection of seeds from 254 ash trees; more than 30 ash seed samples submitted. These seeds were placed in a long-term storage facility, making it possible to preserve the ash gene pool for potential reintroduction of the species when more effective control mechanisms have been introduced to manage the EAB. This will save or regenerate a significant portion of Minnesota's forests.

4. Associated Knowledge Areas

KA Code	Knowledge Area
123	Management and Sustainability of Forest Resources
133	Pollution Prevention and Mitigation
124	Urban Forestry

Outcome #2

1. Outcome Measures

Landowners that implement new management practices will improve management of a significant number of acres. (Target expressed as number of acres on which management was improved.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	18000	30000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Carbon sequestration is the storage of carbon dioxide (usually captured from the atmosphere) through biological, chemical or physical processes for the mitigation of global warming. It has been proposed as a way to mitigate the accumulation of greenhouse gases in the atmosphere released by the burning of fossil fuels.

What has been done

UMN Extension Educators developed a publication and PowerPoint presentation on A Landowner Guide to Carbon Sequestration Credits. This curriculum, taught at eight locations, reached 195 Minnesota landowners and natural resource professionals.

Results

As of September 2008 about 200 Minnesota landowners had enrolled over 30,000 acres in a carbon credit program offered by the Chicago Climate Exchange.

4. Associated Knowledge Areas

KA Code	Knowledge Area
133	Pollution Prevention and Mitigation
124	Urban Forestry
123	Management and Sustainability of Forest Resources

Outcome #3

1. Outcome Measures
Natural resource-based businesses will become more profitable. (Target expressed as dollars earned or saved by natural resources enterprises.)
Not reporting on this Outcome for this Annual Report

Outcome #4

1. Outcome Measures
Research in lignin biodegradation will provide knowledge to advance biofuels.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:
Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Producing 'green' fuels involves stripping the lignin from the cellulose in plant matter, an arduous task. Despite 30 years of active research, it is still not known how lignins are biodegraded. None of the enzymes which have been implicated in lignin biodegradation has yet proved capable of extensively depolymerizing lignins.

What has been done

MAES researchers have for the first time isolated a white-rot fungal enzyme, lignin depolyerase, from Trametes cingulata that is capable of degrading high molecular weight lignin components completely. Unlike other enzymes which have been claimed to be lignin-degrading, lignin depolyerase does not re-polymerize lignin substrates. The Trametes cingulata genome has been sequenced to over 90 percent coverage.

Results

This discovery, along with a fundamental understanding of the mechanism of lignin biosynthesis will help the development of transgenic plants in which the lignins will be much more susceptible to both chemical and biochemical degradatation. This approach is likely to be preferred in the creation of next generation lignocellulosic feedstocks for improving the economic viability of biorefineries.

4. Associated Knowledge Areas

KA Code	Knowledge Area
133	Pollution Prevention and Mitigation

Outcome #5

1. Outcome Measures

Research will provide knowledge to help prevent the spread of invasive forest pathogens.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Oak wilt, caused by an exotic, invasive fungus, is the most significant disease of oaks in Minnesota and has detrimental ecological and economic impacts in rural and urban landscapes. Determining the magnitude and nature of these impacts is necessary for cost effective management of the disease.

What has been done

MAES researchers developed a spatial model of tree mortality where oak wilt spread depends on biological factors such as tree density, tree size, soil type, the growth rate of oak wilt and the amount of the inoculum present. The model was then applied to an urban county in Minnesota to estimate oak wilt mortality when oak wilt is left unmanaged, and then the economic damages were estimated. The simulations showed that if oak wilt were left unmanaged, 3,700-180,000 oak trees in five years would be infected in that county, amounting to economic damages from $1.2 million to $49 million.

Results

The North Central States Oak Wilt Task Group, made up of representatives from Departments of Natural Resources in states where oak wilt is an issue (MN, MI, WI, TX, and CO) see this research as a valuable contribution to their efforts to manage the spread of this invasive pest. The analysis revealed a greater economic impact from oak wilt than managers had realized. Managers are using the results in educational campaigns to local governments and landowners.

4. Associated Knowledge Areas

KA Code	Knowledge Area
124	Urban Forestry
123	Management and Sustainability of Forest Resources

Outcome #6

1. Outcome Measures

Research on economic strategies to promote forest stewardship will inform policy-makers.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Encouraging private forest owners to better manage their land is important for the long-term sustainability of Minnesota forests.

What has been done

A study was completed on financial incentives to increase the application of good stewardship practices on family forest lands. It found the overall lack of interest by family forest owners in enrolling in Minnesota's Sustainable Forest Incentive Act is influenced by many factors including the annual payment amount, familiarity with the program, and opposition to the program's requirement to record a covenant on the property while enrolled in the program.

Results

The Minnesota Forestry Association and other related interest groups used the findings to propose changes to Minnesota's Forest Stewardship Incentives Act. Several important changes to the program were adopted by the 2008 Minnesota Legislature. The findings were also used by the 2008 Minnesota Legislature in creating a new property tax classification and tax incentive program for family forest owners.

4. Associated Knowledge Areas

KA Code	Knowledge Area
123	Management and Sustainability of Forest Resources

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought,weather extremes,etc.)
- Economy
- Appropriations changes
- Government Regulations

Brief Explanation

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Retrospective (post program)
- Before-After (before and after program)

Evaluation Results

Key Items of Evaluation

Program #10

V(A). Planned Program (Summary)

1. Name of the Planned Program

Housing Technology

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures	100%		100%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	1.3	0.0	2.6	0.0
Actual	2.3	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
28299	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
76366	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
6046	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Courses are offered in Minnesota and across the United States in partnership with the building industry and its constituents. Ongoing research continues to increase the quality and quantity of these educational opportunities. The following topics are core to our Housing Technology Programs: Indoor Air Quality in Residential Settings; Moisture Control and Mold; Radon Measurement, Radon Mitigation, and custom courses on new and emerging subjects.

In 2008, primary activities involved responding to consumer demand for radon education, and working with state agencies and local stakeholders to respond to policy issues related to housing industry standards and the foreclosure crisis.The State of Minnesota has passed a requirement that will go into code mid-year 2009, requiring radon-resistant construction practices.Materials and education are being created to respond with trainings and educational venues to help the industry respond.Staff and specialists are working with state agencies and neighborhood partners to design responses to the foreclosure activity.With new funding to rehabilitate foreclosed properties, the collaborative goal within communities and state government is to create a system-guided process to make these rehabilitation the best they can be for residents and communities.

Interest in radon is growing on the consumer side. With that, there is more demand for the radon mitigation work. So there are more contractors prepared and available to do the mitigation work and more consumers asking for it. (For more information, visit http://www.extension.umn.edu/Environment/.)

Reviewers should note that the absence of Experiment Station dollars for research specialists in youth development does not correspond to a lack of research base for 4-H programs. Rather, other dollars and collaborations are utilized to assure that research base.

2. Brief description of the target audience

The target audience for this information is builders, remodelers, contractors, mitigators and others involved with avoiding and resolving problems in homes.Housing technology education has been "hard-wired" into the field of housing construction through substantive relationships with 1) state government (24% of contacts); 2) housing and economic development organizations and federal government (16%) and 3) professional industry associations and trade associations (12% each). The nature of these relationships allowed Extension to pass along expert advice (56% of contacts) and play a role in influencing other organizations' outcomes and processes (28%).

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	914	5700	0	0
2008	1662	8498	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	1	0	
2008	6	0	6

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Educational courses will be delivered to the target audiences.

Year	Target	Actual
2008	65	74

Output #2

Output Measure

- New research will result in the development of new and revised educational materials. (Target expressed as the number of new or revised curriculum materials.)

Year	Target	Actual
2008	1	6

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Improve the durability of new homes by working with builders. (Target expressed as the number of new homes affected.)
2	Improve the availability of healthy and affordable housing through the mitigation of indoor environmental risks. (Target expressed as number of homes affected.)

