2012 Iowa State University Combined Research and Extension Annual Report of Accomplishments and Results

Status: Accepted

Date Accepted: 06/10/2013

I. Report Overview

1. Executive Summary

Agriculture in the state of Iowa has grown from traditional production of crops and livestock to encompass the revolution in the bioeconomy, life sciences, food sciences, value-added products, environmental sciences, and social sciences. Iowa's world-class endowment of natural resources, its highly skilled and educated people, and its well-developed infrastructure supports a diverse and dynamic set of food, feed, fiber, biofuels and bioproducts, environmental and community endeavors.

The Iowa State University (ISU) Combined Extension and Research Plan of Work for FY 2012 reflects reporting under the five USDA priority areas, and is organized under ten broad, interdisciplinary programs:

- **Childhood Obesity** - Prevention
- **Climate Change**
- Community and Economic Development
- Families: Expanding Human Potential
- **Food Safety**
- **Global Food Security and Hunger**
- **Global Food Security and Hunger** - Regional Foods
- Natural Resources and Environmental Stewardship
- **Sustainable Energy** - Biofuels and Biobased Products
- Youth Development

We are in the process of combining the Global Food Security and Hunger and the Global Food Security and Hunger - Regional Foods programs. As a result, the inputs for both programs are reported under Global Food Security and Hunger; however there are activities, outputs and outcomes still being reported under Global Food Security and Hunger - Regional Foods.

Research is conducted across most disciplines in agriculture, defined in its broadest sense, from basic to applied, to make advances in feed, food, fiber, and fuel production to help increase capacity and provide an adequate and nutritious food supply. The research expressed in the program areas is the result of cooperation among researchers within and between departments and colleges at all levels of activity.

For Extension in 2012, there was a marked increase in the 'actual all other dollars" from the planned program units compared to the amount reported in previous years. This is due to a more exact procedure used in 2012 to match every grant and contract account with a specific planned program.

Hatch and Smith-Lever formula grants provide critical funding for staffing that ultimately allows us to leverage and match other external funding sources. The formula grants also provide flexibility in programming to better meet current and emerging needs not being addressed by other sources of funding. Without these funds, there would be less applied research and less real world application of research, and less integration of Extension and research work.

Below find a sampling of programs that are supported by the formula grants and address the USDA

priorities:

- Food Safety
  - Training and certification programs, e.g., ServSave®, GAP, HACCP, Pork Quality Assurance Plus
  - (PQA+), and Transport Quality Assurance (TQA)
  - Nutrition education lessons (including a food safety component) for EFNEP and FNP recipients
  - Numerous in-state and multistate research projects
- Global Food Security and Hunger
  - Crop Advantage Series program and Crop Update newsletter
  - Crop and Livestock Options During Drought
  - Farmland Value and Valuation
  - Numerous in-state and multistate research projects
- Local Food Security and Hunger
  - Lessons on food resource management for EFNEP and SNAP-Ed participants
  - Training volunteers to assist with SNAP (Food Assistance) applications
  - Homegrown Lifestyle
  - In-state and multistate research projects
- Childhood Obesity
  - Training developed for DHS childcare licensure renewal and Child and Adult Care Food Program certification
  - In-state and multistate research projects
- Climate Change
  - A number of in-state and multistate research projects
- Sustainable Energy
  - Bioenergy Bootcamp
  - Corn Stover Harvest Meeting
  - A number of in-state and multistate research projects

Iowa State University also supports our stakeholders by providing, among other programs and activities too numerous to mention, the following:

- Assistance to communities
  - Elder friendly community learning circles
  - Iowa's Living Roadways Community Visioning Program
  - Iowans Walking Assessment Logistics Kit (I-WALK)
  - Buy Iowa Online
  - Community Vitality Center
- Programs targeting and/or benefiting youth
  - 4-H -- Connecting Learning and Living
  - Strengthening Families Program for Parents and Youth 10-14
  - PROSPER (Promoting School-community-university Partnerships to Enhance Resilience)
  - Family Storyteller Program
  - Better Kid Care New Staff Orientation (NSO)
  - Early Childhood Environment Rating Scale (ERS)
  - Children, Youth, and Families at Risk (CYFAR)
- Programs for families and communities
  - Investing @ Your Library
  - Powerful Tools for Caregivers
  - Volunteer Income Tax Assistance (VITA)
  - The Science of Parenting
  - Workplace Wellness
- Programs addressing natural resources and the environment

- Manure Applicator Certification
- Iowa Learning Farms
- Pesticide Applicator Training.and certification
- Numerous in-state and multistate research projects

Total Actual Amount of professional FTEs/SYs for this State

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	380.0	0.0	175.0	0.0
Actual	377.0	0.0	149.0	0.0

II. Merit Review Process

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

- Internal University Panel
- External Non-University Panel
- Expert Peer Review

2. Brief Explanation

There has been no change in our review processes.

Merit review: ISU Extension and Outreach continued to monitor and adjust the plan of work in 2012 through use of self-directed work teams, continuous needs assessment, and ongoing work with public and private partnerships. At the state level, state staff worked closely with key statewide constituencies. Surveys of needs assessment were done at both the local and state level to inform selected plans. Iowa County Extension Councils and local stakeholder groups annually review, and prioritize needs, feeding the information back to the statewide plan of work teams. State POW merit review: North Central Regional Program Directors review plans across the region and are continuing to provide oversight, guidance, and course corrections on the logic models, which help guide the Plan of Work and report of accomplishments.

Scientific Peer Review: Project Proposals: Each project proposal is endorsed by the department chair and Associate Director of the Experiment Station. Each proposal is sent to peers internal to ISU (typically 2 to 4 faculty) for a thorough review of the scientific merit. Depending upon the reviews, the project is either approved, revised based on reviewer comments, or rejected.

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
- Targeted invitation to selected individuals from general public

- Survey of traditional stakeholder groups
- Survey of traditional stakeholder individuals
- Survey of the general public
- Survey specifically with non-traditional groups
- Survey specifically with non-traditional individuals
- Survey of selected individuals from the general public

Brief explanation.

The majority of programs use media and the internet to announce public meetings and listening sessions, and use targeted invitations to traditional stakeholder groups and individuals. In addition, the various programs have employed the following:

• Random surveys of residents in specific communities to obtain feedback.
• Team members are in regular contact with primary stakeholders at meetings, electronically, and on an individual basis.
• Producers, suppliers, policy makers, and other interested parties are invited to state-wide webcasts.
• End-of-meeting and post-program surveys consistently seek input for future research and programming needs.
• Responding to stakeholder input to encourage additional input.
• Identify existing stakeholder meetings, ask to be placed on the agenda, and ask stakeholders to answer questions or provide input.
• Faculty and staff have developed relationships, one key to quality interaction with stakeholder groups, and actively participate in a variety of events where stakeholders are present for interaction.
• Surveys, focus groups and on-going informal assessments match program delivery methods with preferences of stakeholder groups. Decisions regarding content, delivery, and mechanisms to reduce barriers to participation are made with a goal of increasing participation.
• Blogs and other online venues gather comments on programming.

In Fall 2012, ISU Extension and Outreach conducted five town hall meetings across the state in addition to the traditional methods of securing stakeholder input (citizen advisory council meetings, county Extension council meetings). The findings provided information on program strengths and opportunities from users of ISU Extension and Outreach. Program development is being shaped by these conversations. An organization-wide program development process and catalog were created and articulated to inform needs assessment and program design and implementation.

The 2012 drought resulted in increased listening sessions on programming needs with residents across Iowa.

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
- Other (Blogs)

Brief explanation.

• Formal advisory boards, by far the most common method employed, specifically invite representation from the organizations and agencies that work in a given area, and may also include producers nominated by extension program specialists, and representatives of the program specialists, campus specialists and campus researchers.
• Web-based needs assessment and listening sessions are open to the public. Targeted groups are identified and contacted. Steering committees identify key individuals to ensure that the invitation list represents the broad spectrum of stakeholders.
• Use of developed mailing list or a random survey of current and potential clientele.
• External Focus groups include information from peer groups. Conduct needs assessments informally via routine contacts with target audience or formally via surveys.
• Extension state and field specialists serve on multiple county and state advisory committees where needs are identified and used to shape program efforts.
• Extension specialists acquired a very good knowledge, increased through hundreds of personal contacts, telephone calls, e-mail messages and blog comments received each year from potential clientele, of the individuals and groups that will have interest in their programs. Recommendations are also received from county-based Extension staff, campus faculty and staff, and commodity/producer organizations.
• Participants provide personal contacts for our planning process; much attention is paid to major client groups and their boards of directors and other key influences. Suggestions from university administration are an excellent source of contributors.
• Staff are members of coalitions and taskforces at the state and local level that continually review and check changing needs against operational plans.
• Meeting with representatives from state agencies regularly allows for input from consultants to districts throughout the state. Attendance at state and national meetings allow input from individuals, as do email contacts from the web site.
• Media and surveys are used to identify interested stakeholders. State staff hold conversations with individuals in more than 30 key state agencies and state organizations to share information and seek input.

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)
- Survey of the general public
- 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
- Other (Blogs, Facebook, Twitter)

Brief explanation.

In addition to the ongoing needs assessment of ISU Extension and Outreach stakeholders, a comprehensive needs assessment of Iowans was conducted in 2010 to get a representative sample of all Iowans over 18 years of age including an emphasis on engaging non-users of extension via a statistically designed survey. A parallel discussion was held via focus groups designed around topics and geographical regions. Once analyzed this information was shared with staff and is used in evaluating and adjusting existing programs. The results of this process as well as the 2012 town hall meetings shape the planned programs.

There is greater emphasis on working with county extension councils to identify programming needs. Given their new responsibilities since the ISU Extension and Outreach reorganization, councils are being asked to provide ongoing needs assessment to help drive programming. A formal statewide needs assessment step-by-step process is being developed to help councils and campus needs assessment be more systematic and timely as part of the program development process. A program catalog was created to match local needs with statewide educational resources.

In addition:

• Meetings with traditional stakeholder groups and individuals are the most common method used.
• Listening sessions with current and potential clients were held.
• Conduct targeted and random surveys to current and potential clients.
• Contacts are ongoing by field staff, county extension staff, and state specialists who work with individual private sector partners.
• Meetings are held with professional associations and advisory boards, and other groups across the state, providing information and asking for input both on existing and emerging issues, and to assist in better understanding local needs.
• Select stakeholders are asked to serve on advisory boards, leadership councils and work teams to help set program direction, develop innovative programs to reach new audiences, and implement strategies to reach desired outcomes.
• Webinars share information and new program direction and receive input from stakeholders. Participants are often surveyed about needs and interests.
• Participants are often asked to complete a survey at the beginning and end of training to assess their needs and how the training series can be improved, as well as a self-assessment to identify specific knowledge and skills participants gain from the training. This data is continuously reviewed to modify the training as appropriate. Follow-up surveys sometimes occur, and website contacts for information are provided.
• ISU Extension and Outreach state and field specialists serve on multiple county and state advisory committees where needs are identified. ISU Extension and Outreach staff use this information to shape program efforts.
• Personal contacts initiated by the stakeholders with research and extension/outreach faculty and staff.
• One-on-one interaction, surveys from clients at public meetings, discussions with advisory board members, e-mail communication including responses to Web and other media.
• Surveys allow those unable to attend meetings to voice opinions about needs and program planning processes. Follow-up meetings with select individuals providing 'missing voices' are conducted to gather broad-based input.

• Each community determines how they collect input, utilizing a variety of methods, including personal conversations, web surveys, speaking to individuals and groups, and work with the media.

3. A statement of how the input will be 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
- Other (To Design Programs; To Evaluate Programs)

Brief explanation.

Results from the stakeholder input venues were triangulated and used to shape current and future programming. Programs continue to shift to address needs expressed by stakeholders, to the extent possible given current budgetary and staffing constraints.

• A Workplace Wellness program is being developed and implemented based on stakedholder input.
• Based on input from stakeholders, Latino communities and businesses and urban audiences are a focus.
• To better communicate Extension programming to the public, the Program Builder Web site lists all the programs offered by Community and Economic Development.
• Core programs have been identified to focus program delivery in high need subjects across the state.
• Staffing decisions are based heavily on needs expressed by stakeholders. Stakeholders are members of some staff search committees. The leadership development specialist who will be located in Dubuque to serve Wisconsin and Iowa is a good example.
• Stakeholders are used as sources of ideas and for identification of emerging issues. They also react to potential courses of action, research, and educational programs. Stakeholders are influential in creating the multi-year program of work. Information gathered from stakeholders is used in making decisions on program planning and directions for special projects such as research or grant projects.
• Information was used to assess staff and volunteer training needs and develop training plans; develop effective strategies to reach program outcomes; assess effectiveness of training programs and progress towards program goals; review program policy and clarify policy interpretations; and review and revise plan of work goals and planned implementation strategies.
• Stakeholders helped determine program direction, assisted with development of innovative programs to reach new audiences, and helped implement strategies to reach desired program outcomes.
• Engagement with stakeholder organizations keeps the University involved and relevant to the stakeholders.
• Some newly hired faculty and staff receive a startup-package funded in part by stakeholders to help prioritize the type of work that is needed.
• Regular interactions with agencies to identify research and education needs resulting from changes in policy and regulation.
Evaluation surveys following webinars were compiled and information was use to clarify policy

interpretation and plan future webinars to share program information.
- Input from stakeholders resulted in new program offerings.
- Stakeholder input was used to determine the subject matter content of the educational programs, time and place of public meetings, mass media utilized, and the formatting and design of decision aids.
- Input from stakeholders, was used to direct the activities targeted towards each of the major client groups. This includes the amount of funds and other resources to dedicate to each activity and the priority each is given. Furthermore, the programmatic content of each major POW activity was greatly impacted by the input from our stakeholder groups.
- Drought response related resources were based on needs articulated by stakeholders.
- We have used this input to bolster programming for expanding our work with limited resource audiences.

Brief Explanation of what you learned from your Stakeholders

Programs continue to shift to address many of the needs expressed by stakeholders, who tell us:

- ISU Extension and Outreach is being used by one third of the Iowa population.
- All programming topics were rated as important, and STEM education with youth is strongly supported.
- Focus groups supported new partnerships for family and youth development and suggested continuing strong partnerships with schools.
- Focus groups supported a strong emphasis on food preservation.
- Continue to increase the use of technology such as webcasts, webinars, interactive web sites, blogging, ask the expert, etc. especially for audiences 20-40 years old.
- Risk management for agricultural producers is an increasing concern given the drought and higher input costs in crop and livestock production and growing market volatility.
- The next generation of farmers continues to be a concern for agricultural stakeholders. How will young farmers get a start with high land and input costs and high risk?
- Increased interest in "local foods" often from non-traditional audiences such as new-Iowans and people that did not come from a farm background.
- Herbicide resistance weeds and how to manage them is a growing concern.
- Evidence is emerging that western corn rootworms is developing resistance to some Bt traits.
- Increased concern from agricultural producers and agribusiness about increasing regulation of their business, particularly for environmental regulations.
- Increasing concern about opposition to modern agricultural production practices such as GMOs, confinement livestock, animal agriculture, synthetic fertilizers.
- Establish leadership in precision agriculture and robotics research.
- Clean water is a top priority for Iowa.
- Corn stover harvest for cellulosic ethanol is a potential new revenue stream, but questions are raised about sustainable stover harvest and the impact on soil erosion and soil health.
- Develop or identify a third crop for Iowa.
- Profitability of farm enterprises continues to be a challenge even with high crop prices. Strategies to effectively market commodities and manage risk is more important than ever.
- Develop inbreds and varieties with greater cold tolerances that can compete with colder no-till soils and cover crops.
- Set a high priority for biobased and solar-based research and implementation of methods to reduce consumption of fossil fuels.
- Take advantage of a biorenewable energy opportunity for state; include providing science based information to policy-makers.
- Need research that meets sustainability, defined as maintaining our soil and water without compromising future generations' ability to meet their needs.

- Keep on the cutting edge of animal production research that demonstrates appropriate animal care and welfare; disseminate research results to both producers and consumers; and be willing to counter misleading or nonscientific information.
- Provide ongoing assistance to livestock producers in implementation of sustainable practices.
- Provide timely information and advice for individuals, families, and businesses facing tough economic times.
- Embrace sustainability and life cycle analysis principles, and transfer this knowledge to industry to enable decision-making.
- Conduct research that focuses on problem-solving for industry.
- Increased interest in and need for programming in financial literacy education, particularly how to manage during these tough times. Due to challenging economic times, there is interest in a return to the basics, simplicity, getting the most for the nutrition dollar, gardening, and food preservation. Also increased interest in sustainability education, which relates to "leaning our lives".
- Alleviate poverty in Iowa and identify and implement strategies for helping families earn, keep and grow their money.
- Availability and access to safe, nutritious food is a challenge in many rural, Iowa communities, with 'food deserts' existing in rural locations throughout the state.
- Parents, especially those experiencing poverty and those who have children with special needs, are interested in understanding child development and how to interact with their children to promote development, guiding children in developmentally appropriate ways, and strengthening family communication skills. Latino and African American parents have specific needs.
- Child care administrators need and value effective education opportunities that involve coaching and leadership. Peer learning and peer coaching opportunities were well received. Training that offered time for development of detailed action and implementation plans were considered very effective. Early care and education professionals desire credit based educational opportunities that can be tailored to meet their specific needs.
- There is a need for a more organized statewide approach to identifying, recruiting, and managing 4-H volunteers to expand extension resources.
- New families involved with 4-H and youth programs need more support and mentoring.
- Today's youth want vibrant, highly interactive, subject matter programs that interface web technologies with friends and caring adults, especially STEM experiences.
- Volunteers for the 4-H program feel that their volunteer experience has direct benefits to youth and themselves. They feel the 4-H program has influenced their lives by allowing them to learn more about youth, giving them the chance to feel valued, increasing their organizational, public speaking and leadership skills, and increasing their connection to the community.
- A new generation of educational materials and programming are needed on farm energy conservation and efficiency.
- All citizens need to understand agriculture's capacity and role in producing food, feed, fiber, and fuel.
- Agricultural producers need to continue their development of risk management skills.
- The Small Meat Processors Working Group identified needs, resulting in 1) Meat Processors Resource Guide Book. 2) Local, area, and convention training sessions on business sustainability. 3) Extension has broadened the scope of their interaction with meat processors to include issues of business development and sustainability.
- Programs and educational opportunities needed to be implemented across Iowa to address needs of residents experiencing impacts of the drought.
- Update Extension websites and social media tools to meet the needs of young adults.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
9339341	0	7596671	0

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	7256933	0	8106128	0
Actual Matching	7256933	0	8106128	0
Actual All Other	19944530	0	55813209	0
Total Actual Expended	34458396	0	72025465	0

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous				
Carryover	3390798	0	7306762	0

V. Planned Program Table of Content

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Childhood Obesity - Prevention

☑ Reporting on this 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
703	Nutrition Education and Behavior	75%		95%	
704	Nutrition and Hunger in the Population	25%		5%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	5.0	0.0	1.4	0.0
Actual Paid Professional	1.1	0.0	1.0	0.0
Actual Volunteer	1.4	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
61418	0	71199	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
61418	0	71199	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
387013	0	287132	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Conduct workshops and meetings.

- Develop products, curriculum, and other educational resources.
- Provide training and technical assistance.
- Facilitate community advocacy.

Faculty participate in the relevant multistate research committees NE1039 and W1005.

2. Brief description of the target audience

School aged youth, child care providers, school staff, and other adult mentors of youth.

3. How was eXtension used?

eXtension was used as a training resource (available webinars used for staff training regarding feeding children).