Outcome #1

1. Outcome Measures

Improve the durability of new homes by working with builders. (Target expressed as the number of new homes affected.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	1000	2500

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

Outcome #2

1. Outcome Measures

Improve the availability of healthy and affordable housing through the mitigation of indoor environmental risks. (Target expressed as number of homes affected.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	1000	22500

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The University of Minnesota's Housing Technology's Regional Radon Training Center, the Midwest Universities radon Consortium (MURC), is a partnership with U.S. Environmental Protection Agency and States. MURC's mission is to save lives by reducing lung cancer caused by indoor radon exposure.

What has been done

The Center trains professionals in the U.S. and Canada to measure, mitigate, and prevent indoor radon problems. MURC collaborates with the World Health Organization to extend radon risk reduction to nearly 200 countries.

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought,weather extremes,etc.)
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Populations changes (immigration,new cultural groupings,etc.)

Brief Explanation

Reviewers should note that the absence of Experiment Station dollars for research specialists in youth development does not correspond to a lack of research base for 4-H programs. Rather, other dollars and collaborations are utilized to assure that research base.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)

Evaluation Results

Key Items of Evaluation

Program #11

V(A). Planned Program (Summary)

1. Name of the Planned Program

Food Safety Education

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
501	New and Improved Food Processing Technologies	40%		40%	
503	Quality Maintenance in Storing and Marketing Food Products	30%		30%	
504	Home and Commercial Food Service	30%		30%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	9.2	0.0	5.6	0.0
Actual	9.1	0.0	14.3	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
249792	0	717938	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
347504	0	731089	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
182919	0	884023	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Experiment Station: MAES research supported food safety in 2008 through several areas of work including food safety and quality control during food processing and storage, developing sanitizers to use in organic food processing, and control of food-borne pathogens in pre-and post-harvest environments.

Extension: The Food Safety team works diligently to assure that Minnesotans have safer meals away from home, to reduce business citations and violations during health inspections,and to lower risks of foodborne illness outbreaks and related financial consequences in restaurants, hospitals, jails, schools and homes.In 2008, the team's primary efforts continued to be work in the food service industry, providing training and certification of workers to assure food safety in public restaurants.New collaborations with Minnesota's Workforce Development programs are bringing this certification to Minnesotans seeking employment in the food industry. Another primary effort in 2008 ramped up food preservation education efforts in collaboration with Minnesota's fruit and vegetable growers' associations.The local foods movement, along with new concerns about home budgets, has created renewed demand for food preservation knowledge.

For more information, visit www.extension.umn.edu/FoodSafetyEd.

2. Brief description of the target audience

Research supports the food development industry and food processing industry, while the direct audiences of the outreach efforts are food service workers through relationships with the National Restaurant Association, food handlers in community locations, fishermen and farmers, and high-risk audiences through the organizations they trust.

Extension Programs serve food service managers, commercial and community food handlers, caregivers,

consumers, commercial food processors and food inspectors. According to the 2008 organizational network study, primary relationships to facilitate the work were with: 1) state government (27.3% of contacts); private food industry businesses (10.9%); public schools and county governments (9.1% each) and higher education institutions (5.5%).The primary role of food safety educators and specialists with these organizations is to partner around the joint effort of keeping food safe in public places (65.5% of activities), and to provide expert advice (18.2%); also, educators provided substantive information (10.9%).

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	2900	7400	0	0
2008	2280	63801	5997	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	3	12	
2008	0	31	31

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- On-line and face-to-face classes will be delivered for food service workers in English. (Target expressed as number of courses offered.)

Year	Target	Actual
2008	65	89

Output #2

Output Measure

- Content for food service professionals will be translated into Spanish and adapted for Latino culture participants. (Target indicates number of courses available in Spanish.)

Year	Target	Actual
2008	3	2

Output #3

Output Measure

- New materials and training adaptations will be made for additional immigrant groups.

Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	At the completion of each teaching session, participants will show increased knowledge of food safety as measured on the Life Skills evaluation. (Target expressed as a percentage of participants.)
2	At the completion of each teaching session, participants will identify behaviors they intend to change and follow up evaluations will determine whether these behaviors change. (Target expressed as number of behaviors changed / participant.)
3	The MN Dept. of Health reports an 18-20% decrease in inspection critical violations in establishments that employ a Certified Food Manager. Food Safety Education programs will certify food managers. (Target expressed as % of pass rates.)
4	Research will provide knowledge to give organic food processors options for natural disinfectants.

Outcome #1

1. Outcome Measures

At the completion of each teaching session, participants will show increased knowledge of food safety as measured on the Life Skills evaluation. (Target expressed as a percentage of participants.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	70	85

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
504	Home and Commercial Food Service
503	Quality Maintenance in Storing and Marketing Food Products

Outcome #2

1. Outcome Measures

At the completion of each teaching session, participants will identify behaviors they intend to change and follow up evaluations will determine whether these behaviors change. (Target expressed as number of behaviors changed / participant.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
504	Home and Commercial Food Service
503	Quality Maintenance in Storing and Marketing Food Products

Outcome #3

1. Outcome Measures

The MN Dept. of Health reports an 18-20% decrease in inspection critical violations in establishments that employ a Certified Food Manager. Food Safety Education programs will certify food managers. (Target expressed as % of pass rates.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	95	89

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

The Life Skills Evaluation System was used to assess life skills learned in the class. The Instrument has been tested and is valid and reliable for adult programming. The instrument uses a retrospective pretest/post-test and was administered at the end of each ServSafe class. As measured by this instrument, knowledge and behavior in solving problems, keeping accurate and useful records, making decisions, communication, food safety regulations and trying new techniques in food safety increased.

4. Associated Knowledge Areas

KA Code	Knowledge Area
504	Home and Commercial Food Service
501	New and Improved Food Processing Technologies
503	Quality Maintenance in Storing and Marketing Food Products

Outcome #4

1. Outcome Measures

Research will provide knowledge to give organic food processors options for natural disinfectants.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:
Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Organic food regulations limit outside chemicals in all stages of production--from feed and fertilizer to commercial processing. But there are currently no truly organic sanitizers on the market, so organic food processing plants still use chemical sanitizers on their equipment, while some producers uses nothing at all because there is no disinfectant approved for use directly on produce.

What has been done

MAES food safety scientists have been investigating electrochemically activated (ECA) water as a natural disinfectant. The ECA process passes simple salt water through an electric charge that produces two streams of water: oxidized water at pH 7.0 that can be used as a disinfectant and anti-oxidant water that works as a detergent. They tested the antimicrobial efficacy of ECA water against e. coli, Salmonella and Listeria bacteria with success. They also established a three month shelf-life of ECA water for effectiveness as a disinfectant.

Results

A group of organic farmers has been selected to identify testing sites for ECA water application.

4. Associated Knowledge Areas

KA Code	Knowledge Area
501	New and Improved Food Processing Technologies

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Government Regulations
- Populations changes (immigration,new cultural groupings,etc.)

Brief Explanation

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- Retrospective (post program)
- Comparison between locales where the program operates and sites without program intervention
- Other (Inspection documents)

Evaluation Results

Key Items of Evaluation

Program #12

V(A). Planned Program (Summary)

1. Name of the Planned Program

Commodity Crop Production

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
201	Plant Genome, Genetics, and Genetic Mechanisms	10%		10%	
204	Plant Product Quality and Utility (Preharvest)	20%		20%	
205	Plant Management Systems	20%		20%	
206	Basic Plant Biology	10%		10%	
211	Insects, Mites, and Other Arthropods Affecting Plants	10%		10%	
212	Pathogens and Nematodes Affecting Plants	10%		10%	
213	Weeds Affecting Plants	10%		10%	
216	Integrated Pest Management Systems	10%		10%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	11.9	0.0	98.2	0.0
Actual	20.6	0.0	161.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
294140	0	1720512	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
1137734	0	13280831	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
131637	0	13863417	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Experiment Station:Progress was made in several research areas related to commodity crops this year.Among them:
•New information was attained on the impact of moisture during grain filling on the accumulation of deoxynivalenol in Fusarium-infected wheat. •Two new cultivars, Tom (wheat) and Rasmusson (barley), were released, both of which have improved resistance to Fusarium head blight. •The frist study of the characterstics of the soybean sudden death (SDS) syndrom pathogen in the northern U.S., was completed, which has led to increased awareness of this serious disease and to proactive actions by seed companies and soybean producers that will result in improved management of SDS •The economic feasibility of shifting Minnesota pasture and cropland from current land uses to energy crops was analyzed in a set of enterprise budgets, providing needed information in this newly emerging field.
More research results are reported under the Outcomes section.
Extension:In 2008, Extension regional and local educators were focused on:

1) providing core services, including education and consultation to farmers due to significant weather-related threats.