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	3500	48912	13000	10000

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

Patent Applications Submitted

Year:	2012
Actual:	1

Patents listed

Method of Making Fatty Acid N-Acylalkanolamines: Improved and effective methods for synthesis of stearoyl, palmitoyl, and oleoyl ethanolamides as anti-inflammatory and anti-obesity (anorexic effect). Inventors: Wang, Tong; Wang, Xiaosan. Filed 4/25/2012.

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	6	3	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of youth receiving educational programming related to nutrition, physical activity, and health promotion.

Year	Actual
2012	219679

Output #2

Output Measure

- Number of adults who impact youth receiving educational programming related to nutrition, physical activity and health promotion.

Year	Actual
2012	45707

Output #3

Output Measure

- Number of professionals who impact youth receiving training related to nutrition, physical activity and health promotion for youth.

Year	Actual
2012	2112

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Percent of youth participants reporting increased intake of milk.
2	Percent of youth participants reporting increased intake of fruit.
3	Percent of youth participants reporting increased intake of vegetables.
4	Percent of youth participants reporting increased physical activity.
5	Percent of childcare training participants reporting preparedness to apply or teach health promoting dietary behaviors.

Outcome #1

1. Outcome Measures

Percent of youth participants reporting increased intake of milk.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	11

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The 2010 Dietary Guidelines for Americans recommend that children consume three cups of low-fat or fat-free milk or milk products each day. The Youth Risk Behavior Surveillance System data indicate that, of the youth surveyed in Iowa in 2007, only 25% drank three or more glasses of milk per day during the past seven days. Furthermore, data collected by the National Dairy council in 2005 indicate that, among children age six to eleven, 71% of girls and 62% of boys do not meet their calcium requirements.

What has been done
A series of six nutrition lessons is provided to youth (Kindergarten through sixth grade) from low-income families by EFNEP and SNAP-Ed. The lessons are taught by trained paraprofessional staff during school enrichment, after school programs, and summer programs. These lessons focus on helping youth develop into healthy adults by empowering them to make good choices related to diet and physical activity. At each grade level, beverages are closely examined and children participate in hands-on activities related to making healthy beverage choices. Nutrition education was provided on healthy food selection including dairy consumption.

Results
Following participation in the six nutrition lessons, 48% of youth in grades 3rd through 6th indicated that they almost always eat foods from the dairy group at least three times a day. This is an 11% increase in the number of students almost always consuming dairy from beginning to end of the program. This shows improvement from FY11 in which 9.9% of youth reported improvement in their dairy consumption.

4. Associated Knowledge Areas

KA Code	Knowledge Area

703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population

Outcome #2

1. Outcome Measures

Percent of youth participants reporting increased intake of fruit.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	5

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The 2010 Dietary Guidelines for Americans recommend that children consume about 1 ½ cups of fruit each day (may be more or less depending on age, gender, and activity level). The Youth Risk Behavior Surveillance System data indicate that, of the youth surveyed in Iowa in 2007, only 20% reported eating five servings of fruits and vegetables each day. The Iowa Nutrition Network surveyed fifth grade students in 2010 and found that 60% of children reported they ate fruit two times each day. In both cases the serving sizes and variety of fruits and vegetables were not examined.

What has been done
A series of six nutrition lessons is provided to youth (Kindergarten through sixth grade) from low-income families by EFNEP and SNAP-Ed. The lessons are taught by trained paraprofessional staff during school enrichment, after school programs, and summer programs. These lessons focus on helping youth develop into healthy adults by empowering them to make good choices related to diet and physical activity. At each grade level, the fruit food group is closely examined and children participate in hands-on activities related to making healthy choices from the fruit group.

Results
Following participation in the six nutrition lessons, 49% of youth in grades 3rd through 6th indicated that they almost always eat different kinds of fruit every day. This is a 5.2% increase in the number of students almost always consuming a variety of fruit from beginning to end of the program. These results are nearly the same as FY11 in which 48% of youth almost always ate different kinds of fruit, a 5.7% increase

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population

Outcome #3

1. Outcome Measures

Percent of youth participants reporting increased intake of vegetables.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	6

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The 2010 Dietary Guidelines for Americans recommend that children consume about 2 cups of vegetables each day (may be more or less depending on age, gender, and activity level). The Youth Risk Behavior Surveillance System data indicate that, of the youth surveyed in Iowa in 2007, only 20% reported eating five servings of fruits and vegetables each day. The Iowa Nutrition Network surveyed fifth grade students in 2010 and found that 53% of children reported they ate vegetables two times each day. In both cases the serving sizes and variety of fruits and vegetables were not examined.

What has been done
A series of six nutrition lessons is provided to youth (Kindergarten through sixth grade) from low-income families by EFNEP and SNAP-Ed. The lessons are taught by trained paraprofessional staff during school enrichment, after school programs, and summer programs. These lessons focus on helping youth develop into healthy adults by empowering them to make good choices related to diet and physical activity. At each grade level, the vegetable food group is closely examined and children participate in hands-on activities related to making healthy choices from the vegetable group.

Results
Following participation in the six nutrition lessons, 36% of youth in grades 3rd through 6th indicated that they almost always eat different kinds of vegetables every day. This is a 6.1%

increase in the number of students almost always consuming a variety of vegetables from beginning to end of the program.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population

Outcome #4

1. Outcome Measures

Percent of youth participants reporting increased physical activity.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	4

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The Dietary Guidelines for Americans 2010 recommend that children participate in 60 minutes of physical activity daily. The Youth Risk Behavior Surveillance System data indicate that, of the youth surveyed in Iowa in 2009, 57% of males and 50% of females reported they were physically active for a total of 60 minutes or more per day on five of the seven previous days. Among Iowa students in elementary schools surveyed by Iowans Fit for Life in 2009, approximately 55% of girls and 57% of boys were active for 60 minutes or more on five of the last seven days.

What has been done
A series of six nutrition lessons is provided to youth (Kindergarten through sixth grade) from low-income families by EFNEP and SNAP-Ed. The lessons are taught by trained paraprofessional staff during school enrichment, after school programs, and summer programs. These lessons focus on helping youth develop into healthy adults by empowering them to make good choices related to diet and physical activity. At each grade level, physical activity is discussed with almost every lesson and children participate in hands-on activities related to being physically active.

Results
Following participation in the six nutrition lessons, 78% of youth in grades 3rd through 6th indicated that they are almost always physically active every day. This is a 4.4% increase in the

number of students who are almost always physically active from beginning to end of the program. These results are nearly the same as FY11 in which 80% of youth almost always were physically active, a 4% increase.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population

Outcome #5

1. Outcome Measures

Percent of childcare training participants reporting preparedness to apply or teach health promoting dietary behaviors.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	70

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Dietary and physical activity behaviors can be established as early as 2-4 years of age. Informing child care providers of appropriate food and physical activity behaviors is essential to early childhood development.

What has been done
Childcare nutrition education training has been provided to more than 1,800 childcare providers in Iowa.

Results
Over 70% of participants reported preparedness to make changes to apply or teach health promoting dietary behaviors in their own childcare settings.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Populations changes (immigration, new cultural groupings, etc.)
- Other (loss of staff)

Brief Explanation

This state plan of work has identified and implemented core programming. Core programming criteria included timeliness, relevance, uniqueness (services not offered by other organizations), sequential, and impact. Sequential programming was prioritized based on the ability to demonstrate impact.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

To evaluate priority programs (i.e. childcare training), online surveys are capturing evaluation/impact data. Childcare training results suggest more than 70% of participants felt prepared to apply or teach health promoting dietary behaviors. Live Healthy Iowa continued to monitor self-reports of health behaviors including dietary intake physical activity; 70% and 47% of participants reported desirable change in dietary intake and physical activity respectively. EFNEP continued to collect required pre/post data for federal reports.

Key Items of Evaluation

Over 70% of childcare providers reported preparedness to make changes to apply or teach health promoting dietary behaviors in their own childcare settings.

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Climate Change

☑ Reporting on this 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
102	Soil, Plant, Water, Nutrient Relationships	20%		1%	
104	Protect Soil from Harmful Effects of Natural Elements	30%		0%	
132	Weather and Climate	25%		35%	
202	Plant Genetic Resources	0%		30%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	0%		14%	
206	Basic Plant Biology	0%		10%	
605	Natural Resource and Environmental Economics	25%		10%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	1.5	0.0	3.2	0.0
Actual Paid Professional	2.7	0.0	1.2	0.0
Actual Volunteer	0.0	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**
269705	0	379574	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
269705	0	379574	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	2186173	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Priorities for the coming year will be to conduct and synthesize adaptation research, develop resources and strategies to increase climate literacy in target audiences, and train decision-makers in new practices to ensure communities are prepared. The program coordinator will attract educators and program leaders from many parts of Extension to consider content that should shift in their programming so that it addresses climate change, specifically drought-related consequences as they affect production and economics. Content and assistance to producers will change as extreme weather conditions impact crop and livestock operations.

Faculty participate in the associated multistate research committees, NC7, NC1190 and NC1179.

2. Brief description of the target audience

As programming is developed, audiences will be targeted. Targeted audiences must be those with whom we can make a difference, and who can benefit from research-based information. Primarily, we will choose audiences whose production systems will be influenced by climate change, as well as those who consult or influence the decision-makers of these growers and producers. Secondary audiences to be considered will be decision-makers and leaders responsible for preparing communities for change. This includes local government jurisdictions, state and local elected officials, producers and environmental groups, human health services, FEMA, and Extension educators working in food and nutrition, family and community planning and development issues.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	6613	8000	0	0

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

Patent Applications Submitted

Year:	2012
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	10	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of producers and agribusiness professionals who attend face-to-face educational activities, including individual consultations.

Year	Actual
2012	5660

Output #2

Output Measure

- Number of producers and agribusiness professionals who subscribe to newsletters and access web-based resources.

Year	Actual
2012	3900

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of Producers and Community leaders who increase their knowledge of climate change information and how it impacts environment, production systems, and urban systems.
2	Number of Producers who incorporate climate change information into production practices and communities that upgrade city plans reflecting climate change information

Outcome #1

1. Outcome Measures

Number of Producers and Community leaders who increase their knowledge of climate change information and how it impacts environment, production systems, and urban systems.

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Number of Producers who incorporate climate change information into production practices and communities that upgrade city plans reflecting climate change information

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	179

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Severe drought affected much of Iowa during the entire 2012 growing season, causing corn and soybean yields to be lower than expected. Prices for feedgrains increased accordingly, resulting in hardship for livestock producers. Pastures and hay supplies were reduced by the drought as were cattle water supplies.

What has been done
Specialists from Agriculture and Natural Resources Extension at Iowa State University conducted a drought educational webinar on August 21 that was hosted at 51 sites across the state. Participants (N = 179) were asked to evaluate the sessions and to identify information helpful to their farming operations that were impacted by the drought. More than 200 viewed the archived segments of the drought webinar. A total of 127 participants completed the evaluations (response rate 71%). The majority of participants were farmers (60%), followed by land owners (24%), and agribusinesses (23%).

Results

There was a significant increase in participants' knowledge about grain quality concerns, feed implications, harvest considerations, fall fertility decisions, tillage, cover crops and residue as a result of attending these webinars (0.05 level of significance). Participants reported having 'low to some' knowledge on these topics before attending the webinar, which increased to 'some to high'. A majority of participants (70%) were 'somewhat to very likely' to talk to their grain buyers before harvest to understand the aflatoxin policy. More than 70% of respondents indicated that they plan to check and clean engine compartments more frequently, conduct soil tests and adjust rates before applying fertilizer. However, 55% indicated that they 'would not or not likely' to plant cover crops to conserve soil moisture. Also, 32% indicated that they would not test for nitrates in their silage before feeding their livestock. The economic impact is described in the Evaluation section.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
104	Protect Soil from Harmful Effects of Natural Elements
132	Weather and Climate
605	Natural Resource and Environmental Economics

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

55% of survey respondents to the drought webinar indicated that they 'would not or not likely' to plant cover crops to conserve soil moisture. Also, 32% indicated that they would not test for nitrates in their silage before feeding their livestock.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Participants were mixed in their perceptions on the economic impact of drought webinars on their farm operation as evidenced by the absence of any particular trend in the responses. Fifteen per cent indicated a likely economic impact from the knowledge they gained during the webinars of over $50,000, followed by $10,001-25,000 (11%), $501-1,000 (10%), $1,001-5,000 (10%), $5,001-10,000 (10%) and $25,001-50,000 (9%). Around 20% indicated that the information would affect 0-500 animals or acres, and a further 20% indicated it would affect more than 10,000 animals or acres. Participants identified teaching tools such as webinars (32%) and emails (32%) as most useful in receiving drought related farming information. They identified sessions focused on fall applied nitrogen (31%), soil testing (27%) and financial management (25%) as future topics of interest.

Key Items of Evaluation

As drought conditions persist into the 2013 growing season, efforts will be made to monitor crop and livestock producers' adaptation of recommended practices that will mitigate the adverse effects of drought.

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Community and Economic Development

☑ Reporting on this 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
608	Community Resource Planning and Development	100%		100%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	25.0	0.0	12.6	0.0
Actual Paid Professional	7.9	0.0	0.8	0.0
Actual Volunteer	3.0	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**
656262	0	102554	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
656262	0	102554	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
1710536	0	1103914	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Workshops and educational efforts were conducted with community organizations, individuals and leaders to assist in developing and implementing plans for physical and social community improvements.

Research and outreach to communities were done on planning, zoning, resource management, and community and economic development activities using a variety of information dissemination methods. Training sessions were conducted to improve skills of local government officials, community leaders and individuals. Special services were developed to aid Iowa communities that suffered from flooding or other disasters. We conducted participatory research, outreach and training with leaders, workers and individuals to improve the effectiveness and skills of leaders and volunteers in community organizations. We partnered with local economic development organizations to create two new joint economic development-Extension specialist positions. We also partnered with the University of Wisconsin Extension and the City of Dubuque to create a joint faculty line position that will focus on issues important to the greater Dubuque regional economy and develop successful strategies that can be replicated in other communities in Wisconsin and Iowa.

Faculty participated in relevant multistate research committees: NC1030, NC1034, and NE1029.

2. Brief description of the target audience

Individuals, businesses, organizations, public officials, community leaders, and public and not-for-profit organizations in Iowa.

3. How was eXtension used?

Gary Taylor is on the leadership team for the Land Use Planning and Zoning eXtension Community of Practice (COP). The COP held four in-service webinars and published an additional 12 fact sheets during the year.

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	151365	683011	0	0

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

Patent Applications Submitted

Year:	2012
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	1	5	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of articles, publications, reports, plans.

Year	Actual
2012	229

Output #2

Output Measure

- Community planning and visioning: showcasing community development at the national level

Year	Actual
2012	275000

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

Outcome #1

1. Outcome Measures

Community visioning and design: Communities completing quality of life projects.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	35

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
A gap exists between demand for design services to rural Iowa communities and the availability of those services. Many smaller communities in Iowa face enhancement related issues that they are unable to address due to lack of planning personnel and/or resources. Issues facing communities include Iowa's aging population, and wellness issues such as adult and childhood obesity. Several severe weather events, including flat-line winds, flooding, tornadoes, and most recently the drought have affected Iowa towns, increasing in both number and severity. As a result, many Iowa communities are in a state of recovery.

What has been done
The Iowa's Living Roadways (ILR) Community Visioning Program assists small Iowa communities in developing enhancement plans that reflect the values and identity of the community. The program provided technical landscape and transportation planning assistance to 12 Iowa towns. ISU Extension Community and Economic Development (CED) developed mapping technology for use by school districts to create safe routes to school. The Community Design Lab was created to assist communities with design challenges at multiple scales and see projects through to implementation. The College of Design's Bridge Studio aimed to develop sustainable development ideas in Cedar Rapids neighborhoods still recovering from the 2008 flood. The landscape architecture community design studio worked with Mapleton to identify strategies for its long-term recovery from a devastating tornado in 2011.

Results
The 12 visioning communities received a conceptual design plan, a feasibility study and assistance in implementation planning. Types of projects completed include roadside plantings, signage or signage improvements, streetscape enhancements, downtown area improvements, parks and other infrastructure improvements. The 2012 Community Design Lab worked on the 6th

Avenue corridor in Des Moines. In the Cedar Rapids Time Check neighborhood, volunteers from local schools and churches built fields and the first harvest from the urban garden was May 2012. Extension CED employed mapping technology using smartphones for SRTS (I-WALK) in 4 communities, resulting in requests from other communities in multiple states for similar projects. The Community Design Studio developed a series of proposals for Mapleton that addressed community infrastructure, renewable energy, recycling, and new uses for open space. Mapleton applied for and was accepted for the 2012 Iowa's Living Roadways Projects Program and the 2013 Community Visioning Program.

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development

Outcome #2

1. Outcome Measures

Community planning: Community plans/projects initiated.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	60

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
A gap exists between demand for design services to rural Iowa communities and the availability of those services. Many small Iowa communities also lack resources and expertise to develop comprehensive plan and individual community improvement projects. Issues facing communities include Iowa's aging population and wellness issues such as adult and childhood obesity. Several severe weather events, including flat-line winds, flooding, tornadoes, and most recently the drought have affected Iowa towns, increasing in both number and severity. As a result, many Iowa communities are in a state of recovery.

What has been done
Design studios worked with 7 communities in 2012. The College of Design initiated a Community Design Lab that will help communities think through design challenges at multiple scales. The lab worked with 6th Avenue corridor neighborhood in Des Moines. CD-DIAL (Community

Development Data Information and Analysis Laboratory) provided technical assistance in program evaluation, research methods and data analysis to communities, agencies and organizations. The landscape architecture community design studio worked with the town of Mapleton on its recovery efforts following a devastating tornado.

Results
Through the College of Design PLaCE (Partnering Landscape and Community Enhancement) program, the communities of Perry, Dubuque, Maquoketa and Ottumwa, as well as Adair County, partnered with design studios on various planning projects. PLaCE projects completed included a county comprehensive plan, a way-finding plan, an outdoor facilities master plan and three storefront redesign plans. The 2012 Community Design Lab redeveloped the 6th Avenue corridor in Des Moines, including working green storm-water infiltration systems in the design of bike trails. CD-DIAL conducted four surveys in 12 communities: Oelwein Area Health Assessment, City of Ames Residential Satisfaction Survey, Dual Language Preschool Program Survey, and Maquoketa Future Choices Survey. The Community Design Studio developed a series of proposals for Mapleton that addressed community infrastructure, renewable energy, recycling, and new uses for open space. Mapleton applied for and was accepted for the 2012 Iowa's Living Roadways Projects Program and the 2013 Community Visioning Program.

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development

Outcome #3

1. Outcome Measures

Community planning: Communities with improved civic functioning.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	2313

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Iowa municipal employees must also deal with constantly changing legislation and procedures. Many communities in Iowa are still recovering from severe flooding or tornado damage that

created a new set of problems local officials and organizations are still addressing. An added dimension has been the country's financial crisis, particularly in terms of housing. State, county, and local government revenues are down because of the slow economy as well and need information about planning fiscal year budgets.

What has been done
Extension Office of State and Local Government Programs (OSLGP) conducted its annual municipal professionals' certification program. ISU Extension CED and the Iowa League of Cities conducted six budget workshops throughout the state to help Iowa's city clerks and finance officers prepare for the fiscal 2013 budget. Other educational programs provided by OSLGP included training for newly elected officials with MIDAS, council and mayor training, Iowa Library Association training, advanced accounting and Comprehensive Annual Financial Report (CAFR) and TIF (Tax Increment Financing) certification training. In spring 2012, introduction to planning and zoning workshops were conducted in seven communities throughout the state. The sustainability specialist in Fairfield Iowa collaborated with Alliant Energy to pilot the Alliant Energy Hometown Rewards program.

Results
In 2011, 306 municipal professionals were trained at the Extension Office of State and Local Government Programs municipal professionals' certification program. More than 600 city clerks and finance officers attended budget workshops conducted by Extension CED and Iowa League of Cities. Nearly 300 planners and local officials attended planning and zoning workshops held in six locations in the state. Extension CED partnered with the Iowa Finance Authority to develop a statewide housing policy. Extension CED assisted 36 counties in establishing housing trust funds, resulting in grants and leveraged resources totaling nearly $3 million. Through the Alliant Energy Hometown Rewards Program, more than 500 Fairfield volunteers planted more than 400 trees over a weekend.

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development

Outcome #4

1. Outcome Measures

Community economic development: Communities participating in economic development events.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	56

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Many communities in Iowa lack the resources necessary to develop innovative projects and initiatives designed to improve their economic growth. The current recession has further affected economic growth in these communities and they are looking for innovative ways to attract new residents, visitors and businesses. As the immigrant population grows, the demand for Latino business and community development assistance grows.

What has been done
CED submitted a proposal for a second specialist with expertise in minority businesses and leadership. CED partnered with the University of Minnesota to assess the financing and technical assistance needs of underserved entrepreneurs and identify barriers separating them from providers of those services. We also partnered with the University of Wisconsin Extension and the City of Dubuque to create a joint faculty line position that will focus on issues important to the greater Dubuque regional economy and develop successful strategies that can be replicated in other communities in Wisconsin and Iowa. Research project funded by US EDA working with regional trade centers to identify strategies to engage private businesses and public entities in adopting TBL (triple bottom line) sustainability measures into long-term planning.

Results
In fall 2012, a second community development specialist with expertise in minority business and leadership development was hired and works out of Town/Craft in Perry. A two-day roundtable discussion was held at the Town/Craft center in Perry, a community with a Latino population of 35%. The outcome of the underserved entrepreneurs project will be a proposal to develop, pilot and implement new curricula for Extension professionals to use in working with underserved entrepreneurs, financial institutions, and technical assistance providers in nonmetro areas. Two shared economic development-community development specialists were established in Keokuk and Cedar County. The project was piloted in Carroll and Keokuk and the team is now working with Centerville. CED launched a new program called "Communities to Community" (C2C), through which CED will partner with to five Iowa communities in different areas the state. C2C will offer a two-year schedule of bundled design, educational, business and leadership development services available through CED and the ISU College of Design.

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development

Outcome #5

1. Outcome Measures

Community economic development: Number of jobs created or retained.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	350

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Due to housing crisis, financial crisis, and recessionary layoffs, a growing number of people are facing financial stress, credit issues, and loss of income. Many conventional lenders are not able to extend credit to entrepreneurs to the same extent as previously due to a tightening of underwriting standards. Extra technical assistance to small entrepreneurs with business plans that are realistic has been shown to reduce loan losses and enhance business success. Small business and jobs creation is particularly important for sustaining family income for many people during economic recovery.

What has been done
The Community Vitality Center (CVC) was created to identify policy topics of concern to rural communities; commission research to analyze the priority policy topics and impacts of public policy on rural areas; assess best practices, lessons learned and performance of alternative strategies to improve rural vitality; and foster collaborative partnerships to engage rural communities and diverse rural and urban interests in dialogue. CVC and ISU Extension created the Iowa Microloan Program to provide microcredit and technical assistance statewide to small businesses. CED enhanced its support of immigrant entrepreneurship by hiring a second Latino business and community development specialist. CED continued to promote entreprenuership through programs such as First Step FastTrac classes and Exito en el Norte Spanish-language DVD series.

Results
More than 200 businesses were expanded or improved and 1,300 local business leaders and entrepreneurs were assisted in creating and/or retaining approximately 350 jobs. More than 120 businesses were started or assisted with help from ISU Extension CED. Of those, approximately 100 were minority entrepreneurs.

Latino businesses that have benefited from Extension CED's efforts include bakeries, restaurants, grocery stores, clothing stores, and even goat meat producers. ISU Extension CED and the University of Minnesota developed a proposal to assess the financing and technical assistance needs of underserved rural entrepreneurs--particularly Latino entrepreneurs--and identify barriers separating them from service providers. Since its inception in 2008, Iowa Microloan has approved more than 50 loans to small entrepreneurs across Iowa won were unable to access capital for their business.

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development

Outcome #6

1. Outcome Measures

Community planning: Communities participating in training sessions.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	360

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

A gap exists between demand for design services to rural Iowa communities and the availability of those services. Many smaller communities in Iowa face enhancement related issues that they are unable to address due to lack of planning personnel and/or resources. Several severe weather events, including flat-line winds, flooding, tornadoes, and most recently the drought have affected Iowa towns, increasing in both number and severity. Many communities in Iowa lack the resources necessary to develop innovative projects and initiatives designed to improve their economic growth. The current recession has further affected economic growth in these communities and they are looking for innovative ways to attract new residents, visitors and businesses.

What has been done

ISU Extension CED conducted leadership training through Developing Dynamic Leaders, the Nonprofit Management Academy, GIS workshops, planning and zoning workshops, and financial accounting courses. CED launched Community to Communities (C2C) to help communities identify strategies for reinventing themselves to meet the changing needs of their residents and to attract new residents and businesses. Programs such as Community Visioning and I-WALK teach citizens how to assess their community assets, needs, and desires, and how to use this information in making informed decisions. Community development specialists help community leaders address issues such as housing, disaster recovery, and reduced financial resources. The Sustainable Economies project was created to help communities develop strategies for sustainable growth.

Results

The town of Waukon is learning to redefine itself as an elder-friendly community through the C2C program. Ottumwa has also initiated C2C to evaluate the housing situation. Roughly 50 volunteers in 12 communities completed participatory planning through Community Visioning, while teachers, parents, students, and local leaders in four communities evaluated safe routes to school in their communities through I-WALK. Carroll and Centerville participated in the Sustainable Economies project, which uses economic analysis of financial, social and environmental indicators to develop strategies for sustainable growth. This project earned national recognition for excellence from the University Economic Development Association. More than 300 communities benefited from leadership, planning and zoning, GIS, and financial accounting workshops.

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development

Outcome #7

1. Outcome Measures

Community planning and visioning: showcasing community development at the national level.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	275000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Every year the Smithsonian Folklife Festival, a 10-day event attracting more that 1 million visitors, commemorates our living heritage by presenting community-based, cultural exemplars. The 2012 theme was "Campus and Community: Public and Land-grant Universities and the USDA at 150." ISU was one of 17 universities selected to participate in the festival and was the only university that focused on design's role in outreach. The exhibit showcased ISU as a leader in the unique, ongoing partnership between the College of Design and Extension CED in applying creative problem solving to find innovative solutions to communities' complex challenges.

What has been done

The ISU exhibit communicated mulit-layered message through a mix of interactive technology and personal conversation, in which ISU Extension CED was featured prominently, along with the College of Design outreach projects such as PLaCE (Partnering Landscape and Community Enhancement), the ILR Community Visioning Program, and the landscape architecture community design studio. College of Design faculty and staff, as well as CED community development specialists, staffed the exhibit during the festival and interacted one on one with festival attendees.

Results

The ISU Smithsonian Exhibit was displayed on the National Mall in Washington DC for 10 days during the period June 27 through July 8 and ISU faculty, staff, and Extension community development specialists were on hand to answer questions from the public and to explain the role of the College of Design and ISU Extension and Outreach in community planning, development and problem solving. The exhibit was also ISU's focal point at both the Iowa State Fair and the Farm Progress Show. US Secretary of Agriculture Tom Vilsack visited the exhibit at all three venues and spent time talking with the staff about design outreach programs. Based on the annual attendance at each of these events, an estimated 275,000 people saw the exhibit and/or interacted with ISU faculty and staff.

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

The economy is a major external factor affecting ISU Extension CED outcomes because not only has it led to a shrinking state budget, but more communities need assistance with budgeting and financial management, and some local businesses are struggling. That said, the economic climate is good for entrepreneurship, and CED has assisted in starting new businesses throughout the state. Natural disasters that occurred as

far back as 2008 continue to affect Extension CED outcomes. Communities such as Cedar Rapids are still recovering from the 2008 flood, east central Iowa is still rebuilding after flat-line winds, and more than half of the trees in Mapleton were destroyed by a tornado in 2011. CED specialists have been working with these communities on issues such as affordable housing, land use practices, population shifts, and other disaster-related issues. The immigrant population of Iowa continues to grow and CED has responded with diversity training, assistance for immigrant entrepreneurs, and providing training on parenting skills, budgeting, and language.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

ISU Extension Community and Economic Development launched the Community to Communities project to work with communities on issues such as affordable housing, health and wellness, and economic sustainability. These community projects involve random sample surveys in such topic areas as health care, health systems, economic development, land use, transportation, and environment and conservation. For the Community Visioning Program, random surveys of residents in seven communities were conducted to obtain feedback for the development of transportation enhancement concepts. The I-WALK project surveyed teachers and conducted mapping workshops with parents and children in four communities that needed to assess their routes to school.

Key Items of Evaluation

Need for better community programming. Community programming is often not intuitively related to what is seen as Agricultural Extension. CED continued to publish its quarterly newsletter and improve the CED and the Program Builder websites, and continues to develop ongoing programming into products. The College of Design initiated a Community Design Lab that is helping communities think through design challenges at multiple scales, many of which are part of disaster recovery (e.g., Cedar Rapids). Providing support in disaster recovery is crucial with the increasing number of severe weather events in Iowa. Several CED initiatives addressed healthy communities (NE Food and Fitness, I-WALK, Oelwein area health needs assessment). CED continues to develop programming for the growing Latino population in Iowa, including the creation of a second Latino business and community development specialist.

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Families: Expanding Human Potential

☑ Reporting on this 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
607	Consumer Economics	0%		26%	
703	Nutrition Education and Behavior	15%		0%	
704	Nutrition and Hunger in the Population	5%		0%	
801	Individual and Family Resource Management	20%		17%	
802	Human Development and Family Well-Being	50%		24%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	0%		23%	
805	Community Institutions, Health, and Social Services	10%		10%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	35.0	0.0	6.6	0.0
Actual Paid Professional	15.5	0.0	2.9	0.0
Actual Volunteer	27.5	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**
899852	0	348567	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
899852	0	348567	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
3993428	0	579090	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Short term and in-depth sequential educational programs were directed toward individuals, families, professionals and community leaders through one-on-one education, workshops, meetings, conferences, online learning, and social and mass media to strengthen their knowledge and skills. We developed products, curriculum, and other educational resources for use in training, technical assistance, and facilitation of community advocacy.

Faculty participated in relevant multistate research committees: NC1030, NC1171, and NECC1011.

2. Brief description of the target audience

Parents of children, teens, and young adults, families with lower incomes, child and family caregivers, family serving professionals, health professionals, worksite employees, food service managers, food processors, policy makers, businesses, community members and leaders, adults, older adults, education professionals, and employers.

3. How was eXtension used?

The "parenting" and "child care" resource area of eXtension was actively promoted to Iowa parents and professionals who serve parents through distribution of bookmarks during parenting workshops, health fairs, newspaper articles and social media.

ISU webpages link to eXtension content and Ask the Expert resources. ISUEO staff are notified about eXtension webinars that may be useful for their own or clients' professional development.

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	112446	2134526	23866	27000

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

Patent Applications Submitted

Year:	2012
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	19	21	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of parents and family members in educational programs related to child care, parenting, and aging.

Year	Actual
2012	56050

Output #2

Output Measure

- Number of professionals in educational programs related to child care, parenting, and aging.

Year	Actual
2012	3556

Output #3

Output Measure

- Number of adults participating in educational programs that increase awareness of public issues.

Year	Actual
2012	397

Output #4

Output Measure

- Number of community groups formed to address a public issue.

Year	Actual
2012	52

Output #5

Output Measure

- Number of adults participating in educational programming related to nutrition, physical activity and health promotion.

Year	Actual
2012	242284

Output #6

Output Measure

- Number of youth participating in educational programming related to nutrition, physical activity and health promotion.

Year	Actual
2012	12772

Output #7

Output Measure

- Number of professionals participating in educational programming related to nutrition, physical activity and health promotion.

Year	Actual
2012	257

Output #8

Output Measure

- Number of participants in financial resource management programs.

Year	Actual
2012	7010

Output #9

Output Measure

- Number of professionals or volunteers trained to work with families on financial management.

Year	Actual
2012	241

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of parents improving parenting skills.
2	Number of family serving professionals trained.
3	Number of early child care programs improving learning environments and teaching strategies.
4	Number of participants better able to manage later life issues.
5	Number of communities who report taking action to address public issues related to improving circumstances for children, youth and families at risk.
6	Percent of worksite wellness program participants progressing towards action/maintenance according to the "Stages of Change" relative to fruit and vegetable intake.
7	Percent of worksite wellness program participants progressing towards action/maintenance according to the "Stages of Change" relative to physical activity.
8	Percent of adult EFNEP/FNP graduates increasing minutes of physical activity.
9	Percent of adult EFNEP/FNP graduates who made a positive change in one or more nutrition practices.
10	Percent of adult EFNEP/FNP graduates who made a positive change in food resource management skills such as not running out of food.
11	Number of individuals increasing savings and reducing debt.
12	Number of individuals increasing credit as an asset.
13	Number of individuals setting and making progress toward financial goals.
14	Number of professionals or volunteers who are better prepared to apply or teach financial management skills.
15	Number of communities reporting taking actions to improve circumstances for older Iowans.

Outcome #1

1. Outcome Measures

Number of parents improving parenting skills.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	2521

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Lack of parenting knowledge and skills exists among parents who abuse children. Increased delinquency and violence among adolescents has challenged the juvenile justice system. Increases in delinquency and violence over the past decade are rooted in a number of interrelated social problems--child abuse and neglect, alcohol and drug abuse, youth conflict and aggression, and early sexual involvement--that may originate within the family structure. Children who begin school without basic language and literacy skills have difficulty learning to read, and reading level at the end of 3rd grade predicts graduating from high school. Parents and other adults can be instrumental in preparing children to learn by reading to them at an early age. Pressure has increased at the state and local level to fund family support and parenting programs that have proven impacts.

What has been done
Professionals have been trained to deliver the Strengthening Families Program 10-14 a parenting program for Parents and Youth 10 to 14 (an evidence-based program that brings together parents and their preteens/teens with the goal of reducing substance abuse and other problem behaviors in youth), Family Story Teller (an evidence-based family literacy program), and other research-based parenting education programs. Sequential parenting education workshops were delivered to parents, as well as workshops on individual parenting topics. Electronic and hard copy parenting education newsletters were delivered to parents, as well as podcasts, blogs, and Web sites with research-based parenting information.

Results
98% percent (n = 2,521) of parents who participated in sequential parenting education programs improved one or more critical parenting practices. For every dollar spent on the ISU Extension and Outreach Strengthening Families Program 10-14, $9.60 is saved by reducing substance abuse and other youth risky behaviors. Also, $120,000 was raised by five Iowa communities to

implement PROSPER (a community-based prevention program that includes Strengthening Families Program 10-14).

4. Associated Knowledge Areas

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

Outcome #2

1. Outcome Measures

Number of family serving professionals trained.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1945

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Effective parenting and family education relies heavily on quality implementation, specifically how practitioners are trained, supervised, and supported in their work with parents. Parenting professionals must learn to work across cultures, disciplines, and systems, master a growing and diverse body of knowledge, be adept at processes and methods that truly strengthen families, and produce dramatic results in short periods of time with decreasing funding.

What has been done
In the last year, 1,945 family support professionals serving 37,630 families were trained by ISU Extension and Outreach staff in evidence-based curricula to deliver parenting education directly to families.

Results
The Iowa PROSPER program, which incorporates the Strengthening Families Program 10-14, achieved 96% fidelity on content and 3.85 (0-4 scale) on effectiveness of presentation/facilitation for all programs (both family and school). The Growing Strong Families Program, a home visitation program implemented by ISU Extension and Outreach, earned the Iowa Family Support Credential from the Iowa Department of Management and Public Health. The credential is awarded to family support and parent education programs that participate in an external evaluation and are found to substantially adhere to 139 Iowa Family Support Standards based on

the most up to date, evidence-based practices in the family support field.

4. Associated Knowledge Areas

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

Outcome #3

1. Outcome Measures

Number of early child care programs improving learning environments and teaching strategies.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	2116

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Iowa is the second highest state in the nation with dual income earning parents. Iowa State University research examining child care found much of Iowa's child care quality rates as poor or mediocre. Only 20% of observed Iowa child care was rated good. Nearly 20% of the observed infant child care centers in Iowa offered poor quality care and none were offering good quality care. In addition, 40% of the observed family child care homes offered poor quality and 34% of family child care providers reported receiving no child care training within a 12-month period.

What has been done
The Better Kid Care New Staff Orientation (NSO) program provided 16 hours of instruction for preschool and child care center staff and 6 hours of online instruction for child care center directors. The Early Childhood Environment Rating Scale program provided child care professionals with self-assessment, sequentially based instruction and guidance in developing a program improvement plan for quality of early childhood education. Early Childhood Consultants working for the Child Care Resource and Referral and the Department of Public Health participated in a 15-hour skill-based introductory program and/or a four-day consultant credential and mentor credential program. Single topic workshops on health and safety and early learning were also provided to these audiences.

Results

Over the last year, 116 directors/supervisors and 649 child care or preschool teachers participated in the NSO program, completing 11,080 training hours. Preschool teachers showed statistically significant ($p < .001$) gains in each of the 11 NSO outcomes leading to improved child care quality and practice. A retrospective survey of child care professionals ($n = 503$) participating in the Early Childhood Environment Rating Scale training indicated that 86% of participants could better identify strengths and limitations, prioritize changes and develop a workable plan for program improvement. Participants reporting gains in knowledge and program improvement reported working with a total of 34,695 children and 25,695 families.

4. Associated Knowledge Areas

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

Outcome #4

1. Outcome Measures

Number of participants better able to manage later life issues.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	200

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
During any given year, 29% of the U.S. population provides care for a chronically ill, disabled, or aged family member or friend. Research indicates the impact on caregivers is three-fold: physical, emotional, and financial. The latest Stress in America survey results show caregivers report being in poorer health than the rest of the nation, with higher rates of high cholesterol, high blood pressure, overweight/obesity and depression. In addition, 11% of family caregivers report that caregiving has caused their physical health to deteriorate.

What has been done
In the last year, 24 additional class leaders were trained to implement, Powerful Tools for Caregivers, a series of six classes designed to empower family caregivers of older adults to take better care of themselves. Through this program 200 family caregivers learned how to reduce stress, improve caregiving confidence, establish balance in their lives, communicate their needs, make tough decisions, and locate helpful resources.

Results
One hundred percent (n = 200) of those completing Powerful Tools for Caregivers participant evaluations report increased practice of self-care behaviors (e.g., increased exercise, use of relaxation techniques, health self-care).

4. Associated Knowledge Areas

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

Outcome #5

1. Outcome Measures

Number of communities who report taking action to address public issues related to improving circumstances for children, youth and families at risk.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	20

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Students who fail to complete high school present a significant cost to the state of Iowa. In Iowa the dropout rate for Hispanics is 5.3%--much higher than the 2.7% state average. The Latino population in Iowa is expected to increase to 331,000 by 2030. Youth substance abuse and other risky behavior leads to costs for society and individuals. In 2010, 25% of 11th grade students reported binge drinking at least once in a 30-day period. The Centers for Disease Control estimates that alcohol abuse cost $6.8 million in Iowa through lost productivity, health care expenses, law enforcement and other criminal justice expenses, and motor vehicle crash costs from impaired driving. Rural communities also face growing challenges in retaining well-paying jobs and services, and families are financially vulnerable due to low wages, low savings and high debt.