2) changing and adapting programmatic strategies. Pesticide safety certifications, for example, have movedfrom on-line to face-to-face certification coursework to strengthen two-way communication with farmers who alert researchers to new concerns that require future educational and research responses. Small grains educational initiatives reached out to new areas of the state to add small grains as a new rotational option.

3) The team strengthened its response to environmental concerns about drainage systems.Test sites around the state are now examining methods to control the flow of drainage, or to capture drainage and break down nitrogen content before it enters Minnesota's abundant lakes and rivers.(For more information, visit http://www.extension.umn.edu/CommodityCrops/.)

2. Brief description of the target audience

UMN Extension's 2008 organizational network study of the Crops team identified significant efforts committed to: 1) private businesses (34.1% of contacts), county governments (14.6%) and trade associations (11%) as the primary recipient of Extension outreach.To these organizations, significant efforts provided expert advice (34.1% of efforts); and partnerships around a joint effort for mutual benefit.(29% of efforts).Over 15% of efforts were engaged in on-going work to influence other organizations' outcomes and processes.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	54300	20000	0	0
2008	32340	71185	3407	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	2
2008 :	11

Patents listed

Biological Control of Nematodes with Hirsutella minnesotensis (Patent # 7,284,629)
Also these new varieties: 'Tom' new barley variety; two new soybean varieties for general release--a maturity group 0 conventional cultivar (MN0107) and a maturity group 0 conventional cultivar with soybean cyst nematode resistance (MN1710CN). Five soybean food type cultivars were also released and licensed in 2008. Two were small seeded types and three were larger seeded higher protein types.

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	10	120	
2008	7	137	144

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Conduct regional and local events to provide producers with latest applied research for improved crop management. (Target expressed as number of events)

Year	Target	Actual
2008	810	1576

Output #2

Output Measure

- On-farm research will be conducted and result in findings that will inform producers about best management practices.

Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Participants will gain research-based knowledge in crop and water management and workplace safety. (Target expressed as the number of direct person contacts reporting new research-based knowledge.)
2	Participants will act on university-based research they learned. (Target expressed as the number of direct person contacts from meetings who acted on or have made plans to act on information associated with their Extension learning.)
3	Research to manage soybean aphids will provide knowledge for producers to reduce pesticide use and improve profitability.
4	Research in biomass will provide information to help make ethanol production more profitable.
5	Research will provide information to help control new wheat diseases.

Outcome #1

1. Outcome Measures

Participants will gain research-based knowledge in crop and water management and workplace safety. (Target expressed as the number of direct person contacts reporting new research-based knowledge.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	18900	28000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
206	Basic Plant Biology
213	Weeds Affecting Plants
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
204	Plant Product Quality and Utility (Preharvest)
212	Pathogens and Nematodes Affecting Plants
216	Integrated Pest Management Systems

Outcome #2

1. Outcome Measures

Participants will act on university-based research they learned. (Target expressed as the number of direct person contacts from meetings who acted on or have made plans to act on information associated with their Extension learning.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	5425	12834

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Sugarbeet growers in Minnesota and North Dakota produce approximately 60% of the United States beet sugar. The total business activity of the sugarbeet industry in Minnesota and North Dakota is approximately $3 billion. Cercospora leaf spot is the most serious leaf disease of sugarbeet. In 1998, sugarbeet growers lost over $45 million because of Cercospora leaf spot, despite spending millions of dollars in fungicide applications. The fungicides available were not providing effective control.

What has been done

Researchers from the University of Minnesota, North Dakota State and Southern Minnesota Beet Sugar Cooperative conducted studies that resulted in registration of a number of fungicides with different modes of action over the past nine years. Extension Specialists recommended how and when fungicides should be used based on field research. Specialists used plot demonstrations and growers seminars to educate growers on best management practices which growers quickly adopted.

Results

The average number of fungicide application per acre on sugarbeet was reduced from 3.7 in 1998 to 2.4 in 2007. Growers saved over $18 million per year in reduced fungicide applications. In 2007, 94% of growers indicated excellent or good disease control and 6% reported fair disease control using fungicides as recommended. The percentage of sugarbeet growers who stated that Cercospora leaf spot was their worst production problem dropped from 36% in 1998 to 6% in 2007.

4. Associated Knowledge Areas

KA Code	Knowledge Area
212	Pathogens and Nematodes Affecting Plants
211	Insects, Mites, and Other Arthropods Affecting Plants
204	Plant Product Quality and Utility (Preharvest)
213	Weeds Affecting Plants
216	Integrated Pest Management Systems
206	Basic Plant Biology
205	Plant Management Systems

Outcome #3

1. Outcome Measures

Research to manage soybean aphids will provide knowledge for producers to reduce pesticide use and improve profitability.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

In Minnesota, soybeans were planted on 6.9 million acres in 2008. Soybeans have become increasingly important in central and northwestern Minnesota and have surpassed small grains in acreage because of diseases such as scab and Septoria leaf spot of small grains. But the soybean aphid has posed a significant threat.

What has been done

Research has documented the value of natural enemies in controlling aphids and shown that when natural enemies are eliminated, aphid reproduction can rapidly cause significant loss in crop production. Researchers have shown that the 250 aphids per plant economic threshold there research had established is broadly applicable for soybean production across the North Central region.

Results

Regardless of variety, row spacing, or maturity group, this economic threshold will allow producers one week to arrange for treatment of the field to prevent economic loss, defined as the loss (in bu/ac) equal to the cost of control. Pesticide manufacturers have often insisted that given the current commodity prices the economic threshold must be lower, but this research showed this is not the case. Researchers also demonstrated that if treatment occurs too early, aphid population resurges due to lack of natural enemies. The research documented that the soybean aphid economic threshold of 250 aphids per plant will result in a future value to soybean producers in the U.S. of $1.3 billion (projected for the next 15 years.)

4. Associated Knowledge Areas

KA Code	Knowledge Area
211	Insects, Mites, and Other Arthropods Affecting Plants
205	Plant Management Systems

Outcome #4

1. Outcome Measures

Research in biomass will provide information to help make ethanol production more profitable.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Ethanol plants have fallen on hard times.

What has been done

The heat and electricity needed to fuel ethanol production plants can be major costs, both financially and in terms of the plant's carbon footprint. Research has shown that corn biomass--cornstalks and the co-products of ethanol production--in various forms could be used to fuel entire plants, thus improving the plants' energy balance as much as three-fold and potentially making them more profitable. The study involved using engineering and economic models to evaluate numerous combinations of biomass fuels and conversion technologies. The researchers tested their theories by working with five corn ethanol plants in Minnesota and Wisconsin. They have modeled substantial improvements to the corn-based ethanol production process that can be implemented in the near term.

Results

The results are being shared with the ethanol industry, bankers, and pollution control staff.

4. Associated Knowledge Areas

KA Code	Knowledge Area
204	Plant Product Quality and Utility (Preharvest)

Outcome #5

1. Outcome Measures

Research will provide information to help control new wheat diseases.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:
Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

A new African stem rust race named Ug99 has spread beyond Africa and into the Middle East. Scientists estimate that more than 70 percent of all wheat is vulnerable to the rust.

What has been done

Researchers have continued to develop core collection of wild cereal species across their natural ecogeographic range and have systematically evaluated these for resistance to economically important diseases and for other traits.