What has been done
Twenty communities focused on issues related to family economic security, preparing youth for academic success, reducing substance abuse and poverty, developing community leaders, family support networks for aging, and housing. We are reporting on three of these programs. JUNTOS,

Together for A Better Tomorrow, focuses on school success and post high school goals was implemented in five communities reaching over 70 Latino youth and parents. CYFAR projects in two communities had 49 youth and 64 parents in a seven week Strengthening Families Program 10-14 to prevent teen substance abuse and other risky behaviors, strengthen parenting skills, and build family strengths. Asset building research was conducted through focus groups in two communities reaching 77 low to middle resource families with children and community leaders.

Results
In the JUNTOS first year pilot evaluation, post test scores on all sixteen items related to academic success increased from pretest ratings. Parents and students also reported increased knowledge about resources for accessing higher education. CYFAR evaluations revealed parents were more engaged with their youth and youth were performing better in school as a result of their involvement. Substance abuse has also been delayed. The asset building research led to families and community leaders defining what it means to them to be financially successful, identifying barriers to this success and strategies for community based adult and youth education for asset building. One community has followed up action plans related to one of the strategies to enhance children's savings accounts.

4. Associated Knowledge Areas

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

Outcome #6

1. Outcome Measures

Percent of worksite wellness program participants progressing towards action/maintenance according to the "Stages of Change" relative to fruit and vegetable intake.

Not Reporting on this Outcome Measure

Outcome #7

1. Outcome Measures

Percent of worksite wellness program participants progressing towards action/maintenance according to the "Stages of Change" relative to physical activity.

Not Reporting on this Outcome Measure

Outcome #8

1. Outcome Measures

Percent of adult EFNEP/FNP graduates increasing minutes of physical activity.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	37

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The 2010 Dietary Guidelines for Americans recommend adults participate in moderate physical activity for 30 minutes per day for five days per week. The 2009 Behavioral Risk Factor Surveillance System data show that less than half of adult Iowans meet these physical activity recommendations. Furthermore, these data show that physical activity among Iowans increases with income with nearly three times as many people with an income below $15,000 participating in no physical activity when compared to those with income above $75,000.

What has been done
As part of EFNEP and SNAP-Ed programs, a series of eight to ten nutrition lessons are taught by paraprofessional nutrition educators to low-income families with children age ten and under and pregnant women/teens. These lessons show participants how to choose nutritious foods, stretch their food dollars, handle food safely, be physically active, and prepare nutritious recipes. Each lesson has a physical activity component. In particular, lesson 1, Get Moving, focuses on physical activity.

Results
Following participation in at least eight lessons, 37% of participants increased the amount of physical activity in which they regularly participate. In addition, by the completion of the program, 70% of participants reported meeting the physical activity recommendations set by the 2010 Dietary Guidelines for Americans.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

Outcome #9

1. Outcome Measures

Percent of adult EFNEP/FNP graduates who made a positive change in one or more nutrition practices.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	91

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
EFNEP and SNAP-Ed data show that low-income families do not, seldom, or sometimes (as opposed to most of the time or almost always) practice healthy nutrition behaviors such as thinking about healthy food choices when deciding what to feed their families, prepare foods without adding salt, and use the "Nutrition Facts" to make food choices. Additionally, the 2009 Behavioral Risk Factor Surveillance System data show that Iowans in general do not practice healthy nutrition behaviors. For example, only 18.5% of Iowans consumed five fruits and vegetables per day.

What has been done
As part of EFNEP and SNAP-Ed, a series of eight to ten nutrition lessons are taught by paraprofessional nutrition educators to low-income families with children age ten and under and pregnant women/teens. These lessons show participants how to choose nutritious foods, stretch their food dollars, handle food safely, be physically active, and prepare nutritious recipes. Lessons three through seven focus on practicing healthy nutrition behaviors--Fruits and Veggies: Half Your Plate, Make Half Your Grains Whole, Build Strong Bones, Go Lean with Protein, and Make a Change (addresses sodium, fats, and added sugars).

Results
Following participation in at least eight lessons, 91% of participants showed improvement in at least one nutrition practice. Of these participants, 49% more often thought about healthy food choices when deciding what to feed their family, 40% more often prepared foods without adding salt, and 66% more often used the "Nutrition Facts" to make food choices. This is an improvement over FY11 in which 88% of participants showed improvement in at least one nutrition practice.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

Outcome #10

1. Outcome Measures

Percent of adult EFNEP/FNP graduates who made a positive change in food resource management skills such as not running out of food.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	86

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
EFNEP and SNAP-Ed data show that low-income families do not, seldom, or sometimes (as opposed to most of the time or almost always) practice food resource management skills such as planning meals in advance, comparing prices of foods, and using grocery lists. These are skills that can prevent or alleviate food insecurity. In 2009, Iowa State University Extension and Outreach staff surveyed food pantry participants and found the majority were food insecure with over half experiencing very low food security. Behavioral Risk Factor Surveillance System data from 2009 indicated that more than 10% of Iowans struggled with food security.

What has been done
As part of EFNEP and SNAP-Ed, a series of eight to ten nutrition lessons were taught by paraprofessional nutrition educators to low-income families with children age ten and under and pregnant women/teens. These lessons show participants how to choose nutritious foods, stretch their food dollars, handle food safely, be physically active, and prepare nutritious recipes. In particular, lesson 2, Plan, Shop, $ave, focuses on food resource management skills such as meal planning, comparing prices, and using grocery lists.

Results
Following participation in at least eight lessons, 86% of participants showed improvement in at least one food resource management practice. Of these participants, 57% more often planned meals in advance, 43% more often compared prices when shopping, and 50% more often used a grocery list. Furthermore, 44% of these participants reported they less often ran out of food before the end of the month (improved their food security). This is similar to FY11 when 85% of participants showed improvement in at least one food resource management practice.

4. Associated Knowledge Areas

KA Code	Knowledge Area
704	Nutrition and Hunger in the Population

Outcome #11

1. **Outcome Measures**

Number of individuals increasing savings and reducing debt.

Not Reporting on this Outcome Measure

Outcome #12

1. **Outcome Measures**

Number of individuals increasing credit as an asset.

Not Reporting on this Outcome Measure

Outcome #13

1. **Outcome Measures**

Number of individuals setting and making progress toward financial goals.

2. **Associated Institution Types**

- 1862 Extension

3a. **Outcome Type:**

Change in Action Outcome Measure

3b. **Quantitative Outcome**

Year	Actual
2012	2423

3c. **Qualitative Outcome or Impact Statement**

Issue (Who cares and Why)
Families face a complex market in which to make financial decisions and many face increasing budget constraints. Research shows that those who set specific goals are more likely to achieve them. Those who close the gap between current and desired conditions are more likely to report satisfaction or higher levels of well-being. Financial management skills help families prioritize competing short- and long-term goals and use resources in ways that help accomplish goals. Failure to set and achieve goals often leads to mismanagement of financial resources and

significant social and economic costs.

What has been done
Financial management education programs were attended by 6,827 adults. Sequenced workshops focused on the basics of budgeting, record keeping, credit and banking services. A five-week workshop series targeted women and covered basic management, risk management, investing and legal concerns. Extension-trained volunteers at rural VITA sites prepared tax returns for low and moderate-income families, eliminating commercial preparer fees and increasing awareness of and access to refundable credits.

Results
Financial management educational programs resulted in:
* 86% of respondents made progress toward financial goals
* 93% of respondents improved their financial management skills
* 60 community VITA volunteers at 34 rural sites completed tax returns for 1,621 low-income Iowans who received $1,091,572 in EITC refunds to bolster family incomes and achieve financial goals.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #14

1. Outcome Measures

Number of professionals or volunteers who are better prepared to apply or teach financial management skills.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	239

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
There is growing evidence that individualized financial coaching can be an effective way to increase financial literacy by providing one-on-one consultations that lead to behavior changes and goal accomplishment. Coaches facilitate realistic goal-setting, accountability, and practice.

They often are located within agencies and organizations that target underserved audiences, allowing integration of financial education. Iowa schools are mandated to teach financial literacy, but recent research documents a lack of skills and confidence among middle and high school teachers to address this issue. Public school teachers were trained on financial literacy curricula and, in turn, reached Iowa middle and high-school youth.

What has been done
A hybrid or blended financial coaching training course that combines face-to-face sessions with online learning was completed by 182 community-based professionals and volunteers. Participants learn basic skills in communication, active listening, monitoring, and motivating clients. The course connects participants with many skill-building tools that help clients manage financial resources and make informed decisions. A summer workshop provided in-depth training on financial literacy curricula to 59 public school teachers.

Results
100% of the financial coaching course participants reported that they were better prepared to teach financial management skills. The proportion of teachers who reported that they were "well or very well prepared" to teach financial literacy increased from 33% prior to the workshop to 96% following the workshop.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #15

1. Outcome Measures

Number of communities reporting taking actions to improve circumstances for older Iowans.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	32

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

More than 40% of Iowans are over the age of 45, 27% are aged 45-64, and 15% are over the age of 65. Iowa is 5th in the nation for the number of people per capita 65 and over and 3rd in the number of "oldest-old" persons aged 85 and over. Iowa is at the forefront of an aging revolution yet ill prepared to handle the social and economic consequences of this demographic transformation. Iowa cannot fulfill the Governor's mission of being the healthiest state in the nation without addressing the needs of an aging citizenry. Iowa communities and businesses need enhanced tools to support whole-person wellness throughout the life span including midlife and beyond to promote individual quality of life, family well-being, and ultimately economic savings to Iowa.

What has been done

Thirty two counties participated in the Midlife and Beyond: The Whole Picture program by conducting study circles and action forums. The study circles met four times and resulted in an action forum to determine two to five ways to improve life for older Iowans. County Extension and Outreach staff in each county recruited a local steering committee to plan the study circles and action forums. Sixty-five volunteers were trained to facilitate the study circles, action forums, and action teams. The action teams explored what was currently happening locally and what could be done to address the issue.

Results

Community actions resulting from the study circles and action forums included actions for older Iowans by better connecting with or promoting current services or improving:
* community awareness of community services in four communities
* health resources in three communities
* transportation in two communities
* recreation and tourism in two communities
* promotion volunteerism in two communities
* cross age communication through technology in two communities
* economic opportunities through jobs and entrepreneurship in one community
* housing in one community
* intergenerational community service through a barter system of needs and skills in one community

4. Associated Knowledge Areas

KA Code	Knowledge Area
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.)
- Other (transition of new staff in communities and partnerships, loss of faculty and staff)

Brief Explanation

The decrease in funding for some private/non-profit organizations has led to fewer of their staff engaging in professional development and being trained to deliver sequenced parenting education programs. As emerging issues are identified (e.g., environmental education) some staff time has shifted to growing programming in these new areas. Transition of new staff in local communities takes time resulting in less direct programming while staff are making local connections and learning their job roles.

Economic constraints continue to influence program planning and participation rates. Citizens and organizations may wish to participate in programs but lack time and transportation. Federal and state legislation continues to impact appropriations and policy for nutrition and health programming initiatives. In this state, a grocery store chain has begun employing Registered Dietitians in stores throughout the state (currently 100). This trend has created competition for programming in rural communities traditionally served by ISU Extension and Outreach staff. Healthcare reform is also modifying the landscape for programming; additional opportunities in preventive health care are available. Increasing interest in indirect delivery methods continue for individuals and work organizations. Several of the education materials are available on the Spend Smart, Eat Smart website and Nutrition and Health website. ISU Extension and Outreach in Iowa continues to experience loss of staff, driving more programming via technology. The diversity of the population in Iowa continues to change and challenges programming efforts to be sensitive to a variety of cultures.

Time and resource constraints continue to influence program planning and delivery. Iowa has a very high proportion of rural residents with multiple jobs, reducing time available for participation in Extension programs. Research documents a stigma attached to participation in financial management programs, particularly in rural communities. Employers face decreasing budgets for employee professional development making it difficult for professionals to afford educational offerings. An increasingly diverse population challenges the university's ability to meet diverse educational needs.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Post then pre-tests administered to parents who participated in evidence-based parenting education reveal 98% percent (n = 2,521) of parents improved one or more

parenting skills. Pre- and post-surveys indicate 82% (n = 148) of families who participated in Growing Strong Families, a home visitation program delivered by Extension, improved or maintained healthy family functioning, problem solving, and communication. Also 91% (n = 169) of families increased their knowledge about child development and parenting and 97% (n = 180) of families increased or maintained social supports. This program earned the Iowa Family Support Credential from the Iowa Department of Management and Public Health. The credential is awarded to family support and parent education programs that complete an external evaluation and are found to substantially adhere to the 139 Iowa Family Support Standards based on the most up to date, evidence-based practices in the family support field.

The Strengthening Families Program 10-14 is the highest ranked substance abuse prevention program in the world. It is being implemented across the U.S., Puerto Rico, and in over 25 countries. Estimates indicate that over 1,000 professionals are trained each year to deliver SFP 10-14 all over the world reaching tens of thousands of families. Research reveals that youth who participated in the program in 6th grade continue to experience on-going benefits from the program after high school graduation. The Iowa PROSPER program, which incorporates the Strengthening Families Program 10-14, achieved 96% fidelity on content and 3.85 (0-4 scale) on Effectiveness of presentation/facilitation for all programs (both family and school).

New staff orientation workbook/portfolio evaluations of new child care providers revealed 93% of preschool teachers (n = 649) showed statistically significant ($p < .001$) gains in each of the 11 NSO outcomes leading to improved child care quality and practice. A retrospective survey of child care professionals (n = 503) participating in the Early Childhood Environment Rating Scale training indicated 86% of participants could better identify strengths and limitations, prioritize changes, and develop a workable plan for program improvement.

100% (n = 200) of family caregivers who completed a survey after they participated in Powerful Tools for Caregivers workshops, increased self-care behaviors.

Surveys were administered at the conclusion of selected sequential financial programs to assess change in knowledge, attitudes, and/or behaviors. Findings are reported in results sections of the report. Challenges facing this approach are attrition in program attendance and non-response among those present at the last session. Funding effective incentives for completion of evaluations will be important. Designing and funding more rigorous evaluations using experimental designs will help Extension identify "what works" and what may be equally effective, but lower-cost delivery systems.

Key Items of Evaluation

Close to 100% of all individuals who participate in Extension parenting education, early childhood, and family caregiving programs have improved one or more life skills and overall family functioning.

Professional development for public school teachers has significant impact on their abilities to teach a key 21st century core curriculum skill: financial literacy. Pre- and post-evaluations conducted by a third-party evaluator document dramatic improvement in the ability of financial literacy educators to teach this required content. Professional development for teachers strengthens the ability of schools to improve the financial capabilities of youth.

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Food Safety

☑ Reporting on this 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
307	Animal Management Systems	10%		0%	
308	Improved Animal Products (Before Harvest)	5%		0%	
315	Animal Welfare/Well-Being and Protection	5%		0%	
503	Quality Maintenance in Storing and Marketing Food Products	5%		0%	
703	Nutrition Education and Behavior	20%		0%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	5%		6%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	25%		94%	
723	Hazards to Human Health and Safety	20%		0%	
806	Youth Development	5%		0%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	10.0	0.0	2.5	0.0
Actual Paid Professional	3.6	0.0	1.4	0.0
Actual Volunteer	0.1	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**
205680	0	364250	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
205680	0	364250	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
766756	0	1312472	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

• Conduct workshops and facilitate meetings. Workshops include ServSafe® Certification food safety, food preservation, HACCP implementation and GAPS preparation.
• Provide regulatory updates and training for the grain supply chain participants and the agencies responsible for regulating the industry.
• Develop food safety educational materials and resources, such as web based tools and Extension publications.
• Provide training and technical assistance such as fundamental food safety training for volunteer staffed events, line level employees, and respond to specific questions related to application of food safety principles.
• Provide training and technical assistance in the dairy, beef and swine industries.

Faculty participate in the following associated multistate research committees: NC213, NC1023, NC1183, NC1194, NE1028, S294, S1027, and S1033.

2. Brief description of the target audience

Food growers, food processors, foodservice management and staff in commercial and noncommercial operations, consumers, and food stand volunteers.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	10900	9651047	1300	100

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

Patent Applications Submitted

Year:	2012
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	6	5	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of adult participants in Extension programs on food safety.

Year	Actual
2012	38720

Output #2

Output Measure

- Number of hits on Iowa State University Extension food safety project websites.

Year	Actual
2012	6253155

Output #3

Output Measure

- Number of adults attending HACCP training.

Year	Actual

2012	184

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of people receiving food safety certification.
2	Percent of adult EFNEP/FNP graduates with a positive change in food safety practices.
3	Number of consumers who understand modern livestock practices as they pertain to animal health and comfort, quality and safety.
4	Number of dietary professionals that understand modern livestock practices as they pertain to animal health and comfort, quality and safety.
5	Number of youth and teachers that increase their awareness of modern livestock practices as they pertain to animal health and comfort, quality and safety.
6	Million dollars saved throughout the food chain by implementing Quality Management Systems through educational programs such as the Iowa Quality Grain Initiative, Pork Quality Assurance Plus® and Transport Quality Assurance®
7	Number of producers who increase their awareness of the new Food Security Act and food safety regulations.
8	Number of adults that increase their awareness of safe home food preservation techniques.
9	Number of fruit and vegetable producers who increase their knowledge of food safety practices.

Outcome #1

1. Outcome Measures

Number of people receiving food safety certification.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1011

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
It is estimated 48 million people experience a foodborne illness each year with 3,000 deaths resulting from these illnesses. Providing food handlers and decision makers involved in food production, processing, and service from farm to fork with knowledge about risks can help reduce incidents of foodborne illness by leading to better practices.

What has been done
Over 1,000 Iowans (n = 1011) participated in an 8-hour workshop about safe food handling practices and 5,070 participated in food safety sessions related to on farm food safety, safe food preservation, or safe handling of food when working in retail outlets.

Results
Of the 1,011 who participated in the 8-hour certification course workshop, 92% (n = 1098) were successful in earning certification.

4. Associated Knowledge Areas

KA Code	Knowledge Area
503	Quality Maintenance in Storing and Marketing Food Products
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #2

1. Outcome Measures

Percent of adult EFNEP/FNP graduates with a positive change in food safety practices.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	64

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Previous EFNEP and SNAP-Ed data show that low-income families do not, seldom, or sometimes (as opposed to most of the time or almost always) practice food safety management skills such as thawing and storing food properly. These are skills that can prevent or alleviate illness.

What has been done
As part of EFNEP and SNAP-Ed, a series of eight to ten nutrition lessons is taught by paraprofessional nutrition educators to low-income families with children age ten and under and pregnant women/teens. These lessons show participants how to choose nutritious foods, stretch their food dollars, handle food safely, be physically active, and prepare nutritious recipes. Each lesson includes a component relating to food safety.

Results
At entry to the program 55% (568 of 1,030 participants) demonstrated acceptable food safety practices (i.e. thawing and storing foods properly). Following participation in at least eight lessons 85% (874 of 1,030 participants) at the end of the program demonstrated acceptable food safety practices (i.e. thawing and storing foods properly).

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #3

1. Outcome Measures

Number of consumers who understand modern livestock practices as they pertain to animal health and comfort, quality and safety.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	3300

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
A large percentage of the US population lives in an urban or suburban environment and is disconnected from agriculture and food production. At the same time, there is increasing interest and concern in the general population about food safety, quality, animal health and wellbeing, farm systems that produce food, and sustainability. Consumers and the public need access to unbiased information and educational events that can enhance their knowledge in these areas in order to make sound nutrition decisions/practices.

What has been done
ISU Extension Dairy Team partnered with Iowa's dairy producer and industry associations, other farm and commodity organizations (ISU site) and the regional dairy check-off organization, Midwest Dairy Association, to plan and host 3 Dairy Farm Open House workshops. The purpose was to provide experiential events incorporating a tour of a dairy with designated stations to showcase and educate on specific attributes of dairy farms (animal comfort and health, milking practices, product safety and quality, environmental stewardship). A post workshop survey to rate their experience of the dairy tour, assess their knowledge and trust of dairy practices, and evaluate their interests in the dairy industry and dairy products was conducted at 2 sites (1900 attendees).

Results
* A total of 3300+ participants were involved in these 3 events with many families and young children, and most participants from non-agricultural backgrounds and 321 post event surveys were completed.
* 100% rated successful/educational (86% rating excellent; 14% rating very good (3.89/4.00 rating).
* Prior to the event, 81% had a positive (63% extremely positive) opinion and trust in dairy farms

(3.46/4).
* Post workshop, 96% had a positive (84% extremely positive) opinion and trust in dairy farms (3.78/4).
* Post workshop, 96% believed dairies provided the best care and handling of animals (3.68/4).
* Post workshop, 92% believed dairies protect the environment and excel at environmental stewardship (3.66/4).
* Post workshop, 97% stated dairies provide extremely safe and wholesome milk & dairy products (3.79/4).
* 100% supported growth of the dairy industry in Iowa.
* Post workshop, 99% indicated modern dairies and dairy practices were impressive and had extreme confidence and trust in dairy farms and the dairy industry.
* Participants' opinion of modern dairies following the event was positively and significantly increased.
* Participants' main issues encompassed questions regarding nutrient and environmental management.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)
315	Animal Welfare/Well-Being and Protection
703	Nutrition Education and Behavior
806	Youth Development

Outcome #4

1. Outcome Measures

Number of dietary professionals that understand modern livestock practices as they pertain to animal health and comfort, quality and safety.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	212

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

There are a wide variety of highly nutritious, safe and affordable dairy products that meet and exceed all milk quality standards and tests. Differential labeling is sometimes confusing to consumers, and they also have many interests and questions regarding how their food is produced, and the quality, safety, and assurance of animal wellbeing, farm sustainability, and dairy product quality and safety. Dietary and health professionals, dairy grocer case managers, and in-store dietary professionals (only some stores) are often the front line and only source of credible information and recommendations for consumers and the public. Many of these professionals have never been exposed to agriculture, farms, and different dairy production systems and practices that form the basis for the great variety of dairy products as well as consumers' attitudes, understandings, and choices.

What has been done

Three all-day dairy academies (which included both on-farm and milk processing plant tours and education modules, as well as other presentations on dairy practices, dairy sustainability, animal health and wellbeing) were conducted for dairy grocer case managers and in-store dieticians and health professionals by ISU Extension and Midwest Dairy Association. Pre- and post-tests on participants' understanding of dairy facts and knowledge were conducted, as well as a personal satisfaction survey.

Results

* 100% ranked the dairy academy as a highly effective educational event.
* 100% ranked the dairy academy as a highly credible, understandable source of dairy practices and information.
* 67% increase in post workshop test scores compared to pre workshops scores.
* Dairy grocer case managers (DGCM) rated the dairy academy as most highly effective educational training of their careers.
* 100% DGCM stated they had greater understanding of dairy practices and dairy sustainability.
* 100% DGCM stated they would use this information with their peers and clients.
* DGCM estimated individual interactions with >1000 customers per year and felt they were the sole person at the store to respond to dairy issues and questions.
* In-store dieticians also ranked the information presented and educational aspects very highly.
* 100% planned future use with peers and clients.
* In store dieticians estimated 300+ individual clients and contacts/year.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)
315	Animal Welfare/Well-Being and Protection
703	Nutrition Education and Behavior
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources

Outcome #5

1. Outcome Measures

Number of youth and teachers that increase their awareness of modern livestock practices as they pertain to animal health and comfort, quality and safety.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1200

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Teachers and young student often have limited knowledge about nutrition and food safety and quality, animal health and well- being, and farm systems that produce food. Educators and their students need access to unbiased information and educational opportunities and curriculum that can enhance their knowledge in these areas in order to make sound nutrition decisions and practices.

What has been done
The Iowa's Dairy Story program and curriculum was established and coordinated by a three-way partnership between Iowa State University Extension and Outreach and its county Extension Councils, Northeast Iowa Community College, and the Northeast Iowa Dairy Foundation. The program consists of in school curriculums for grades 3-5 (4 pre-trip and 3 post-trip lessons), as well as an on-farm, hands-on module that combined a focus on animal health and wellbeing, modern dairy practices, environmental stewardship, sustainability, and milk and dairy product quality, safety, and nutrition information. A 2012 teacher survey of these schools was conducted to assess the program (content, communications, and presenters) as well as the 4 pre-trip and 3-post trip lessons (1-10 system; 1 = poor; 5 = average; 10 = excellent). A student survey will be conducted in 2013.

Results
* 38 schools in NE Iowa participate in the program.
* Over 12,500 students have participated in the program over the last decade.
* 1200 students and teachers were impacted by this program in 2012.
* 100% of teachers ranked content and presenters as excellent (9.83/10 and 9.92/10, respectively).
* 100% ranked communications as superb (10/10: perfect scores).

* 4 Pre-trip lesson materials and curriculum ranked very high (9.64, 9.38, 9.82, and 9.82, respectively).
* 3 Post-trip lesson materials and curriculum ranked very high (9.73, 9.73, and 9.64, respectively).
* This program has enhanced both student and teacher knowledge of dairy food production and nutrition.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems
315	Animal Welfare/Well-Being and Protection
703	Nutrition Education and Behavior
806	Youth Development

Outcome #6

1. Outcome Measures

Million dollars saved throughout the food chain by implementing Quality Management Systems through educational programs such as the Iowa Quality Grain Initiative, Pork Quality Assurance Plus® and Transport Quality Assurance®

Not Reporting on this Outcome Measure

Outcome #7

1. Outcome Measures

Number of producers who increase their awareness of the new Food Security Act and food safety regulations.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	200

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The introduction of enhanced food safety regulations in January 2011 (Food Safety Modernization Regulations) by the Food and Drug Administration has stakeholders in the food industry

scrambling to determine what is required for compliance. The new regulations, if not followed, will cost food industries thousands of dollars and potential failure. This uncertainty reaches from production to the consumer. Stakeholders are motivated by both regulatory compliance and a desire to provide a reliable and quality product to their customers as well as minimizing personal liability risk because the demand for locally grown fruit and vegetables by consumers has dramatically increased.

What has been done
FDA and USDA are partnering with extension and outreach programs throughout the U.S. to ensure that food companies are prepared for the new regulations. Three workshops were conducted by Value-Added Ag staff to review food safety regulations for growers and community leaders to address related compliance issues to the new regulations. Although food safety is incorporated into all food related programing conducted by Value-Added Ag staff, technical assistance was provided directly to one grower group to develop farm food safety plans as the first step to acquiring GAP certification.

The Extension food safety team has developed a bi-annual food safety regulation workshop series, available face-to-face and via the web, to provide extension guidance to food companies. The series has reached 44 food companies throughout the U.S. and Puerto Rico. With each workshop/webinar, handouts and guidance documents have been developed to assist food companies with understanding the new regulations. The webinar series is available for viewing at any time and will be offered again in 2013.

To address the need to keep local food growers throughout Iowa in compliance with the new regulations, a sequential, 3-level on-farm food safety pilot program designed to provide educational guidance based on the marketing venue of choice to address food safety assurance has been created by the Extension food safety team.

Results
Five of the participating farms developed an understanding and began implementation of their Farm Food Safety Plan and indicated that they could now achieve GAP certification if and when customers request it. Participants indicated an increased sense of confidence that they are providing a safe and reliable product and can continue to meet their customers' safety requirements up to and including GAP certification. Workshops survey results showed a clear need for continued resources and education on risk management tools and resources needed for all links in the food chain.

In the bi-annual food safety regulation workshop series, pre and post knowledge assessments are conducted with each workshop/webinar along with a 3-6 month follow up for the Introduction to FSMA workshop. There was a significant change in the knowledge gained about FSMA regulations after the completion of the webinar (n=22). In the 3-month follow-up assessment (n=12), participants indicated that they made procedural changes in response to the webinar and had shared the information with an average of 4 other employees within their organization. For the HACCP versus Preventive Controls Workshop and Auditor View workshops (n=3 returned), a general knowledge gained survey was provided along with 3 to 6 month individual follow-up surveys.

For the auditor workshop, all participants that returned the survey indicated that they gained significant knowledge as a result of the webinar and they would adopt the information within their companies.

Each of the grower workshops had a pre- and post-workshop knowledge change assessment

along with a 3 to 6-month behavior change assessment. The first three workshops revealed a significant change in food safety knowledge along with significant indicated behavioral changes. Some of the behavioral changes are: water and soil testing, traceability plan formation, record keeping changes, and training of seasonal personnel. These behavioral changes are significant because they represent the main factors attributable to foodborne illness outbreaks within fruits and vegetables (i.e. water, soil, personnel, and record keeping).

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems
503	Quality Maintenance in Storing and Marketing Food Products
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
723	Hazards to Human Health and Safety

Outcome #8

1. Outcome Measures

Number of adults that increase their awareness of safe home food preservation techniques.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	4356

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Interest in home food preservation has increased due to the local food movement and the economy. According to the National Center on Home Food Preservation 1 in 5 U.S. households can their own food; however, many are unaware of the food safety issues that home food preservation encompasses.

What has been done
Of the 471 adults who participated in food preservation education programming, 48 completed online food preservation lessons, 21 attended a four hour food preservation workshop, 5 had their pressure canner tested and 397 attended a general food preservation class.

Results
Of those who took part in the online food preservation lessons, there was a 53% increase in those who reported high or very high knowledge about foodborne illness, a 44% increase in those stating high or very high knowledge of safe food handling practices, and a 61% increase in those reporting high or very high knowledge of recommended canning practices after the lessons.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #9

1. Outcome Measures

Number of fruit and vegetable producers who increase their knowledge of food safety practices.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	32

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The growing demand for local and regional food offers an unprecedented market opportunity for small and midsized farms and holds great promise for increasing the access to healthy and affordable food for rural areas. However, participation in the local food system demands that farms demonstrate compliance with complex and often expensive food safety practices that have evolved in response to public health outbreaks. This requirement threatens to exclude the very farmers best suited to meet demand for local and regional food. In 2010, only three farms in the state of Iowa were GAP (good ag practices) certified.

What has been done
Northeast Iowa fruit and vegetable growers approached Iowa State University Extension & Outreach (ISUEO) for assistance in meeting food safety requirements of a large food service provider. Working with the Northeast Iowa Food & Farm Coalition (NIFF), Winneshiek County Extension received a USDA Specialty Crop Block grant of $15,700 from the Iowa Department of

Agriculture and Land Stewardship in 2011 to meet two goals. First, the grant was used to develop a training program to equip food safety "coaches" who could provide technical assistance to farmers to implements GAP and prepare them for food safety certification. Second, funding was used to create a GAP cost-share program to assist farmers with the cost of an audit. A training program was launched for "food safety coaches", which included a course or workshop on GAP and a day-long training that included visits to three farms. A consultant from Primus Labs lead the on-farm training and demonstrated the audit process on the farm. Thirteen people participated in this training with half of them being interested in becoming food safety coaches. The remaining trainees work with farmers in their professions and found the GAPs training useful for their work.

Results

Through the food safety coaching program, 21 Iowa fruit and vegetable farms received assistance in writing a food safety plan. The level of on-farm assistance varied from site visits to mock audits to prepare them for an actual GAP audit. The mock audit helped farmers identify food safety areas that were still of concern, so they could address them prior to paying for a real audit. Following the mock audit, 11 farms requested a USDA GAP audit for their farm and 100% passed. Twelve farms received financial assistance through the GAPs cost-share program. The 2012 drought decreased the number of farms originally projected to apply for cost-share funding. ISU Extension continues to support the need for GAP certification with other outreach programs. The Iowa GAP Center blog [http://blogs.extension.iastate.edu/iowagap] was created to be a source of timely information for Iowa specialty crop producers. A 3-level GAP education program has been created to assist producers with general GAP knowledge (KNOW), creation of farm safety plans (SHOW) and a mock audit exercise (GO). The tiered program will be rolled out across Iowa and will provide a venue for growers and buyers to communicate about food safety requirements other than certification.

4. Associated Knowledge Areas

KA Code	Knowledge Area
503	Quality Maintenance in Storing and Marketing Food Products
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
723	Hazards to Human Health and Safety

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 (outbreaks; food recalls)

Brief Explanation

Implementation of the Food Safety Modernization Act has raised awareness about risks from improper handling of food along the food chain. Foodborne illness outbreaks continued, although most of these did not reach levels of national outbreaks. Economic challenges and increasing numbers of new Iowans led to investigation by food entrepreneurs of ways to grow food based businesses.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Through high pass rates (92%) on the national certification exam and food preservation knowledge surveys we know our food safety programs have led to increases in knowledge, with the ultimate goal of changes in behavior. Increases in numbers of Iowans participating in food safety programming, beyond our targets, indicates there is considerable interest in improving safe food handling practices.

Iowa fruit and vegetable farms received assistance in writing a food safety plan for on-farm production and post-production processes, resulting in safe and healthy food and non-food agricultural products, while taking into account economical, social and environmental sustainability. Arranging for their GAP audits on the same day they received assistance in writing food safety plans resulted in a cost savings of up to 50%.

Key Items of Evaluation

Numbers of individuals participating in food safety certification programs, number and percent of those achieving food safety certification, and the number of those taking part in food preservation programming are key evaluation indicators for food safety programs.

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Global Food Security and Hunger

☑ Reporting on this 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
102	Soil, Plant, Water, Nutrient Relationships	8%		0%	
201	Plant Genome, Genetics, and Genetic Mechanisms	0%		10%	
202	Plant Genetic Resources	0%		3%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	0%		3%	
204	Plant Product Quality and Utility (Preharvest)	0%		3%	
205	Plant Management Systems	8%		3%	
212	Pathogens and Nematodes Affecting Plants	0%		18%	
216	Integrated Pest Management Systems	9%		2%	
301	Reproductive Performance of Animals	4%		1%	
302	Nutrient Utilization in Animals	0%		15%	
303	Genetic Improvement of Animals	4%		24%	
305	Animal Physiological Processes	0%		8%	
306	Environmental Stress in Animals	9%		1%	
311	Animal Diseases	8%		5%	
401	Structures, Facilities, and General Purpose Farm Supplies	8%		0%	
403	Waste Disposal, Recycling, and Reuse	9%		0%	
405	Drainage and Irrigation Systems and Facilities	8%		0%	
601	Economics of Agricultural Production and Farm Management	8%		1%	
602	Business Management, Finance, and Taxation	9%		1%	
603	Market Economics	8%		2%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	69.0	0.0	69.3	0.0
Actual Paid Professional	25.8	0.0	35.1	0.0
Actual Volunteer	0.0	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
2585197	0	5304246	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
2585197	0	5304246	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
8747827	0	42762261	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Continue to be a leading research institution on basic and applied questions impacting to increase Iowa agricultural production capacity. Maintain and strengthen extension education programs targeting Iowa farmers that develop their skills to evaluate and adopt emerging technologies and best management practices. Hire and retain faculty and staff that are committed to the success of Iowa agriculture. Foster integrated research/extension teams to address priorities facing Iowa farmers. Support professional develop of faculty and staff to ensure that they are competitive in external funding, respected by peers and producers and proud and productive colleagues. The severity of the drought during the entire growing season prompted multiple meetings, field days and consultations to provide farmers and others directly related to crop and livestock production with strategies to mitigate its economic effects on operations.

Faculty participate in the following associated multistate research committees: NC0007, NC0140, NC0205, NC213, NC1023, NC1029, NC1030, NC1034, NC1037, NC1038, NC1040, NC1168, NC1170, NC1171, NC1177, NC1183, NC1184, NC1191, NC1194, NC1195, NC1197, NE1020, NE1028, NE1034, NE1042, NRSP7, NRSP8, NRSP9, S0294, S1025, S1027, S1032, S1033, S1039, S1043, W1009, W1173, W2168, W2171, and others.

2. Brief description of the target audience

Agricultural producers in Iowa and the agribusinesses and agencies that interact with them. Policy makers that impact agriculture.

3. How was eXtension used?

Cooperatives Community of Practice (CoP) on eXtension: Iowa led the development of the multi-state Cooperatives CoP which successfully launched a new eXtension website in October 2010, www.

extension.org/cooperatives . The site features information, news, events, and frequently asked questions about cooperative principles, business development, finance, board strategy, marketing and youth. An Ask-an-Expert tool allows information users to ask specific questions about cooperatives. New sector specific content has begun to take shape in 2011, including food cooperatives, farm supply and grain marketing cooperatives. A youth content team is working to develop exciting multi-media content to help young people learn about cooperative principals and career opportunities. The team conducted a Dot Survey of 1,034 FFA members at the National FFA Convention to help understand the needs and interests of the target audience. The Community of Practice is a collaborative effort led by Extension professionals and university professors from IA, ND, OK, TX, with support from industry partners and USDA Rural Development. The Cooperatives CoP is part of the National eXtension Initiative which 76 land grant universities contribute to.

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	85000	3736000	0	0

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

Patent Applications Submitted

Year:	2012
Actual:	15

Patents listed
Use of Plant Antibodies in Fighting Pathogen Toxin-Induced Plant Diseases such as SDS in Soybean: Plant Anti-FvTox1 Antibody in Enhancing Foliar Sudden Death Syndrome Resistance in Soybean. Inventors: Bhattacharyya, Madan; Brar, Hargeet Kaur. Filed: 10/25/2011.

Mesoporous Silica Nanoparticles Suitable for Co-delivery: Methods for the Co-Delivery of Protein and DNA into Plant Cells Using Mesoporous Silica Nanoparticle. Inventors: Martin-Ortigosa, Susana; Trewyn, Brian; Valenstein, Justin; Wang, Kan. Filed: 12/06/2011.

Assay for Measuring Rootworm Resistance: Assay to Measure Rootworm Resistance to Transgenic Maize. Inventor: Gassmann, Aaron. Filed: 12/08/2011.

Novel Vegetable Protein Fractionization Process and Compositions: A Novel Process to Fractionate Soybean Protein. Inventors: Deak, Nicolas; Johnson, Lawrence. Filed: 12/09/2011. Patent #8,142,832 issued 3/27/12.

Molecular Cloning of brown-midrib2 (bm2) Gene: Molecular Cloning of brown-midrib2 (bm2) Gene. Inventors: Schnable, Patrick; Tang, Ho Man (Holly); Liu, Sanzhen; Wu (2011), Wei. Filed: 1/30/2012.

TAL Effector-Mediated DNA Modification: Transcription Activator-Like (TAL) Effector Nucleases. (1) Inventors: Zhang, Feng; Bogdanove, Adam; Voytas, Daniel. Filed: 3/22/2012.

TAL Effector-Mediated DNA Modification: Transcription Activator-Like (TAL) Effector Nucleases. (2) Inventors: Zhang, Feng; Bogdanove, Adam; Voytas, Daniel. Filed: 3/22/2012.

TAL Effector-Mediated DNA Modification: Transcription Activator-Like (TAL) Effector Nucleases. (3) Inventors: Zhang, Feng; Bogdanove, Adam; Voytas, Daniel. Filed: 3/22/2012.

Modification of Plants for FvTox1-interacting Protein Carbonic Anhydrase to Enhance Foliar SDS Disease Resistance and Improve Yield: Modification of Soybean Plants for the FvTox1-interacting Protein Carbonic Anhydrase to Enhance Foliar Sudden Death Syndrome Disease Resistance. Inventors: Bhattacharyya, Madan; Pudake, Ramesh. Filed: 4/27/2012.

miRNA396 and Growth Regulating Factors for Cyst Nematodes Tolerance in Plants: miRNA396 as a Tool to Control Cyst Nematodes. Inventors: Baum, Thomas; Hewezi, Tarek Abdel Fattah. Filed: 4/27/2012.