Results

This research has led to the identification of novel and potentially more durable resistance genes to the major diseases of Fusarium head blight and more recently to the stem rust race Ug99. Work is now being done to characterize these resistances genetically and move them into cultivated wheat and barley. Using the identified resistance genes in cereal breeding programs will increase the genetic diversity of cultivars and reduce the vulnerability of the crops to changes in pathogen populations.

4. Associated Knowledge Areas

KA Code	Knowledge Area
212	Pathogens and Nematodes Affecting Plants
206	Basic Plant Biology

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought,weather extremes,etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration,new cultural groupings,etc.)

Brief Explanation

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- Retrospective (post program)
- Before-After (before and after program)
- During (during program)
- Case Study
- Comparisons between program participants (individuals,group,organizations) and non-participants
- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- Comparison between locales where the program operates and sites without program intervention

Evaluation Results

Key Items of Evaluation

Program #13

V(A). Planned Program (Summary)

1. Name of the Planned Program

Community Economics

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
602	Business Management, Finance, and Taxation	33%		33%	
608	Community Resource Planning and Development	67%		67%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	9.0	0.0	6.5	0.0
Actual	12.0	0.0	6.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
219879	0	42895	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
857177	0	109639	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
574001	0	321979	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Research the support the health and vitality of Minnesota communities focused on several sectors of that economy, including the rural retail environment, housing policy issues, state tax financing issues, changing rural labor markets, and tourism. Especially in this time of economic stress, knowledge of public sector impacts on state economic growth, as well as new local and regional economic opportunties is essential. We have reported in previous years' Accomplishment Reports on MAES community economic development work on rural change, markets and government. This work continues to inform Minnesota public policy makers.

Extension:Community Economics programs work directly in communities to provide applied research and educational programming that support local decisions aimed at strengthening local economies. In 2008, community retail sectors frequently utilized Extension's applied research programs to receive an analysis oftheir local markets or of their economic strengths and weaknesses.Business Retention and Expansion programs continued to be utilized in 2008, creating local community-to-business connections that uncover problems and inform strategic planning.This year, an innovative project created a Business Retention and Expansion program for ethnic businesses in the Twin Cities. This was done through partnerships with three ethnic chambers.

For more information, visit www.extension.umn.edu/community.

2. Brief description of the target audience

Primary audiences for community economics programs and research include chambers of commerce, the tourism industry, economic development officers, local governments, and nonprofits that will, in turn, create and implement local economic development strategies.

According to the 2008 organizational network study, primary contacts were with local and statewide economic development organizations (25.2% of contacts).Chambers of commerce and city governments also utilized service (14% each), and trade associations (especially retail trade) were engaged with Extension (10.3% of contacts). The most frequent type of contact provided substantive information to organizations (36.4% of contacts), expert advise was the second most frequent type of activity (27.1%) followed by partnerships around a joint effort with mutual benefit (22.4%).

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	8800	8000	0	0
2008	9545	29394	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	10	16	
2008	16	14	30

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Educational workshops will be provided (face-to-face and on-line). (Target expressed as numbers of workshops.)

Year	Target	Actual
2008	239	259

Output #2

Output Measure

- Community-based applied research will be conducted regarding retail trade, business retention and expansion and tourism development. (Target expressed as numbers of communities engaged.)

Year	Target	Actual
2008	12	19

Output #3

Output Measure

- Community-based trainers will be trained to continue providing education in communities through business retention and expansion programming, customer service training and internet literacy programs. (Target expressed as the numbers of trainers trained.)

Year	Target	Actual
2008	99	111

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Participants in Community Economics programs will increase their knowledge of relevant community economic development topics. (Target expressed as the percentage of participants reporting increased knowledge.)
2	Participants in long-term programs (Business Retention and Expansion, Tourism Development, Connecting Rural Communities) will contribute to new plans for local economic development. (Target expressed as a percentage of participants in long-term programs initiated in prior three years who report that participation in Community Economics programming led to creation of new plans.)
3	Communities engaged in long-term programs (Business Retention and Expansion, Tourism Development, Connecting Rural Communities) will report that plans developed as a result of Community Economics programming were implemented to the betterment of their local economies. (Target expressed as a percentage of communities in long-term programs initiated in prior three years who report that participation in Community Economics programming led to creation of new plans). Note: Communities could be those of place (geographic) or those of interest (industry or sector-based.)
4	Research will provide knowledge to support survival of small independent retailers in rural Minnesota.
5	Research on the structure of Minnesota's tax system will provide legislators with necessary information to support economic growth.
6	Research on subprime mortgage lending and foreclosure will provide policy makers with knowledge to support Minnesota's homeowners and affordable housing in rural and urban Minnesota.

Outcome #1

1. Outcome Measures

Participants in Community Economics programs will increase their knowledge of relevant community economic development topics. (Target expressed as the percentage of participants reporting increased knowledge.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	80	93

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development
602	Business Management, Finance, and Taxation

Outcome #2

1. Outcome Measures

Participants in long-term programs (Business Retention and Expansion, Tourism Development, Connecting Rural Communities) will contribute to new plans for local economic development. (Target expressed as a percentage of participants in long-term programs initiated in prior three years who report that participation in Community Economics programming led to creation of new plans.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	70	51

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Business Retention and Expansion programs led community volunteers to survey business leaders about their current capacity to succeed in their community. Members of Business Retention and Expansion Program community task forces were surveyed in early 2009. The survey requested information from task force members from seven communities that have completed the Business Retention and Expansion program within the past three years. A total of 49 task force members completed the survey.

Results

A six point measurement scale was used to measure responses for each of the following program objectives. The goal is described below, along with the percent of task force members responding four or higher on a six point scale (1 = not at all to 6= to a great degree).

* The program established a strategic plan for economic development. (51%)
* The program provided support for local business. (41.7%)
* The program built community capacity to sustain growth and development. (31.3%)

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development

Outcome #3

1. Outcome Measures

Communities engaged in long-term programs (Business Retention and Expansion, Tourism Development, Connecting Rural Communities) will report that plans developed as a result of Community Economics programming were implemented to the betterment of their local economies. (Target expressed as a percentage of communities in long-term programs initiated in prior three years who report that participation in Community Economics programming led to creation of new plans). Note: Communities could be those of place (geographic) or those of interest (industry or sector-based.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	75	26

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

Responses to this survey question had a range of responses -- from 42.9% to 11.1%. While respondents noted that the program helped to establish a strategic plan for economic development (52%), they were not as positive about the implementation of that plan. Program enhancements are now being put in place to support implementation.

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development
602	Business Management, Finance, and Taxation

Outcome #4

1. Outcome Measures

Research will provide knowledge to support survival of small independent retailers in rural Minnesota.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Small retail business owners in rural towns often feel threatened by the presence of big box retailers.

What has been done

A study of 190 small independent retailers in Minnesota investigated relationships between the retailers' perceived hostility of their business environment and the emphasis they placed on differing business strategies. The study revealed that independent retailers' perceived hostility of the business environment was related to their perceptions concerning customers' patronage of local stores rather than the presence of big box stores. Business retailers who shared their market with big box retailers placed an emphasis on a merchandise strategy. However, it was independent retailers who focused on financing and operation strategies that reported highest performance.

Results

The research was shared with the retailers and provided information developed into Extension education programming. The new knowledge that it was customer patronage that predicted perceived hostility of the business environment for rural retailers and not level of competition or type of competition in the marketplace gave the retailers information to focus on improved business success.

4. Associated Knowledge Areas

KA Code	Knowledge Area
602	Business Management, Finance, and Taxation

Outcome #5

1. Outcome Measures

Research on the structure of Minnesota's tax system will provide legislators with necessary information to support economic growth.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Minnesotans are aging and over the next two decades a much greater proportion of taxpayers will be over the age of 65. Models used to forecast state income tax receipts are not reliable in the new environment.

What has been done

Models used to forecast state income tax receipts were modified to allow the number of taxpayers in specific age cohorts to grow at different rates over time. This revised model and long term models for sales and corporate income receipts were used to prepare a forecast for state revenues through 2035.