Arabidopsis Nonhost Resistance Gene(s) and Use thereof to Engineer Disease Resistant Plants: Identification and Application Arabidopsis Nonhost Resistance Gene(s) in Creating Disease Resistant Soybean Cultivars. Inventors: Sumit, Rishi; Bhattacharyya, Madan. Filed: 5/24/2012.

Aphicidal Toxins and Methods: Rational Design of Aphicidal Bt Toxins Using Aphid Gut Binding Peptides. Inventors: Bonning, Bryony; Liu, Sijun; Li, Huarong. Filed: 6/8/2012.

Identification of Protective Antigenic Determinants of Porcine Reproductive and Respiratory Syndrome Virus and Uses Thereof: Identification of the Protective Antigenic Determinants of the Porcine Reproductive Respiratory Syndrome Virus (PRRSV) which Account for Immunity to all Virulent Strains of the Virus. Inventors: Erdman, Matthew; Harris, Delbert (Hank). Filed: 6/26/2012. Patnet #8,241,847 issued 8/14/12.

Improving Activity of Corn Gluten Meal as an Herbicide Using Dry Acid Treatment: Improving the Efficacy of Corn Gluten Meal as an Herbicide Using Dry Acid Treatment. Inventors: Christians, Nick; Hippen,

Renate. Filed: 7/20/2012.

Materials and Methods for Using an Acyl-Acyl Carrier Protein Thioesterase and Mutants and Chimeras Thereof in Fatty Acid Synthesis: The Functional Characterization of Novel Thioesterases for the Production of Functionalized Carboxylic Acids. Inventors: Nikolau, Basil; Yandeau-Nelson, Marna; Jing, Fuyuan. Filed: 7/25/2012.

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	21	120	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of producers and agribusiness professionals who attend face-to-face educational activities, including individual consultations.

Year	Actual
2012	58000

Output #2

Output Measure

- Number of producers and agribusiness professionals who subscribe to newsletters and access web-based resources.

Year	Actual
2012	5428000

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of livestock and crop producers who adopt management and production systems and practices to improve cost control and market access.
2	Number of intergenerational transfers or new farm businesses who learn strategies on how to successfully transition farming operations within their family, or understand the risks and opportunities connected to starting a farming enterprise.
3	Number of crop and livestock producers who increase their knowledge on marketing, insurance or USDA program alternatives that are consistent with the risk bearing ability of their businesses and their personal preferences for managing risk.
4	Number of producers and other entrepreneurs who increase their awareness of alternative enterprises or value retained opportunities by either attending an educational program or downloading educational materials from a website.
5	Number of clients who participate in horticulture programs on production methods, market outlets, Best Management Practices, and IPM techniques.
6	Number of producers and service providers who learn about crop production and protection strategies that focus on improving agronomic practices.
7	Number of livestock and crop producers who adopt management and production systems and practices to improve cost control and market access. (continued)
8	Number of businesses that learn technical assistance in accessing capital for economic development of new food-based business startups.
9	Number of dairy producers and agribusiness professionals who learn management and production practices to improve cost control and profitability.
10	Number of producers and service providers who learn about crop production and protection strategies that can help them manage crops and natural resources during the drought of 2012.

Outcome #1

1. Outcome Measures

Number of livestock and crop producers who adopt management and production systems and practices to improve cost control and market access.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1400

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

A. Most pork producers do not have adequate expertise or training for effectively managing their ventilation systems relative to swine well-being and comfort to provide a healthy air environment and conserve energy. A healthy air environment is important for pig performance and for the competitive position of Iowa pork producers. Both pork producers and society are impacted. Pork production is a foundation wealth generating economic engine in Iowa supporting thousands of jobs both directly and indirectly. Saving energy costs is important in the effort to reduce greenhouse gases. This program keeps energy prices affordable and reduces emissions, thus lowering the carbon footprint.

B. Agriculture production methods are an important consideration for a growing number of consumers and producers looking for alternatives to conventional agricultural production systems. Helping niche pork producers become more efficient is beneficial for both the producer and the consumer that desires a food choice. Producing pork from these types of farms is important economically for small family-oriented pork operations. Previous work with niche pork producers has shown challenges with reproduction, feed efficiency, growing piglet mortality, health issues, pre-weaning survival and nutrient management. These issues, if not addressed, will reduce income, increase carbon footprint, reduce competitive position and hinder robust local farm economic development.

C. Increased grain demand for feed and ethanol has increased economic incentives for Iowa farmers to convert marginal land from pasture or forage to crop production. According to the USDA Census of Agriculture, nearly 20% of Iowa pastureland was converted to cropland from 2002 to 2007. High grain prices in the period 2008 to 2012 have continued or accelerated this trend. Improving productivity of pastures through better management allows increased beef production per acre of land. Improved productivity in turn incentivizes marginal land to remain in forage production. Profitable forage production on marginal land improves economic activity in rural Iowa, reduces soil erosion and improves water quality.

What has been done

A. A multistate, interdisciplinary team (South Dakota, Minnesota, Nebraska and Iowa) developed a training program on ventilation system management that producers can understand and adopt into their operations. Pork producer associations in those states have seen the value of the workshop and have helped to fund the cost. A pre-test survey shows a high level of misunderstanding regarding ventilation systems and related animal husbandry practices. The workshop incorporated a hands-on method that allowed participants to learn, not only from the specialists, but also from putting the newly acquired information into practice. Specialists worked together to build a model swine facility on wheels that contains all the equipment, inlets, and controllers needed to let producers practice ventilation principles. In Iowa a huge effort was made to use this training with pork producers. Fifteen workshops were held reaching 254 pork production operations and/or systems. 189 post-workshop surveys were completed; those completing the survey had influence over 10,700,671 market hogs, representing a third of Iowa's swine industry.

B. Virtual farm tours of successful niche swine producers were developed and originally watched by 75 niche farmers. The original tours were filmed and photographed for 'anytime viewing' on the Internet to increase availability. To date, these tours have been watched more than 2300 times by niche swine producers and others interested in this subject. Swine niche management techniques have been taught at 18 regional and state-wide niche workshops, reaching 478 niche pork producers. A feeding research trial has been started on an Iowa State University research farm to analyze the growth curve of niche pigs to be used in the future for formulating more cost effective niche pig production diets.

C. During the 5-year period 2007 to 2011, over 121 pasture walks, field days or other grazing programs were conducted across Iowa. These programs were attended by more than 1100 participants. The objectives of these programs were to increase attendees' knowledge of grazing and pasture management techniques, increase adoption of practices that improve forage production efficiency and improve forage utilization to reduce total feed costs for the enterprise. As a result of these programs, staff initiated the Iowa Certified Grazier Program in 2012, targeting advanced grazing managers to pilot a new curriculum for an advanced grazing school, and grazing mentor program.

Results

A. After the ventilation system workshop, survey results indicated that participants had increased their confidence to make the proper changes to their system. Impact from this program was carefully measured. First, a post-meeting evaluation was completed by 189 pork production operators. A pre-test and post-test measured knowledge gained and 75% of the respondents (n=189) indicated a major increase in knowledge. Participants also indicated the new knowledge they would most likely use in their operations, listed all the changes they planned to make because of the information presented in the workshop, and estimated the dollar value gained from improving their ventilation system management. About half of the participants estimated a value change in energy savings and improved farm air quality for their operation. The total benefit for all participants (189) was reported at $411,600 in production improvements and energy cost savings. Out of 189 respondents, 95 indicated they would make changes. Finally, a 6-month follow-up survey was sent to a sample of the participants and returned by 22 participants. It verified that the changes planned and reported on the post-workshop survey were carried out in those operations.

B. An online survey was sent to viewers of the virtual niche farm tour. Thirty-two viewers responded with 16 pages of comments about how they used the information to improve their businesses. 95% found the virtual tour effective to highly effective. A few comments from viewers:

* The entire virtual farm tours project was a complete success in my book - very helpful to our farmers, staff, and interested parties in the industry.
* All the sessions were very interesting to me and I learned something new from all of them. I

think that whatever works best for you is what you need to do. I have hoop buildings and want to use them for farrowing and do away with farrowing crates.
* While the research done and presented by the ISU staff was useful, it is also usually more accessible through bulletins or on the web. As a farmer, that makes the direct contact with other farmers who I may never meet, let alone step foot on their farms, even more important and probably more useful.
* This was such a convenient, accessible way to gather a huge amount of information from farmers that have knowledge and experience raising hogs using some alternative practices. The slides were great visuals that enhanced what was talked about, and the ability of the attendees to ask questions and interact with the presenters made it almost like being in the same room as the presenters.
C. Surveys were mailed to 1100 participants of grazing educational programs. The 154 participants that returned surveys had attended an average of 3.25 of these educational events. The participants managed an average of 129 cattle and 235 acres. As a result of the knowledge gained, 15% of participants subdivided pastures to rotationally graze, 12% increased the number of paddocks, 9% improved pasture fertility, 15% frost seeded legumes, 13% body condition scored cows to monitor performance and 15% modified their watering system. 70% of the respondents improved beef production per acre by at least 20% and the median economic value of this programming was more than $1,000 per operation. The impact of this program resulted in $1.1M in added economic activity to rural communities and improved the productivity equivalent to 64,000 acres, or the forage to support more than 35,000 beef cows.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
303	Genetic Improvement of Animals
305	Animal Physiological Processes
306	Environmental Stress in Animals
311	Animal Diseases
401	Structures, Facilities, and General Purpose Farm Supplies
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation
603	Market Economics

Outcome #2

1. Outcome Measures

Number of intergenerational transfers or new farm businesses who learn strategies on how to successfully transition farming operations within their family, or understand the risks and opportunities connected to starting a farming enterprise.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	505

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
A. The number of farmers in Iowa is continually decreasing. The decrease in farm numbers impacts food production and life in rural America in general. Land values and rents are at record levels this year, making the passing of farms to the next generation exceedingly difficult. Care must be taken to ensure adequate income for both retiring and beginning farmers.
B. Access to capital and or land ownership is a huge limitation for beginning and or non-traditional farmers from entering into production agriculture and agricultural processing. Developing strategies to access capital for new start-up businesses or transferring land and farm operations from generation to generation is critical to a smooth transition between ownership.
C. Surveys indicate that more and more women are assuming farm management roles in existing operations or have become land owners through purchases, inheritance and seeking ways to better manage and sustain the profitability of these farming operations. Technical assistance, training and mentoring are critical resources in helping these new managers be successful.

What has been done
A. 1) A series of estate planning workshops was held throughout Iowa, designed to help people begin the process of developing an estate plan for their farms. Five case studies were used to illustrate typical situations and stimulate discussion during the program. The Ag Decision Maker served as a clearinghouse for information because it provides for longevity and continued access to resources. Half of the publications and tools were added in February 2012; the balance added in March 2012. In total, sixteen publications were posted to the Whole Farm Decisions - Transition & Estate Planning section. Total participation at the thirteen workshop sites was 395, with 349 participants completing demographics and 377 completing end-of-meeting evaluations. Participants owned land in 80 of Iowa's 99 counties, Minnesota, Nebraska, and Wisconsin. 2) In addition, a series of farm transition seminars focused on transitioning the farm from one generation to the next. Areas such as conflict resolution, goal setting and other salient activities to a successful transition were covered. 3) Finally, individual consultations were provided to help landowners ascertain their options for transitioning the farm to the next generation.
B. Five companies received direct Technical Assistance to launch or expand their agricultural businesses. This assistance came in the form of either feasibility studies or market analysis report. In conjunction with an ISU Extension Farm Management Specialist, Value-Added Ag staff helped train and prepare educational leaders to conduct 3 Annie's farm management programs fostering improved problem solving, record keeping and decision making skills for farm women with an emphasis on estate planning, retirement and succession planning.
C. In conjunction with ISU Extension Farm Management Specialist - VAA staff presented at 3

"Managing for Today and Tomorrow" workshops fostering improved problem solving, record keeping and decision making skills for farm women with an emphasis on estate planning, retirement and succession planning. Forty-five women attended one of the 3 farm transition workshops.

Results

A. The estate planning workshops focused on increasing understanding of the basics of estate planning and farm succession planning. Five case studies were developed to illustrate options and expected outcomes. Aspects that required an attorney were covered. 52% of the participants reported having a better understanding of who should be a part of the estate planning team. 95% reported knowing what information they needed for visiting with their attorney. 84% said they were likely to revise their wills based on the knowledge gained. 81% reported they learned how to choose an attorney and develop an estate plan. Eighty-six percent reported finding the case studies useful to very useful. Participants considered Iowa Inheritance and Federal Estate taxes to determine where uncertainty exists regarding estate taxes. The Integrated Balance Sheet exercise helped participants explore the role of tax implications in the decision making process.
B. The technical assistance provided through feasibility studies resulted in agriculture processing businesses accessing capital to make $32M additional investments in businesses in Iowa that support $7.2M in new or retained payroll. Forty-five participants attended 3 farm transition workshops. Survey results from 74 attendees of Annie's workshops resulted in improved awareness and a request for additional in-depth training in estate planning (54%), 61% developed new support networks and identified new professionals to support their farm management tasks.
C. Survey results showed improved awareness and a request for additional in-depth training in the following areas: 54% - estate planning, 61% developed new support networks and identified new professionals to support their farm management tasks. Comments had common themes: 1) My very first goal is to establish regular and formal farm business meetings at a neutral location with the operators of our family farm; 2) I will initiate and implement estate planning with siblings to discuss and choose from the options that are best for us; 3) Do a balance sheet on needed income and projected expenses for the next year for the short term and do a long term one for the next five years.

4. Associated Knowledge Areas

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

Outcome #3

1. Outcome Measures

Number of crop and livestock producers who increase their knowledge on marketing, insurance or USDA program alternatives that are consistent with the risk bearing ability of their businesses and their personal preferences for managing risk.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	160

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Successful producers and business managers are constantly refining their management skill set. Resources for learning new risk management strategies are often available but not always easily accessible or appropriate for non-traditional or underserved producers and business owners.

What has been done
Value-Added Ag (VAA) staff assisted in the training and preparation of educational leaders that conducted 9 Annie's farm management programs in Iowa. These sessions fostered or improved problem solving, record keeping and decision-making skills for farm women. 160 participants attended one of 9 risk management program sessions held across Iowa. Each session consisted of 6 sessions for a total of 54 individual class meetings.

Results
Participants learned strategies that they plan to implement on their own farms. Survey results from 74 attendees of Annie's workshops resulted in improved awareness and a request for additional in-depth training in the following areas: 42% grain marketing and production costs, 24% on livestock marketing, 36% on risk management. Comments had common themes: 1) Do a balance sheet on needed income and projected expenses for the next year for the short term, and do a long term one for the next five years; 2) Plan more and regular whole farm meetings.

4. Associated Knowledge Areas

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

Outcome #4

1. Outcome Measures

Number of producers and other entrepreneurs who increase their awareness of alternative enterprises or value retained opportunities by either attending an educational program or downloading educational materials from a website.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	3260

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

A. Producers and processors of agricultural products are constantly looking for ways to improve the profitability of their operations. The those cases where expanding operations is not an option, identifying ways to diversify or add value to existing enterprises is often the logical option, and one that significantly improves rural economies. Access to current reliable and relevant resources and information about such options is a critical need and one that is provided through the web tools provided by the Value-Added Ag (VAA) program at AgMRC.org.

B. Local Food production and procurement continue to be an area of great interest for both producers and consumer. One of the major obstacles limiting local food production in Iowa is limited availability due to seasonality. Producers have expressed great interest in expanding their production potential through the use of High Tunnels (HT) to extend their growing season and improve production quality and quantity.

What has been done

A. VAA staff coordinate the efforts of the USDA-funded AgMRC.org website and work with a national network of value-added specialists to provide a robust and comprehensive web-based library of value-added agriculture resources and research.

B. Staff developed two Extension publications 1) rainwater catchment, and 2) vegetable production budgets for HT. Staff also conducted 7 one-day workshops introducing HT production to growers across the state. These day long workshops reached 158 current or future growers. Four additional conference presentations focused on high tunnel production introduced 100 additional growers to the production methodology.

Results

A. The project has become a national resource for value-added production processing and research information with over 120,000 unique visits per month accessing information through downloads, subscriptions to renewable fuels newsletters, 19 publication articles, and 14 radio broadcasts. Access to this information provides the users the knowledge and awareness to help in decision-making for their agricultural enterprises.
B. A High Tunnel publication has been downloaded more than 150 times; 86 growers attended workshops on the topic. These attendees provided feedback and requests for additional training on crop specific production methodology. Portions of these workshops were also presented as breakout sessions at numerous local foods workshops across the state. Survey results show that as a result of these workshops 60% of attendees plan to increase their fruit and vegetable production and marketing.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
306	Environmental Stress in Animals
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation
603	Market Economics

Outcome #5

1. Outcome Measures

Number of clients who participate in horticulture programs on production methods, market outlets, Best Management Practices, and IPM techniques.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	25542

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Citizens of Iowa, farmers and agribusiness professionals benefit from Iowa State University certifying applicators to ensure responsible storage, handling, transport and application of pesticides across Iowa to maintain safe environmental conditions and ensure runoff from

cultivated fields does not impair water quality.

What has been done
A total of 15,757 private applicators and 9,785 commercial applicators were trained and certified on pesticide safety topics. Commercial topics included effects of pesticides on groundwater and other non-target sites; phytotoxicity; equipment calibration, safe application techniques and drift; pesticide labels; pesticide stewardship; and integrated pest management. Private topics included a technology update, exploring labels, EPA new container/containment rule, Goss's Wilt & Northern Corn Leaf Blight, Palmer Amaranth and other pigweeds, herbicide-resistant weeds, and a corn rootworm resistance management seminar.

Results
As a result of certification training, 15,757 private applicators are storing, handling, transporting and applying pesticides in a safe manner, which benefits the citizens of Iowa and the environment. Also, 9,785 commercial applicators are practicing similar safety techniques. Certification directly results in jobs retained or created, so 9,785 commercial applicators were able to obtain jobs or continue working at their current pesticide application jobs. At an average salary of $45,000 per year, this equates to new and retained employment worth $440 million, a tremendous economic benefit to Iowa. Specific survey results of the programs are included in the Evaluation section.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
201	Plant Genome, Genetics, and Genetic Mechanisms
202	Plant Genetic Resources
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
212	Pathogens and Nematodes Affecting Plants
216	Integrated Pest Management Systems
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation
603	Market Economics

Outcome #6

1. Outcome Measures

Number of producers and service providers who learn about crop production and protection strategies that focus on improving agronomic practices.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	2049

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Farmers need and seek unbiased information on crop production and consider Iowa State University Extension the primary source of such information. Research-based results helps producers and agribusiness professionals make timely and economic management decisions.

What has been done
Meetings are effective ways for Extension to present timely crop production research results farmers and agribusiness professionals can apply to their operations. The Crop Advantage Series (CAS) is an example of the over 300 total meetings Iowa State University has led or participated in by providing expertise. Attendance at the Crop Advantage Series was 2049 in 2012. Information delivered at the Crop Advantage Series reaches attendees who represent an estimated 23 percent of Iowa's 24.8 million acres of farmland.

Results
On average, CAS attendees thought the information presented in the program would improve profits by $8.56 per acre, an average value per attendee of more than $24,000 and a total value of over more than $49 million.

* 91% of attendees indicated that the ISU information/training enabled them to better identify Goss's Wilt.
* 60% planned on rotating problem fields to a different crop based on ISU information/recommendations.
* 66% selected Goss's Wilt resistant hybrids to plant in high risk fields based on ISU information.
* 29% have diversified overall weed management strategies to reduce the risk of weed resistance.
* 29% have diversified herbicide modes of action to reduce the risk of weed resistance.
* 29% have agreed to reevaluate their weed management programs to reduce the risk of weed resistance.
* Only 1% didn't recognize that resistance was a potential risk to their farm.
* 93% agreed with ISU's recommendations that weed management is a long term investment rather than a short term program and cost.

Farmers benefited by implementing these recommendations through reduced risk, reduced input costs and increased production. The citizens of Iowa benefited by a reduction in pesticide applications to the environment and increased farm profitability which builds the economic activity

of the state.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
201	Plant Genome, Genetics, and Genetic Mechanisms
202	Plant Genetic Resources
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
212	Pathogens and Nematodes Affecting Plants
216	Integrated Pest Management Systems
403	Waste Disposal, Recycling, and Reuse
405	Drainage and Irrigation Systems and Facilities
601	Economics of Agricultural Production and Farm Management

Outcome #7

1. Outcome Measures

Number of livestock and crop producers who adopt management and production systems and practices to improve cost control and market access. (continued)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	2870

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
D. Beef cow numbers in the U.S. are at the lowest since the 1950s. This is occurring at a time when demand for beef exports is increasing and sustained profitability is returning the cow-calf sector. Delayed by a national drought, the rebuilding of the beef herd in Iowa appeared to be initiated in January 2012, as evidenced by an increase in beef heifer retention of 20,000 head. Due to the reproductive biology of beef cows, the rebuilding of beef numbers could be a 4-5 year

process or more. Successful implementation of technologies such as estrus synchronization, artificial insemination and ultrasound pregnancy examination can improve reproductive success and lifetime productivity of beef heifers while controlling the costs of developing these heifers.
E. Land costs continue to increase substantially. Land values increased 64% and land rents increased 37% over the past 3 years. Such increases add to uncertainty and they make entry into and/or expansion in agriculture production extremely difficult. How farmers control these costs will determine their profitability.
F. Many dairy producers (>40% in Iowa) are milking in stall barns or antiquated milking parlors which are achieving only 25 cows milked per person per hour. This not only creates a labor and financial drain, but also impacts human health and performance. In comparison, other producers are achieving 75 cows milked per person per hour in well-designed (efficiency and ergonomically) milking parlors (low cost parlors and automatic milking systems). This difference represents a person being three times more efficient in terms of labor which translates into significant differences in farm profitability between these milking systems. An exceptionally useful tool for producers contemplating milking system decisions would be a database of costs, benefits, and economic ranges of income and expense variables and responses by producers who have already implemented decisions on building low cost parlors or automatic milking systems.

What has been done
D. The Iowa Beef Center of ISUEO and the Iowa Cattlemen's Association hosted 10 Heifer Development Clinics across Iowa in January, February and March of 2012. These clinics brought information on the latest technologies in beef reproduction, genetics and nutrition to beef producers across Iowa. Reproductive technologies featured include estrus synchronization and fixed time artificial insemination, meeting nutritional needs, artificial insemination and semen handling, and use of ultrasound for early detection (<30 days) of pregnancy. Local veterinarians demonstrated ultrasound pregnancy detection in the clinics. Breeding company representatives discussed proper frozen semen handling.
E. Extension Farm Management has addressed the increasing land costs from several perspectives. A series of leasing meetings were held throughout Iowa; a major conference held for professional farm managers and land appraisers; 3 statewide surveys were conducted on land values, land ownership and cash rental rates.
F. ISUEO Dairy Team initiated, completed, and summarized surveys in 2012 of producers they had worked with who had already installed a low cost parlor (LCP) or automatic milking system (AMS) on their farm. Surveys were completed by 90% of LCP (18/20 surveyed) and 8 AMS (represents 50% of all AMS farms since this is a very recent technology) producers. Summarized data have been published in extension publications and disseminated state and nationwide through extension networks, and published in national dairy magazines.

Results
D. Participants that completed an after-meeting evaluation managed an average of 103 cows and retained 20 heifers each year. Over 90% of the attendees had improved understanding of technologies available to develop heifers, management practices to improve conception and longevity and keys to successful heifer development. More than 95% of attendees indicated that they intended to implement body condition scoring, target weight nutrition, use of estimated progeny differences for sire selection and establishment of a written health protocol. More than 80% plan to use estrus synchronization and ultrasound pregnancy diagnosis. The majority of attendees plan to retain heifers in the future and over 20% plan to increase the number retained. At the time of the series, attendees managed over 61,800 cows and retained 12,000 heifers each year.
E. 61 of 265 attendees at the Soil Management and Land Valuation Conference reported over a $1,000 benefit to their businesses from attending the conference. This is the longest running conference at Iowa State University. Evaluations of the leasing meetings were reported last year.

The cash rent and land value surveys are the most frequently downloaded surveys.
F. Herds that built a LCP on average are milking 55% more cows while decreasing milking labor 28% (2.44 hrs/day). LCP milking labor costs decreased from $1.83/cwt milk to $0.95/cwt (0.98/cow/day to $0.50/day) Herds building a LCP also saw a 32% and 17% decrease in manure handling and feeding labor, respectively mainly associated with housing changes accompanying the LCP installation. LCP producers saw a 15% increase in milk production (8 lbs), 23% decrease in SCC (improved milk quality), and a 4% reduction in culling rate, equating to >$80,000 income increase/year. 100% of LCP producers agreed the system improved cash flow, profitability, and was a good personal and financial investment. 100 % of LCP producers stated improved quality of life (valued at $23,818/year). Herds that built an AMS are milking 12% more cows while decreasing milking labor 75%. AMS milking labor costs decreased from $1.93/cwt milk to $0.35/cwt ($1.34/cow/day to $0.27/day). AMS producers decreased heat detection labor 70% (used automatic activity monitoring), spent 40 minutes more/day on records evaluation, and 40 minutes/day less on employee oversight. AMS producers saw a 12% increase in milk production (9 lbs), 36% decrease in SCC (improved milk quality), 6% improvement in pregnancy rate, and a 1% reduction in culling rate, equating to >$150,000 income increase/year. 100% of AMS producers agreed the system improved cash flow, profitability, and was a good personal and financial investment. 100% of AMS producers stated improved quality of life (valued at $22,500/year). These surveys databases provide an excellent tool for current producers to evaluate costs, benefits, risks, and variability when contemplating these milking systems

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
303	Genetic Improvement of Animals
305	Animal Physiological Processes
306	Environmental Stress in Animals
311	Animal Diseases
401	Structures, Facilities, and General Purpose Farm Supplies
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation
603	Market Economics

Outcome #8

1. Outcome Measures

Number of businesses that learn technical assistance in accessing capital for economic development of new food-based business startups.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	5

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Ignorance of and access to capital and or land ownership is a huge limitation for beginning and/or non-traditional farmers entering into production agriculture and agricultural processing. Developing strategies to access capital for new start-up businesses or transferring land and farm operations from generation to generation is critical for a smooth transition between ownership.

What has been done
Five companies received direct technical assistance to launch or expand their agricultural businesses. This assistance came in the form of either feasibility studies or market analysis reports.

Results
The technical assistance provided these companies via feasibility studies resulted in agriculture processing businesses accessing capital to make $32M additional investments in businesses in Iowa that support $7.2M in new or retained payroll.

4. Associated Knowledge Areas

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

Outcome #9

1. Outcome Measures

Number of dairy producers and agribusiness professionals who learn management and production practices to improve cost control and profitability.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	258

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Dairy producers and their associated agribusiness consultants are constantly evaluating management practices and strategies, as well as new technologies and their effects on increasing dairy profitability and sustainability. They are very interested in a trusted, non-biased source of information as well as tools to better help them evaluate strategies and make and implement cost effective decisions and changes.

What has been done
ISUEO Dairy Team conducted a series of 7 regional dairy days (NE and SE Iowa) that focused on 6 different major areas and technologies that affect dairy profitability. Workshops included presentations and hands-on demonstrations, and a survey was conducted to assess participant understanding and knowledge gain (1-10 scoring of knowledge level with 10 being highest).

Results
* 258 participants (223 dairy producers (14% of total Iowa dairy industry)and 35 agribusiness) engaged in the program and 124 post workshop surveys were completed.
* 100% responded the meeting had high educational value.
* 40% of participants put an educational economic value on the program (~$300 per person).
* Cover crop presentation resulted in a 2.54 increased knowledge score or 57% knowledge increase.
* Calf housing presentation resulted in a 2.58 increased knowledge score or 53% knowledge increase.
* Dairy economic outlook presentation resulted in a 2.50 increased knowledge score or 67% knowledge increase.
* Automatic milking systems presentation resulted in a 3.34 increased knowledge score or 94% knowledge increase.
* Dairy/beef quality assurance presentation resulted in a 2.40 increased knowledge score or 54% knowledge increase.
* Precision feeding presentation resulted in a 2.63 increased knowledge score or 55% knowledge increase.
* Five producers reported making changes based on previous dairy day with an average value of $9,020 in increased profitability.
* Dairy Days improved decision making capabilities and profitability of participants.

4. Associated Knowledge Areas

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

205	Plant Management Systems
305	Animal Physiological Processes
401	Structures, Facilities, and General Purpose Farm Supplies
601	Economics of Agricultural Production and Farm Management

Outcome #10

1. Outcome Measures

Number of producers and service providers who learn about crop production and protection strategies that can help them manage crops and natural resources during the drought of 2012.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	490179

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Crop production and protection is always subject to a wide variety of variables. Changes in weather patterns rapidly impact the choice of crops grown, rotations, management timing, and pests encountered. Growers, agribusiness professionals and extension specialists must be ready to address issues that arise from these rapid changes in a timely manner to avoid adverse economic situations. The drought of 2012 was a perfect example of Extension's ability to accurately assess the situation and proactively provide information, research results and resources for farmers and service providers to help manage their operations in the face of an extreme weather disaster.

What has been done
Two rapid response drought webinars are an example of taking expert information to a statewide audience through live, interactive web meetings and also offer the option of viewing the archived meetings at their own convenience. In addition, dozens of live regional drought meetings were held in cooperation with industry partners, with thousands of farmers attending. ISU specialists also reached hundreds of thousands of clients through print and web based agricultural media, providing agronomic information to help make integrated crop management decisions for coping with the drought.

Results

ANR Extension specialists at Iowa State University conducted a drought educational webinar on August 21 that was hosted at 51 sites across Iowa. Participants (N = 179) were asked to evaluate the sessions and to identify information helpful to their farming operations that were impacted by the drought. There was a significant increase in participants' knowledge about grain quality concerns, feed implications, harvest considerations, fall fertility decisions, tillage, cover crops and residue as a result of attending these webinars (0.05 level of significance). In addition, participants in the drought webinar reported having 'low to some' knowledge on these topics before attending the webinar, which increased to 'some to high'. A majority of participants (70%) were 'somewhat to very likely' to talk to their grain buyers before harvest to understand the aflatoxin policy. More than 70% of respondents indicated that they plan to check and clean engine compartments more frequently, conduct soil tests and adjust rates before applying fertilizer. However, 55% indicated that they 'would not or not likely' to plant cover crops to conserve soil moisture. Also, 32% indicated that they would not test for nitrates in their silage before feeding their livestock. Participants were mixed in their perceptions on the economic impact of drought webinars on their farm operation as evidenced by the absence of any particular trend in the responses. Fifteen per cent indicated a likely economic impact from the knowledge they gained during the webinars of over $50,000, followed by $10,001-25,000 (11%), $501-1,000 (10%), $1,001-5,000 (10%), $5,001-10,000 (10%) and $25,001-50,000 (9%). Around 20% indicated that the information would affect 0-500 animals or acres, and a further 20% indicated it would affect more than 10,000 animals or acres. Participants identified teaching tools such as webinars (32%) and emails (32%) as most useful in receiving drought related farming information. They identified sessions focused on fall applied nitrogen (31%), soil testing (27%) and financial management (25%) as future topics of interest. A total of 127 participants completed the evaluations (response rate 71%). The majority of participants were farmers (60%), followed by land owners (24%), and agribusinesses (23%).

A Wallaces' Farmer article on fertility management post drought/planning for 2013 crop reached 50,000 web readers and 50,000 hard copy readers. A Corn/Soybean Digest article on soil management/conservation following the drought reached 250,000 readers. The Iowa Farmer Today blog entries on drought issues, including green stem syndrome in soybean, post-drought soil management, hybrid selections based on drought dynamics, pest management under drought conditions, fertility impacts of the drought and many other agronomic issues reached 90,000 print subscribers and 50,000 web readers. Harvest/fire management/prevention information was shared on regional radio, local papers, the Wallaces' Farmer website, Iowa Farmer Today web and print, reaching well over 100,000 clients.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
212	Pathogens and Nematodes Affecting Plants
216	Integrated Pest Management Systems
601	Economics of Agricultural Production and Farm Management

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Competing Public priorities

Brief Explanation

Swine field specialists and the Iowa Pork Industry Center (IPIC) faculty made significant efforts to address swine producer economic sustainability and business planning, which has been extremely difficult for pork producers because of consequences resulting from a severe drought in 2012. Fuel costs and a competitive environment for corn by competing industries including ethanol use, drove up feed costs to a level where most swine producers have been forced into a negative cash flow. Some producers have also faced water supply shortages and rural water issues. Extension organized a series of meetings around Iowa to discuss possible interventions to improve cash flow, adoption of more efficient production practices, downsizing herds, reducing feed wastage, aggressive culling practices, and improving health.

A new farm bill was not passed. This meant that new material was not available to develop and/or present. Extension specialists discussed options being considered by Congress, but this proved to be a fruitless endeavor after it became apparent that it would be difficult to pass a new farm bill.

The 2012 drought meant an increase in the number of crop insurance meetings but at the time it wasn't possible to change the decision whether or not to buy insurance or which level would be most profitable. This will change for the coming year and risk management will become a more important feature of ISU Extension programming.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

It has been difficult to evaluate the results of the drought aftermath efforts Extension educational programs provided pork producers. Many of the suggested interventions are not ideal for producers and do not return them to profitability. Farmers are generally optimistic about the future and often don't adopt best practices until it is late in the game. A third drought year will certainly drive feed costs significantly higher and fuel costs are expected to escalate in 2013 due to additional loss of refineries. Further, the continued drought severity may lead to water shortages and possibly widespread liquidation if it continues through the next crop cycle. Water tables are extremely low now and a further loss could be a state disaster.

Private Pesticide Applicator Training Program: A post-training survey indicated the program was well received and valuable to the participants. Overall, 96% of respondents rated the program as good-excellent; 96% agreed that the information presented was useful for their farm operations. To determine if the program had an impact on the participants and their work methods, the evaluation examined specific areas to assess

behavioral changes towards safer pesticide use practices. As a result of training, 22% of participants said they would read pesticide labels carefully every time they used them (76% reported they already did this); 54% of applicators now know the difference between Mandatory and Advisory statements on pesticide labels (46% reported they knew this prior to training). The post-training evaluation also examined if participants had indeed successfully implemented new pesticide safety activities, as a result of the previous year of P-PAT. According to the respondents, 90% said they review atrazine and other pesticide labels for precautions to prevent water contamination and 95% reported they know the characteristics of the watershed where they farm. In addition, 95% said they monitor crop growth stage and review pesticide label timing restrictions before making applications.

Commercial Pesticide Applicator Training: A combination of statewide programming and live presentations were used to deliver pesticide safety information to commercial applicators. Evaluations completed by the attendees were used to measure the programs' effectiveness and get feedback as to the usefulness of the information. A few examples of changes in knowledge and actions from three of the programs follow: 1) There was a significant improvement in applicators' post-training knowledge on protecting groundwater and other non-target sites, phytotoxicity, pesticide stewardship, and pest management compared to pre-training knowledge. The number of applicators who indicated they had a high level of knowledge about movement of water soluble materials in a watershed was 49% pre-training; 90% post-training. Evaluations from the Seed Treatment program indicated that after attending the program, 34% of respondents said they would purchase or put together a pesticide spill kit (65% said they already had one). Responses indicated that 24% of applicators would now help protect water supplies by inspecting check valves annually (68% said they already did this). Another example of changed behavior as a result of the training was evident in evaluations from the Ornamental and Turfgrass program. When asked if they would modify their application practices based on water quality concerns in Iowa, 42% said Yes as a result of training (52% said they already did this). In addition, 43% reported they will now check pesticide labels for phytotoxicity and sensitive plant statements as a result of training (55% reported they already did this).

Key Items of Evaluation

Drought concerns Extension will have to address with pork producers:

- Water supply issues - will need to plan for and, if necessary, implement water delivery to swine producers. This is beyond the scope of the Iowa Pork Industry Center resources but we are prepared to assist. Iowa is in the planning stage now.
- Iowa Pork Industry Center will continue to host producer meetings across Iowa, discussing exit strategies, more efficient use of labor, and other cost saving methodologies.
- Alternative feed ingredients will be explored.
- Assist in the development of exit strategies for select producers.

An example of the tremendous impact of the swine ventilation training is evident from one participant's follow-up: he called Extension to admit his energy bill (even with a slight increase in his energy costs) was $10,000 lower the year following the workshop after he implemented recommended practices. This program produced significant changes in a healthier air environment for workers and pigs and improved profitability through reduced energy costs.

A new farm bill will result in an increased need for providing farmers and landowners with technical information. This will be especially important if the features in a new bill change drastically. Risk management will be an important component for discussion.

Currently it appears the drought may continue. This means short term planning will be important, but longer term planning to prepare for radical swings in weather will also be important for profitability.

V(A). Planned Program (Summary)

Program # 7

1. Name of the Planned Program

Global Food Security and Hunger - Regional Foods Systems

☑ Reporting on this 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
131	Alternative Uses of Land	20%		0%	
205	Plant Management Systems	20%		0%	
402	Engineering Systems and Equipment	10%		0%	
403	Waste Disposal, Recycling, and Reuse	10%		0%	
404	Instrumentation and Control Systems	10%		0%	
601	Economics of Agricultural Production and Farm Management	20%		0%	
602	Business Management, Finance, and Taxation	10%		0%	
	Total	100%		0%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	12.0	0.0	6.1	0.0
Actual Paid Professional	0.0	0.0	0.0	0.0
Actual Volunteer	0.0	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**
0	0	0	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
0	0	0	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

This program will focus resources and efforts for the following objectives:

1. Improving production, harvest and handling techniques to assure food quality and safety and improve farmer profitability.
2. Enhancing light processing, storage and preparation to assure quality and safety.
3. Educating youth and adult consumers in healthy food choices and food production and preparation.
4. Engaging communities in planning and leadership capacity building to expand opportunities associated with regional foods.

2. Brief description of the target audience

This program addresses identified needs across Iowa's economy and society. Existing and beginning farmers are increasingly interested in produceing value crops and livestock and market them in such a way as to retain a larger share of consumer expenditures on food. Processors, distributors, retailers and institutions have expressed a strong interest in buying more locally produced food products. These farmers and businesses alike will face new questions and challenges as they conduct more business-to-business transactions, buy in smaller lots and sell closer to the consumer. Extension can meet their needs through applied research and engaged learning opportunities. Consumers' lifestyles today, both adults and youth, promote inactivity and poor diet choices. Education and research-based information about healthy livestyles will be covered in this program, as will access to and the importance of fresh fruits and vegetables.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	610	24500	0	0

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

Patent Applications Submitted

Year:	2012
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of farmers trained and knowledge, awareness, and/or skill development gained in: food safety, GAP, production practices, business planning and management, marketing.