Results

Results were shared with two special commissions appointed by the Governor and the Legislature to consider changes in the state's finances needed to better position Minnesota for the future.

4. Associated Knowledge Areas

KA Code	Knowledge Area
602	Business Management, Finance, and Taxation

Outcome #6

1. Outcome Measures

Research on subprime mortgage lending and foreclosure will provide policy makers with knowledge to support Minnesota's homeowners and affordable housing in rural and urban Minnesota.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

As the economic crisis deepens, Minnesota's home foreclosure rate has increased.

What has been done

Researchers:
--Analyzed the spatial distribution of sub-prime home mortgage loans in urban and rural Minnesota.
--Developed an understanding of the relationship between the characteristics of borrowers, neighborhoods, and the spatial distribution of sub-prime lending in urban and rural Minnesota.
---Analyzed the relationship between sub-prime lending and the provision of affordable housing in urban and rural Minnesota.

Results

A report was submitted to the Minnesota State Legislature. The findings greatly contributed to an understanding of how sub-prime lending is distributed in Minnesota and the linkages between sub-prime lending and foreclosure. Results from this research directly contributed to the passage of an anti-predatory lending bill in the Minnesota State Legislature.

4. Associated Knowledge Areas

KA Code	Knowledge Area
602	Business Management, Finance, and Taxation

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy

Brief Explanation

Business Retention and Expansion Task Force Members who were interviewed were quick to point out that current economic decisions are affecting the impact that their BR&E program could have.To quote a respondent, *"It is difficult for this program to be implemented in an economy that is tanking faster than it can be saved.That being said, it is an excellent program. It focuses ideas into a formulated plan which benefits everyone and yet helps individual businesses."*

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- Retrospective (post program)
- Before-After (before and after program)
- During (during program)
- Case Study
- Comparisons between program participants (individuals,group,organizations) and non-participants
- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- Comparison between locales where the program operates and sites without program intervention

Evaluation Results

Key Items of Evaluation

Program #14

V(A). Planned Program (Summary)

1. Name of the Planned Program

Nutrition Education Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
501	New and Improved Food Processing Technologies	5%		5%	
701	Nutrient Composition of Food	25%		25%	
703	Nutrition Education and Behavior	60%		60%	
704	Nutrition and Hunger in the Population	10%		10%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	**Extension**		**Research**	
	1862	**1890**	**1862**	**1890**
Plan	17.5	0.0	23.4	0.0
Actual	12.7	0.0	31.1	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		**Research**	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
32729	0	301713	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
307472	0	1600424	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
7124401	0	1620140	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Extension:Nutrition education programs at the University of Minnesota help people with limited income discover how to make healthy food choices while stretching food dollars.The Nutrition Education Programs deliver programs funded by the USDA Food Stamp Nutrition Program.These programs are complemented by outreach to families, schools and communities, for a more systemic approach to disease and obesity prevention, healthy environments and quality continuing education for community professionals.

Growing unemployment rates in 2008 increased the number of Minnesotans eligible for nutrition education programs.In fact, the number of participants served grew by 9% from 2007 - 2008.Inflation in food prices and gas prices was a particularly harsh new reality for persons eligible for this program for much of 2008.The educational team incorporated new information into programming to help participants cope.

Research:In addition, a series of research projects explored:the impact of nutrition education on children and the impact of access of food on families; impact of healthy beverage consumption, and the food shopping behavior of low-income families. In addition, MAES research was conducted to develop better understanding of the nutritional content and health benefits of various foods, as well as developing methods to help the food processing industry provide healthy food.

For more information, visit www.extension.umn.edu/health.

2. Brief description of the target audience

The 2008 organizational network study shows that the primary organizational relationships of nutrition educators are held with public schools (26.3% of contacts).Social service organizations are also a primary contact (14.1%), followed by health-focused organizations (9.7%), food shelves (9.1%) and early childhood organizations (9%). The primary focus of these relationships are partnerships around the joint effort of improving the health and nutrition of children and families (46.8%), followed by a role in providing substantive information to organizations (34.4%).

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	22330	1428000	29500	68300
2008	31281	184204	50139	70000

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	3	27	
2008	5	34	39

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Classes will be provided in individual and group settings that teach about quality, food safety, food resource management and food security. (Target expressed as number of workshops/classes taught.)

Year	Target	Actual
2008	3050	3998

Output #2

Output Measure

- School Food Service Institutes will be held for school food service workers and managers so that they implement healthy food service programs for Minnesota's public schools. (Target expressed as number of institutes held each year.)

Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	An increased number of individuals will use research-based information from Extension to improve their intake of healthful foods. (Target expressed as percentage of participants who self-report change.)
2	Food service personnel will use research-based information from Extension to improve students' healthy eating. (Target expressed as percentage of workshop participants reporting use of materials.)
3	Program participants will increase human nutrition knowledge. (Target expressed as percentage of participants who report knowledge change.)
4	Program participants will increase their skills in selecting and buying food that satisfies nutritional needs, managing food budgets and preparing affordable foods within the food groups. (Target expressed as percentage of participants who reported learning these skills.)
5	Research on the benefits of whole grain to reduce cancer risk will provide information for health professionals and food processors.
6	Nutrition research will provide information to support childrens' health.

Outcome #1

1. Outcome Measures

An increased number of individuals will use research-based information from Extension to improve their intake of healthful foods. (Target expressed as percentage of participants who self-report change.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	50	71

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Nutrition Education intervention activities were delivered to 247 older adults in five communities. The project targeted more vulnerable older adults in communities. The project used learner-driven approaches to deliver nutrition education, along with adult learning principles, experiential learning methods and facilitation. Specific activities include interactive games and quizzes, personal conversations and visual aids.

Results

Evaluated results were very positive:
- 75% made positive dietary changes
- 93% increased knowledge of food choices
- 71% increased their intake of fruits and vegetables by one serving per day
- 76% increased their intake of whole grains by one serving per day

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

Outcome #2

1. Outcome Measures

Food service personnel will use research-based information from Extension to improve students' healthy eating. (Target expressed as percentage of workshop participants reporting use of materials.)

Not reporting on this Outcome for this Annual Report

Outcome #3

1. Outcome Measures

Program participants will increase human nutrition knowledge. (Target expressed as percentage of participants who report knowledge change.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	75	76

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

In 2008, 1,261 members of the Latino community participated in a variety of events offered to increase knowledge of healthy nutrition. Examples of events developed include 'Fiestas de Salud' and fruit and vegetable tastings with and within local grocery stores.

Results

The community-based events had a significant effect on participants' knowledge and increased intake of fruits and vegetables. Results from pre-post surveys indicated that approximately 70% increased knowledge regarding healthy benefits of fruits and vegetables, and 71% intend to eat more fruits and vegetables. In addition to this in-person programming, key messages around the benefits of fruits and vegetables were sent in a social marketing campaign, with messages sent to over 100,000 Latino community members through the radio and print media.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

Outcome #4

1. Outcome Measures
Program participants will increase their skills in selecting and buying food that satisfies nutritional needs, managing food budgets and preparing affordable foods within the food groups. (Target expressed as percentage of participants who reported learning these skills.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	50	70

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

Outcome #5

1. Outcome Measures

Research on the benefits of whole grain to reduce cancer risk will provide information for health professionals and food processors.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Interest in the healthy effects of eating whole grains has focused on their possible benefits in preventing colon cancer. But research indicates it is not so much the processing of the grain, but the kind of grain that is most important.

What has been done

A previous study found that hard red wheat is more effective than soft white wheat in reducing colon cancer risk, regardless of processing state. Researchers have now examined the effect of wheat class (red versus white) and processing (whole versus refined) on reducing markers of colon cancer risk during the early and late stages of colon cancer development. Studies on rats showed that only hard red wheat significantly reduced a marker of stem cells mutation, compared to soft white wheat.

Results

The studies convincingly demonstrated that processing state does not influence colon cancer risk in this animal model of colon cancer. However, the results strongly suggest that red wheat, particularly hard red wheat, protects against colon cancer risk, whereas white wheat has a modest or no effect on colon cancer risk. Further, hard red wheat shows the ability to regress animals from an established state of high cancer risk to a state of lower cancer risk.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
701	Nutrient Composition of Food

Outcome #6

1. Outcome Measures

Nutrition research will provide information to support childrens' health.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:
Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Getting children to eat healthy whole wheat bread can be a challenge.

What has been done

Nutrition researchers observed meals fed to kindergartners through sixth graders for one school year. Red and white whole-grain flour was gradually added to the bread and rolls in school lunches. The children didn't show a preference for either type of flour, and didn't start throwing away more bread products until the amount of whole-grain flour reached about 70 percent.

Results

The research shows a gradual approach to improving childrens' diets can be successful both at school and at home.

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
703	Nutrition Education and Behavior

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration,new cultural groupings,etc.)

Brief Explanation

Increased number of people eligible for programs demanded that we increase partnerships and meet demand.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Retrospective (post program)
- Before-After (before and after program)
- Time series (multiple points before and after program)
- Comparisons between program participants (individuals,group,organizations) and non-participants

Evaluation Results

Key Items of Evaluation

Program #15

V(A). Planned Program (Summary)

1. Name of the Planned Program

Consumer Horticulture

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	10%		10%	
132	Weather and Climate	10%		10%	
205	Plant Management Systems	60%		60%	
211	Insects, Mites, and Other Arthropods Affecting Plants	10%		10%	
213	Weeds Affecting Plants	10%		10%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	2.1	0.0	8.4	0.0
Actual	0.0	0.0	0.9	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	145410	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	30351	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

MAES research activities that benefit consumers also, and initially, benefit Minnesota's commercial horticultural industry, such as development of new hardy plants for the northern gardener.The results and impacts from horticultural research therefore are reported under the planned program "Commercial Horticulture."

Extension:Consumer horticulture educators and specialists provide answers to questions consumers have so that they can maintain healthy green spaces in homes and communities.The Extension horticultural team also trains and supports Master Gardeners who provide volunteer services in their communities to help keep communities green.In 2008, a major effort of the Consumer Horticulture team brought Master Gardener and horticultural education into the internet age.The new Master Gardener Training is available on-line and in real-time voice overs for internet users.The training has had high satisfaction rates in its pilot period, and is ready will be implemented across the state.On-line, the training is accessible now not only to Master Gardener volunteers, but to green industry professionals and non-volunteer consumers.This increases the outreach of the program without increasing costs.

In addition, the program team is moving more fact sheets and publications on-line to help consumers solve problems without face-to-face interaction. On-line diagnostics and modules are responding to more demand cost-effectively.

With these new efforts to modernize the program, 2008 was a transformational year for Master Gardener programs and other consumer horticulture efforts, and we anticipate future outcomes will result.
(For more information, visit http://www.mg.umn.edu/.)

2. Brief description of the target audience

Extension:According to the 2008 organizational networks survey, private businesses are the primary recipients of consumer horticulture education and research (16% of organizational efforts), followed by community and cultural organizations (14.2%), county governments (8%) and then trade associations and media organizations (7.1% each).

Primary efforts with these organizations were to pass along expert advice (34% of activities), provide substantive information (27.7% and to partner with organizations around a joint effort of mutual benefit (23%).

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	95000	51000	5000	0
2008	123000	1113949	42000	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	1	4	
2008	0	1	1

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Master Gardeners trained by Extension will deliver hours of educational service to the residents of Minnesota. (Target expressed as the number of volunteer hours committed by Master Gardeners.)

Year	Target	Actual
2008	95000	102736

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Minnesotans interested in horticulture will deepen their knowledge of horticulture content. (Target expressed as a percentage of persons reporting new knowledge.)
2	Minnesotans receiving answers to horticulture questions will act on university-based research they learned. (Target expresssed as the number of direct person contacts who acted on or have made plans to act on information associated with their Extension learning.)

Outcome #1

1. **Outcome Measures**

Minnesotans interested in horticulture will deepen their knowledge of horticulture content. (Target expressed as a percentage of persons reporting new knowledge.)

Not reporting on this Outcome for this Annual Report

Outcome #2

1. **Outcome Measures**

Minnesotans receiving answers to horticulture questions will act on university-based research they learned. (Target expresssed as the number of direct person contacts who acted on or have made plans to act on information associated with their Extension learning.)

Not reporting on this Outcome for this Annual Report

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Competing Programmatic Challenges

Brief Explanation

Administrative and team efforts this year were focused on reorganizing horticulture education efforts to take advantage of technology and strengthen program reach through technology.These efforts competed with staff hours available for program evaluation and research.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. **Evaluation Studies Planned**

- Retrospective (post program)
- Case Study

Evaluation Results

Key Items of Evaluation

Program #16

V(A). Planned Program (Summary)

1. Name of the Planned Program

Commercial Horticulture

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
201	Plant Genome, Genetics, and Genetic Mechanisms	10%		10%	
204	Plant Product Quality and Utility (Preharvest)	40%		40%	
205	Plant Management Systems	40%		40%	
211	Insects, Mites, and Other Arthropods Affecting Plants	10%		10%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	8.1	0.0	36.5	0.0
Actual	14.5	0.0	51.4	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
274294	0	816428	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
791531	0	6581899	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
29059	0	2676975	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

MAES research:In 2008, MAES research continued to make progressin providing new cold hardy woody plants, fruits and flowers to support Minnesota's commercial horticultural industry.Research also progressed on Minnesota's major horticultural crops--potatoes, sweet corn and other vegetables. One example of the results of that research: Corky ringspot of potato appeared for the first time in Minnesota in 2007 and caused an estimated loss of $500,000 due to rejection of discolored tubers for processing.One research project showed that this virus and its nematode vectors occur endemically in Minnesota and that the disease was not being introduced in infected seed potatoes.This has eliminated the need for testing seed potatoes for this pathogen. Another project provide scientists and the potato industry a genetic resource for better management of bacterial ring, a national quarantine pest, by sequencing the genome of the causal agent.Other genome mapping research have resulted in the world's first Diversity Arrays Technology mapping microarray for potato.This array is publicly available and will allow scientists from around the world to rapidly, efficiently and cheaply map genes of interest in wild potato species. Other results in potato research are described under the "Outcomes" section.

Minnesota's small wine industry continues to grow, using U of M developed grape wine varietiesThere are now more than 20 wineries across the state, up from just 4 a decade ago. Vines of four U of M selections were planted in nine other states (CT, SD, ND, NE, IA, PA, IN, KY, and VT) in 2008.The U of M chrysanthemum breeding program is recognized as one of the premiere public-sector flower breeding chrysanthemum programs in the world.In 2008 the plant breeding program trialed herbaceous perennial selections from the breeding program at multiple locations in Minnesota, inlcuding 83 chysanthemum selections. Research investigating methods for screening for improved winter hardiness in perennial ryegrass has developed methods that are now being used in the germplasm improvement program.These methods will increase the rate at which improved cultivars can be made available for seed producers in northern Minnesota. Results from 2008honey bee research are described in the "Outcomes" section.

Extension:In 2008, commercial horticulture educators and researchers worked together to serve apple growers, grape growers, fruit. vegetable growers and potato growers.Conferences, field days and interstate connections reached growers with information about new research and valuable education.Major efforts for 2008 included: 1) Dissemination of *High Tunnels*: High Tunnels use tent-like covers to lengthen the growing season by at leastone month on each side of Minnesota's harsh winters.The team believes that there are now 300 high tunnels across the state, helping to increase availability of Minnesota foods while increasing growers' revenues.In order to use a High Tunnel System, growers must be educated about the growing and handling of crops in a tunnel.Extension is providing that education, and is also rewriting manuals to respond to interest in using High Tunnel for additional crops (e.g., raspberries and organic products).2)New potato varieties are being tested and demonstrated to help growers produce with less fertilizer and nutrient management needs. (For more information, visit www.extension.umn.edu/vege&fruit.)

2. Brief description of the target audience

Audiences are fresh market producers including growers of fruits and vegetables for processing, the processing industry, associated agribusinesses turf professionals, nurseries and garden centers, and landscape professionals. Several of these groups have high representations of new immigrants.

According to the 2008 organizational network study, trade associations received the largest effort of Extension's commercial horticulture service (40.4% of contacts), followed by state government, professional associations and higher education institutions (10.6% each).Activities with these organizations included passing along expert advice (34%), providing substantive information (27.7%) and partnerships with organizations around a joint effort with mutual benefit (23.4%).

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	13000	18500	0	0
2008	13149	23769	627	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	2
2008 :	2

Patents listed

Apple Tree Named 'Minneiska' (PP18,812)
Chrysanthemum Variety (Patent #19,043)

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	32	
2008	8	33	41

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Deliver workshops, classes and seminars and other events to provide information to targeted audiences.

Year	Target	Actual
2008	95	96

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Participants will gain knowledge in fruit and vegetable growing practices. (Target expressed as number of direct person contacts reporting new knowledge.)
2	Participants will act on university based information they learn. (Target expressed as the number of direct person contacts who acted on or have made plans to act on information associated with their Extension learning.)
3	Research on the biological and cultural control of potato insects will provide knowledge to improve production practices.
4	Research will provide information to develop sustainable solutions to problems affecting honey bee health.

Outcome #1

1. Outcome Measures

Participants will gain knowledge in fruit and vegetable growing practices. (Target expressed as number of direct person contacts reporting new knowledge.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	7470	5189

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
204	Plant Product Quality and Utility (Preharvest)

Outcome #2

1. Outcome Measures

Participants will act on university based information they learn. (Target expressed as the number of direct person contacts who acted on or have made plans to act on information associated with their Extension learning.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2130	1298

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
211	Insects, Mites, and Other Arthropods Affecting Plants
205	Plant Management Systems
204	Plant Product Quality and Utility (Preharvest)

Outcome #3

1. Outcome Measures

Research on the biological and cultural control of potato insects will provide knowledge to improve production practices.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Seed potato certification in the U.S. has a history of almost 100 years. Unfortunately, over the past 20 years, North American seed certification programs have proved increasingly unsuccessful in eliminating viruses, especially Potato virus Y, from state and national seed potato production systems.

What has been done

Research outputs in 2008 included: 1) assessment of the importance of stand gaps in virus spread; 2) evaluation of the potential of soybean aphid to transmit potato leafroll virus; and 3) field testing of a theoretical model suggesting that moderate host plant resistance to green peach aphid and potato aphid, if complemented by naturally occurring biological control, could provide control superior to insecticide alone.

Results

Research has shown that uniform potato stands have much less virus spread than those with missing plants. Winged aphids tend to alight on plants along field borders or margins of stand gaps. These conclusions led to recommendation to use border crops to protect early generation seed potato fields. Research also showed that large fields can be protected from green peach aphid colonization by targeting insecticide treatments to field margins. These recommendations have been widely accepted and used by potato growers.

4. Associated Knowledge Areas

KA Code	Knowledge Area
211	Insects, Mites, and Other Arthropods Affecting Plants
205	Plant Management Systems

Outcome #4

1. Outcome Measures

Research will provide information to develop sustainable solutions to problems affecting honey bee health.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Promoting the health of our nation's honey bees is critical to assure their survival against the new problem facing them, which has been named Colony Collapse Disorder, but is still not entirely understood.

What has been done

Minnesota bee research, reported in previous Accomplishment Reports, has described the line selected for hygienic traits and resistance to Varroa mites. This technology transfer project brought the researcher to California, where the majority of the geen bees produced and distributed throughout the U.S. originate, to enhance the existing lines of bees reared in that area.

Results

The project is the first step toward the development of a national stock certification program for honey bees. Certification would increase the market value of queen bees and would increase quality, genetic diversity, and health of honey bees for beekeepers nationwide. The project is the first of its kind in the U.S. to explore the feasibility of stock certification for honey bees.

4. Associated Knowledge Areas

KA Code	Knowledge Area
211	Insects, Mites, and Other Arthropods Affecting Plants
205	Plant Management Systems

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought,weather extremes,etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration,new cultural groupings,etc.)

Brief Explanation

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- Retrospective (post program)
- Before-After (before and after program)
- During (during program)
- Case Study
- Comparisons between program participants (individuals,group,organizations) and non-participants
- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- Comparison between locales where the program operates and sites without program intervention

Evaluation Results

Key Items of Evaluation

Program #17

V(A). Planned Program (Summary)

1. Name of the Planned Program

Livestock

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
301	Reproductive Performance of Animals	10%		10%	
302	Nutrient Utilization in Animals	15%		15%	
304	Animal Genome	5%		5%	
305	Animal Physiological Processes	10%		10%	
306	Environmental Stress in Animals	5%		5%	
307	Animal Management Systems	30%		30%	
311	Animal Diseases	20%		20%	
315	Animal Welfare/Well-Being and Protection	5%		5%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	10.2	0.0	44.9	0.0
Actual	16.7	0.0	58.4	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
420398	0	1951593	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
912910	0	7275751	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
16466	0	4640742	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Experiment Station: Livestock related research spans the continum of translational applied research to basic, cellular research.The following are some research areas in which MAES supported research has made more contributions and impacts in 2008:

•Leading the Minnesota beef industry in efforts to enhance production and marketing conditions and sustainability of beef operations under downgraded bovine TB status. •Research into animal welfare and cow comfort. •Defining the cellular mechanisms of steroid-enhanced muscle growth in steers. •Genome signature of artificial selection and genome-wise association analysis in Holstein cows.

Other research impacts are described under the "Outcomes" section.

Extension:Through direct education to producers, collaborative efforts with state departments, trade associations and others, and outreach with information through multiple media sources, livestock educators and specialists provide education to producers of hogs, cows, and poultry, making them more profitable and responsive to their industry.In 2008, the team worked to migrate many educational programs on line, and responded to demands for safe and healthy livestock production from America's consumers and the retail companies that serve them. (For more information, visit http://www.extension.umn.edu/topics.html?topic=4.)

2. Brief description of the target audience

The Livestock education team serves Minnesota dairy producers, pork producers, poultry producers, beef producers, veterinarians, consumers, Minnesota feed industry. Forage growers and feeders, and commercial hay producers.The 2008 organizational network surveys underscore the collaborative work this team does to improve animal health and protect consumers.Extension's livestock team collaborates with trade associations (27.5% of contacts), private farming businesses (16.5%), professional associations and state government (11.3% each) to deliver research-based information that producers can use.Their efforts are split somewhat evenly between partnering for a joint effort with mutual benefit, providing expert advice, and delivering substantive information through and with these groups.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	**Target**	**Target**	**Target**	**Target**
Plan	19000	3800	0	0
2008	47575	145256	4672	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	1
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	10	80	
2008	19	74	93

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Through demonstration projects, provide ideas and solutions to producers on such topics as milk house waste, manure rate application on fields, and on-farm demonstrations of forage topics such as alfalfa brown root rot variety screening, and alfalfa fall cutting. (Target expressed as number of demonstration projects.)

Not reporting on this Output for this Annual Report

Output #2

Output Measure

- Provide workshops, training sessions, schools, and other processor specific events. (Target expressed as number of events.)

Year	Target	Actual
2008	250	206

Output #3

Output Measure

- The Quality Count$ initiative will sustain its cooperative partnerships with regulatory, association and production groups that assist in addressing the issue of somatic cell count. (Target expressed as the minimum number of groups involved.)

Year	Target	Actual
2008	25	28

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Through the Quality Count$ program, the average bulk tank somatic cell count in Minnesota dairy operations will be maintained at a low level, and move downward over time through changed attitudes and improved consistency of dairy producers. (Target expressed as the somatic cell count under which Minnesota's dairy industry will stay.)
2	Participants will gain knowledge in research-based practices related to beef, dairy, horse, poultry, swine management and manure related management. (Target expressed as the number of direct person contacts reporting new knowledge.)
3	Participants will act upon university-based research learned. (Target expressed as the number of direct person contacts who acted on or have made plans to act upon information associated with their Extension learning.)
4	Profits of small beef operations will increase through joint marketing activities. (Actual is expressed as total added profits for 14 producers.)
5	Research will provide knowledge on alternative swine and dairy housing systems for improved animal health.
6	Research will provide better understanding of the PRRS virus transmission and control, for improved swine health.
7	Research will develop methods and provide information on options to improve odors emitted from open manure storage.

Outcome #1

1. Outcome Measures

Through the Quality Count$ program, the average bulk tank somatic cell count in Minnesota dairy operations will be maintained at a low level, and move downward over time through changed attitudes and improved consistency of dairy producers. (Target expressed as the somatic cell count under which Minnesota's dairy industry will stay.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	300000	300000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

The Quality Count$ program began in 2005 to cope with spiking somatic cell counts that reflect cow health and effect product quality.

Results

During January 2008 there was a 25,000 SCC improvement from January 2007. Throughout the whole year DHI SCC improved at an accelerated rate and by November 2008 there was a 75,000 improvement over November 2007. Taking into consideration season change, the net gain for 2008 over 2007 was 56,000 SCC. This was a good year for milk quality improvement in Minnesota. 2008 was the best milk quality year ever recorded in Minnesota and the trend appears to be continuing down. This compares to the high mark SCC count numbers of 400 - 500,000 in 2002.

4. Associated Knowledge Areas

KA Code	Knowledge Area
305	Animal Physiological Processes
307	Animal Management Systems
306	Environmental Stress in Animals
315	Animal Welfare/Well-Being and Protection
311	Animal Diseases

Outcome #2

1. Outcome Measures

Participants will gain knowledge in research-based practices related to beef, dairy, horse, poultry, swine management and manure related management. (Target expressed as the number of direct person contacts reporting new knowledge.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	6800	8950

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
315	Animal Welfare/Well-Being and Protection
302	Nutrient Utilization in Animals
311	Animal Diseases
306	Environmental Stress in Animals
307	Animal Management Systems
305	Animal Physiological Processes
301	Reproductive Performance of Animals

Outcome #3

1. Outcome Measures
Participants will act upon university-based research learned. (Target expressed as the number of direct person contacts who acted on or have made plans to act upon information associated with their Extension learning.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	1900	2400

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

When bovine TB stopped appearing in tests in the early 1970's, Minnesotans thought they were done worrying about the disease. More than 30 years later, the state faced that battle again. A series of TV-positive herds in northwest Minnesota caused Minnesota to lose its 'TB Free' status. Loss of this status costs beef and dairy producers an estimated $18 million per year statewide. Producers needed clear information, and Minnesota organizations needed to be mobilized to act on behalf of the livestock industry.

What has been done

EDUCATION: Throughout the state, Extension conducted coffee shop meetings and marketing workshops, and advised on biosecurity measures. COLLABORATION: Extension partnered with the Minnesota Board of Animal Health, Department of Agriculture and Department of Natural Resources to work on a unified response to the disease. Since TB had only been identified in four of the state's 87 counties, Extension and its partners worked to get 'Split State' status, which would elevate the status of TB-free counties.
VETERINARY TRAINING: Extension's Beef Team arranged training for 42 Minnesota veterinarians and 30 veterinary students to learn to spay beef heifers, providing more marketing options for producers.

Results

Due to Extension's mobilization and education, USDA approved Minnesota's 'Split State' status. As a result, only a fraction of the $18 million industry is affected negatively by the TB-positive status of a few counties.

4. Associated Knowledge Areas

KA Code	Knowledge Area
311	Animal Diseases
307	Animal Management Systems
305	Animal Physiological Processes
302	Nutrient Utilization in Animals
301	Reproductive Performance of Animals
306	Environmental Stress in Animals
315	Animal Welfare/Well-Being and Protection

Outcome #4

1. Outcome Measures

Profits of small beef operations will increase through joint marketing activities.
(Actual is expressed as total added profits for 14 producers.)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	{No Data Entered}	169172

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Northeast Minnesota is dotted with hundreds of small beef operations (23 cows). The size of these operations makes it difficult for producers to take advantage of efficiency of size to become more profitable. Research has shown a significant $6-10/cwt. increase in price simply by increasing lot size to 50,000 lbs. In addition, it is more difficult for these producers to add further value by vaccinating and backgrounding the calves in advance of marketing them.

What has been done

Extension guided development of a cooperative marketing group among these farmers, and profits increased. The object was to help cow/calf producers form a group of feeder cattle with enough quantity to draw the attention of commercial feedlots. Cooperation among this progressive group has also given them the opportunity to improve genetics, teaching AI synchronization, ration balancing, the value of records, the power of carcass data, ADG post weaning, and shrink value.

Results

The calculated increase in value locally, due to added weight, less marketing costs, less shrink, and a savings in trucking costs, ranged from $148-$180/head. (498 cattle were sold in 2008.) Also, this past year the organization contracted its sales in August. By November, the price dropped $.25/lb for a total added value of $87,500. The total additional profits then, for the 14 families was $169,172 or $12,084 / family.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems

Outcome #5

1. Outcome Measures

Research will provide knowledge on alternative swine and dairy housing systems for improved animal health.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

A contented livestock animal is a productive one. And of course farmers want the best for their animals. But animal comfort issues have to be balanced against the need to make a living.

What has been done

Research on sow group housing, where sows and piglets move around freely in a pen with thick straw bedding that absorbs most of their manure, has shown the housing resulted in more natural behavior with less risk of lameness and difficult pregnancy and birthing. Research on compost-bedded dairy barns has shown similar advantages. The compost bedding--which must be aerated twice a day by the farmer but is only removed from the barn once or twice a year, can then be spread on fields like manure or further composted outside the barn.

Results

The research has shown cows in compost-bedded barns are less likely to come up lame and tend to be cleaner. They also produce up to two gallons more milk per day. U of M hosted an international conference on compost-bedded barns and the results of this research has generated interest from farmers around the world.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems
306	Environmental Stress in Animals

Outcome #6

1. Outcome Measures

Research will provide better understanding of the PRRS virus transmission and control, for improved swine health.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:
Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The PRRS virus has been a seemingly intractable problem for swine producers for some time. Integrated research is necessary to tackle the disease on several fronts.

What has been done

Research has led to better understanding of the mechanisms of airborne transmission of respiratory pathogens, and approaches for prevention of PRRS disease in susceptible pigs.

Results

Because of the knowledge generated from this research, end users, namely veterinarians and swine producers have changed behaviors to implement new measures of biosecurity that include air filtration which have been shown to help prevent disease transmission. The demonstration that PRRS disease can be prevented without use of vaccines provides new hope to the swine industry for control of this dreaded disease.

4. Associated Knowledge Areas

KA Code	Knowledge Area
311	Animal Diseases

Outcome #7

1. Outcome Measures
Research will develop methods and provide information on options to improve odors emitted from open manure storage.

2. Associated Institution Types

•1862 Research

3a. Outcome Type:
Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The concept of aeration in waste water treatment is now new, however it is not in wide use in animal agriculture. The major problem is that most commercial aeration systems are expensive, and low-cost options haven't been effective.

What has been done

Research has provided new knowledge in using aeration to mitigate a persistent air quality problem: odors emitted from open manure storage. Results showed that by innovative engineering designs, it is possible to make aeration a very affordable technology for animal producers to use to combat manure odor. The research showed that over three-fold increases in aeration efficiency can be achieved by simply using more than one aerator in the system and connecting them. The cost of six venturi air injectors is approximately $1,000.

Results

The results of the research were incorporated into educational materials and provided to producers, agricultural professionals, state agencies and local stakeholders, and has generated interest around the country.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought,weather extremes,etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration,new cultural groupings,etc.)
- Other (Changing consumer preferences)

Brief Explanation

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- Before-After (before and after program)
- Time series (multiple points before and after program)
- Case Study
- Comparisons between program participants (individuals,group,organizations) and non-participants
- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.

Evaluation Results

Key Items of Evaluation