Year	Actual
2012	21

Output #2

Output Measure

- Number of processors, manufacturers, distributors, retailers or institutions attending training and receiving technical assistance.
  Not reporting on this Output for this Annual Report

Output #3

Output Measure

- Number of youth and families participating in ISUE RLFS lessons and activities such as ISUE 4-H Youth's Growing in the Garden: Local Foods and Healthy Living curriculum and school and out-of-school staff, volunteers, and partners participating in ISUE RLFS trainings.
  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	Number of acres producing fruits and vegetables.
2	Number of loans supporting fruit and vegetable production.
3	Number of Community Supported Agriculture (CSA) operations, farmers' markets, farm to school chapters, distributors, grocery stores, restaurants, and other institutions buying from Iowa farmers through these channels.
4	Number of meat lockers and specialty meat processing plants, on-farm fluid milk and dairy product processing plants and licensed food processors.
5	Number of cities and/or counties with new or revised comprehensive plans and/or regulations that include language addressing regional food systems.
6	Number of high tunnels installed to expand production with season-extension techniques.
7	Number of individuals who increase their knowledge regarding winery operations.
8	Number of fruit and vegetable farmers who develop food safety plans to qualify for GAP certification.

Outcome #1

1. Outcome Measures

Number of acres producing fruits and vegetables.

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Number of loans supporting fruit and vegetable production.

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

Number of Community Supported Agriculture (CSA) operations, farmers' markets, farm to school chapters, distributors, grocery stores, restaurants, and other institutions buying from Iowa farmers through these channels.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1456

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Connecting producers, retailers and consumers within the local food networks has proven to be a bigger challenge than any of the stakeholders imagined. Providing more efficient connectivity has taken on a priority status within the local foods initiatives. Extension has played a critical role in helping provide transparency and improved communications among stakeholders.

What has been done

Value-Added Ag (VAA) has expanded 2 web-based marketing and market research tools to assist in marketing efforts by individuals, farmers markets and food procurement businesses within Iowa. Technical assistance was provided to farmers, grower groups and procurement agencies to develop a replicable local foods model to better serve the local foods demands. VAA staff played a highly visible role in educating stakeholders at workshops and seminars with their expertise regarding building strong food networks. Staff efforts resulted in 41 presentations or seminars related to local foods systems across the state reaching 708 attendees.

Results
The two local foods web-based tools have over 732 registered users and get 5600 visits per month. A 6-member farmer group developed a replicable aggregation model, which has expanded to a point that a partnership with one of their institutional buyers has resulted in a shared space agreement to allow producers to expand their production and move the group to a more sustainable business venture. The aggregation model is being shared with other interested groups via 2 workshops and a video conference. Sixteen other producers or producer groups were provided direct technical assistance to strengthen their businesses.

4. Associated Knowledge Areas

KA Code	Knowledge Area
131	Alternative Uses of Land
205	Plant Management Systems
402	Engineering Systems and Equipment
403	Waste Disposal, Recycling, and Reuse
404	Instrumentation and Control Systems
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation

Outcome #4

1. Outcome Measures

Number of meat lockers and specialty meat processing plants, on-farm fluid milk and dairy product processing plants and licensed food processors.

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Number of cities and/or counties with new or revised comprehensive plans and/or regulations that include language addressing regional food systems.

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

Number of high tunnels installed to expand production with season-extension techniques.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	41

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The potential of increasing local food production through season extensions and risk management has generated interest among growers in High Tunnel (HT) production methodology, which can provide several additional weeks of production, improve product quality and increase yields.

What has been done
41 producers attended High Tunnel workshops for beginning and experienced HT producers. VAA assisted USDA-NRCS with a HT information booth at the Farm Progress Show in Iowa and provided training for NRCS staff on HT basics. VAA produced two new Extension publications and conducted several interviews and webinars on the topic.

Results
53% of workshop attendees applied for NRCS-EQIP dollars to support HT production. 62% added $100 or more additional income to their operation. 17% added more than $5,000 net income. 95% used the materials provided to improve their production operations. 100% of attendees requested additional workshops and training to be offered the following year.

4. Associated Knowledge Areas

KA Code	Knowledge Area
131	Alternative Uses of Land
205	Plant Management Systems
402	Engineering Systems and Equipment
601	Economics of Agricultural Production and Farm Management

602 Business Management, Finance, and Taxation

Outcome #7

1. Outcome Measures

Number of individuals who increase their knowledge regarding winery operations.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Presently, there are 101 licensed wineries and over 300 vineyards (totaling 1,200+ acres) in Iowa. The potential economic opportunities regarding wineries, value-added agriculture and tourism are growing exponentially. However, many current owners or those who are entering the industry lack the background, experience and skills to effectively manage a winery.

What has been done
Workshops covering various aspects of wine making concepts and technologies have been developed and offered to the public. Specifically, a 2-day workshop on oak barrel techniques in barrel-making, sanitation, storage and alternatives was held at a Iowa winery to allow participants hands-on experience. A tasting proficiency training series was offered to increase participants' ability and confidence in the sensory analysis of wine.

Results
Survey results for the oak barrel workshops (n=32) showed that 14 (out of 20 evaluations) ranked the presentations and personal economic value as excellent. Evaluation from the sensory analysis series (n=16; 14 evaluations completed) indicated an increase in knowledge from Poor to Good. Twelve respondents plan to implement some techniques after attending the workshop (teach their staff, make changes, increase comparison sampling).

4. Associated Knowledge Areas

KA Code	Knowledge Area
131	Alternative Uses of Land

402	Engineering Systems and Equipment
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation

Outcome #8

1. Outcome Measures

Number of fruit and vegetable farmers who develop food safety plans to qualify for GAP certification.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	32

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The growing demand for local and regional food offers an unprecedented market opportunity for small and midsized farms and holds great promise for increasing the access to healthy and affordable food for rural areas. However, participation in the local food system demands that farms demonstrate compliance with complex, and often expensive food safety practices that have evolved in response to public health outbreaks. This requirement threatens to exclude the very farmers best suited to meet demand for local and regional food. In 2010, only three farms in the state of Iowa were GAP certified.

What has been done
Northeast Iowa fruit and vegetable growers approached Iowa State University Extension & Outreach (ISUEO) for assistance in meeting food safety requirements of a large food service provider. Working with the Northeast Iowa Food & Farm Coalition (NIFF), Winneshiek County Extension received a USDA Specialty Crop Block grant of $15,700 from the Iowa Department of Agriculture and Land Stewardship in 2011 to meet two goals. First, the grant was used to develop a training program to equip food safety "coaches" who could provide technical assistance to farmers to implements GAP and prepare them for food safety certification. Second, funding was used to create a GAP cost-share program to assist farmers with the cost of an audit. A training program was launched for "food safety coaches", which included a course or workshop on GAP and a day-long training that included visits to three farms. A consultant from Primus Labs lead the on-farm training and demonstrated the audit process on the farm Thirteen people participated in this training with half of them being interested in becoming food safety coaches. The remaining

trainees work with farmers in their professions and found the GAPs training useful for their work.

Results

Through the food safety coaching program, 21 Iowa fruit and vegetable farms received assistance in writing a food safety plan. The level of on-farm assistance varied from site visits to mock audits to prepare them for an actual GAP audit. The mock audit helped farmers identify food safety areas that were still of concern, so they could address them prior to paying for a real audit. Following the mock audit, 11 farms requested a USDA GAP audit for their farm and 100% passed. Twelve farms received financial assistance through the GAPs cost-share program. The 2012 drought decreased the number of farms originally projected to apply for cost-share funding. Arranging for their GAP audits on the same day resulted in a cost savings of up to 50%. ISU Extension continues to support the need for GAP certification with other outreach programs. The Iowa GAP Center blog was created to be a source of timely information for Iowa specialty crop producers. It can be viewed at: http://blogs.extension.iastate.edu/iowagap.

4. Associated Knowledge Areas

KA Code	Knowledge Area
131	Alternative Uses of Land
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

- Economy
- Government Regulations
- Competing Public priorities
- Other (Consumer trends and preferences)

Brief Explanation

Several factors affect Extension programming and producers' degree of risk with local foods ... lack of crop insurance, policy decisions such as the Food Modernization Act, USDA funding of educational and assistance programs, no established prices for fruits and vegetables such as there are for commodities, and few financing options for small producers.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Through the food safety coaching program, a three-level GAP education program has been created to assist producers with general GAP knowledge (KNOW), creation of farm safety plans (SHOW) and a mock audit exercise (GO). The tiered program will be rolled out across the state and will provide a benchmark for growers and buyers to communicate about food safety requirements other than certification.

Key Items of Evaluation

Benchmark levels of awareness regarding food safety requirements for growers and

buyers will be used to measure knowledge gained as a result of educational programs targeting these stakeholders.

V(A). Planned Program (Summary)

Program # 8

1. Name of the Planned Program

Natural Resources and Environmental Stewardship

☑ Reporting on this 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
101	Appraisal of Soil Resources	6%		0%	
102	Soil, Plant, Water, Nutrient Relationships	11%		26%	
111	Conservation and Efficient Use of Water	5%		4%	
112	Watershed Protection and Management	6%		9%	
121	Management of Range Resources	0%		2%	
123	Management and Sustainability of Forest Resources	5%		0%	
125	Agroforestry	5%		0%	
131	Alternative Uses of Land	6%		3%	
132	Weather and Climate	5%		7%	
133	Pollution Prevention and Mitigation	6%		9%	
134	Outdoor Recreation	0%		7%	
135	Aquatic and Terrestrial Wildlife	5%		15%	
136	Conservation of Biological Diversity	5%		11%	
141	Air Resource Protection and Management	5%		1%	
403	Waste Disposal, Recycling, and Reuse	5%		1%	
405	Drainage and Irrigation Systems and Facilities	10%		0%	
605	Natural Resource and Environmental Economics	10%		5%	
608	Community Resource Planning and Development	5%		0%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890

Plan	13.5	0.0	14.6	0.0
Actual Paid Professional	14.9	0.0	5.0	0.0
Actual Volunteer	38.0	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**
1495554	0	804516	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
1495554	0	804516	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
2125423	0	3867404	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

The following basic to applied research activities will allow for attainment of the four program goals.

• Address air and water quality along with other environmental issues of Iowa through research, education, and extension programs targeted at solving environmental problems of producers, citizens, public health officials, and regulators.
• Increase the research and adoption of best management conservation practices, crops, and cropping systems that control soil erosion, minimize sediment transport, and reduce nutrient export. Increase the research and adoption of practices, crops, and cropping systems that reduce nitrate export.
• Approach water quality and quantity issues from a watershed perspective using adaptive management principles the link the private and public sectors.
• Develop better models and tools to be used to evaluate the effects of changes in the mix and location of crop and livestock systems due to climate change.
• Identify site specific strategies and facilitate the implementation of these strategies to improve air quality and address related concerns, particularly with respect to siting and operations of confined-animal feeding operations and neighbor-to-neighbor relationships.
• Understand and evaluate the economic impact of management of natural resources including the economic viability of alternative crops, cropping practices, and cropping systems, and the economic and environmental benefits of such alternatives.
• Quantify the non-market and market values associated with our Iowa natural resources including forests, natural areas/abandoned pasture, CRP, wildlife, energy, and community resources.
• Research ways to conserve the use of energy inputs used in the production of food, feed, fiber and biofuels with a particular view towards carbon reduction.

The following extension/outreach activities support the four program goals.

• Appropriate curriculum for targeted groups, fact sheets, and web access tools for decision making.
• Targeted programming to address policy issues as they arise including response to public comment

documents, development of hard copy materials and resources for regulators and policymakers.
- Produce, update or revise handbooks, newsletters, and bulletins as appropriate.
- Hold workshops, field days, farm/field visits, and satellite and web based sessions as appropriate.
- Develop strategies and programs to increase community (citizen) involvement, especially related to private and public natural resources.
- Develop and execute educational programs about conservation program in the new farm bill.
- Develop and execute educational programs about indices and diagnostic tools (e.g. P Index) that can be used to improve nutrient management.
- Develop and execute educational programs on methods to conserve and produce biorenewable energy.
- Provide soil and water stewardship information and research at the 2012 Farm Progress Show which attracts participants from many states outside Iowa, including internationals.

Faculty participate in the following associated multistate research committees: NC1034, NC1190, NC1195, S1025, S1028, S1032, S1042, W2004, W2128, W2133, and W2188.

2. Brief description of the target audience

This program focuses on the private and public sectors. The "actors" to be engaged with research and extension activities associated with this program include: crop and livestock producers, private citizens, public health officials, state and federal agricultural and natural resource agencies, environmental groups, landowners, homeowners, agricultural and natural resource scientists and engineers, agribusinesses, and policy makers.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	10400	122000	0	1500

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

Year:	2012
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	9	53	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of producers, agribusiness professionals, and land-owners who attend face-to-face educational activities, including individual consultations.

Year	Actual
2012	66500

Output #2

Output Measure

- Number of producers, agribusiness professionals and land-owners who subscribe to newsletters and access web-based resources.

Year	Actual
2012	377700

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of producers that participate in programming directly focused on increasing the number of livestock production sites that adopt practices that reduce impacts to air resources.
2	Number of acres where the adoption of conservation practices was implemented.
3	Number of producers increasing the efficiency of manure and crop nutrient utilization while minimizing surface run off and preserving ground water quality.
4	Number of Iowa citizens who participate in learning activities that focus on improving water quality and quantity.
5	Fact sheets downloaded by the public from the ISU Farm Energy (PM 2089) series in this reporting year.

Outcome #1

1. Outcome Measures

Number of producers that participate in programming directly focused on increasing the number of livestock production sites that adopt practices that reduce impacts to air resources.

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Number of acres where the adoption of conservation practices was implemented.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	435

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Nonpoint source pollution from agricultural production systems has been shown to be a significant contributor to impairment of water bodies both in Iowa and those downstream. Surface runoff commonly carries phosphorus-rich sediments off-site, while infiltrated water can be enriched with high levels of nitrate-nitrogen which has leached through the soil profile. Mitigating agricultural losses is important to producers seeking to maximize agricultural efficiency, as well as to the citizens of Iowa and those downstream needing access to safe, clean water for drinking, recreation and sustaining their livelihoods.

What has been done
The Iowa Nitrogen Science Assessment has identified cover crops as having potential to significantly reduce soil erosion and phosphorus export and capture nitrate-nitrogen before entering tile drains. In 2012, Iowa Learning Farms hosted 15 different field days on the topic of cover crops with presentations by experts in the field. Total attendance recorded for these events was 435 participants. In 2011, ILF hosted 8 field days/workshops with a total attendance of 349 participants. Cover crop outreach materials were provided to all program participants at each event. Additionally, ILF is in its 5th year of on-farm cover crop research in collaboration with

Practical Farmers of Iowa and has 10 farmer-partners in Butler, Greene, Guthrie, Ida, Shelby, Tama, Taylor, Washington (two farmer-partners) and Webster counties demonstrating the use of cover crops.

Results
Activities associated with this programming have been evaluated through 2-week and 6-month follow-up surveys to document change in behavior. From these followup surveys, 36% of participants indicated that they had planted cover crops after an ILF outreach event resulting in 4,348 new acres around the state of Iowa.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
133	Pollution Prevention and Mitigation
403	Waste Disposal, Recycling, and Reuse
405	Drainage and Irrigation Systems and Facilities
605	Natural Resource and Environmental Economics

Outcome #3

1. Outcome Measures

Number of producers increasing the efficiency of manure and crop nutrient utilization while minimizing surface run off and preserving ground water quality.

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Number of Iowa citizens who participate in learning activities that focus on improving water quality and quantity.

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Fact sheets downloaded by the public from the ISU Farm Energy (PM 2089) series in this reporting year.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1250

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Information and educational resources regarding farm energy efficiency and energy conservation are scattered among various organizations. To address this issue and raise awareness of existing resources, ISU Extension & Outreach facilitates meetings of the ISU Farm Energy Task Force. Participants include representatives from the investor-owned and rural cooperative utilities, farm energy audit providers, ISU Extension & Outreach, and other organizations statewide.

What has been done
Since its inception in 2010, the ISU Farm Energy Task Force quarterly meetings have improved knowledge and awareness of farm energy efficiency and energy conservation resources among statewide organizations. This collaboration encourages participants to share farm energy efficiency and conservation information between their organizations and to make that information available to their clients.

Results
In this reporting year, ISU Farm Energy Task Force participants described the following outcomes regarding their ongoing interactions and participation in the group:
- increased effectiveness promoting energy efficiency programs
- up-to-date knowledge about an expansive range of energy issues
- greater appreciation for what ISU Extension & Outreach can offer
- scientific validation for the ISU Farm Energy Task Force's work and recommendations
- improved decision-making ability
- improved service for clients
- stronger relationships with professionals in their industrial sector

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
141	Air Resource Protection and Management
403	Waste Disposal, Recycling, and Reuse
608	Community Resource Planning and Development

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

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Behavior changes associated with Extension's non-point programming were evaluated using 2-week and 6-month follow-up surveys. The follow-up surveys document that 36% of participants indicated that they had planted cover crops after an Iowa Learning Farm outreach event resulting in 4,348 new acres with cover crops in Iowa.

Key Items of Evaluation

Environmental protection of soils that have potential erosion risk was improved through educational efforts that resulted in cover crops being added to more than 4,000 acres in Iowa.

V(A). Planned Program (Summary)

Program # 9

1. Name of the Planned Program

Sustainable Energy - Biofuels and Biobased Products

☑ Reporting on this 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
101	Appraisal of Soil Resources	0%		9%	
102	Soil, Plant, Water, Nutrient Relationships	8%		18%	
111	Conservation and Efficient Use of Water	8%		0%	
125	Agroforestry	8%		0%	
131	Alternative Uses of Land	10%		0%	
136	Conservation of Biological Diversity	8%		0%	
205	Plant Management Systems	5%		20%	
302	Nutrient Utilization in Animals	5%		1%	
402	Engineering Systems and Equipment	8%		15%	
403	Waste Disposal, Recycling, and Reuse	8%		0%	
404	Instrumentation and Control Systems	0%		23%	
511	New and Improved Non-Food Products and Processes	7%		14%	
512	Quality Maintenance in Storing and Marketing Non-Food Products	3%		0%	
601	Economics of Agricultural Production and Farm Management	10%		0%	
602	Business Management, Finance, and Taxation	12%		0%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	7.0	0.0	9.8	0.0
Actual Paid Professional	1.9	0.0	5.5	0.0
Actual Volunteer	0.0	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**
193935	0	731222	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
193935	0	731222	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	3714763	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

We will focus our resources and efforts on developing improved crops and plant materials for use as feed stocks to produce biofuels and bio-based products while still producing adequate food and feed supplies; developing agronomic practices to produce these feed stocks in sustainable ways to mitigate environmental risks; developing new harvesting, storing and transporting systems for these new feedstocks; and adopting new conversion processes that are more efficient, use less energy and water, and produce value-added co-products. These technologies will be integrated so that they work as a complete system and the ISU BioCentury Research Farm will play a key role. We will develop educational programming for farmers and landowners addressing agronomic and economic topics regarding biomass harvest, storage and handling.

Faculty participate in the following associated multistate research committees: NC213, NC1178, NC1183, NC1194, NE1042, S1041, SERA38, and W2128.

2. Brief description of the target audience

This project focuses on basic human needs for environmentally sustainable energy and consumer goods (e.g. building construction materials, plastics and adhesives) and, therefore, we all benefit -- producers with more efficient crops and production systems, rural communities with new employment opportunities and economic development, processing companies with advanced conversion technologies, and all of us because we all need inexpensive and environmentally acceptable forms of energy.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	2200	1250	0	0

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

Patent Applications Submitted

Year:	2012
Actual:	7

Patents listed

Peptide Domains that Bind Small Molecules of Industrial Significance: Application of Phage Display for Identifying Peptide Ligands Binding to Target Molecules. Inventors: Binder, Thomas; Yamamoto, Yasufumi; Rao, Aragula Gururaj; Hanke, Paul. Filed: 10/13/2011.

Depolymerization of Polylactic Acid: Methoxide Chemistry (Potassium and Sodium Compounds) Based Depolymerization of Polylactic Acid. Inventors: Grewell, David; Srinivasan, Gowrishankar. Filed 10/13/2011.

Methods for Treating Lignocellulosic Biomass: Pretreatment of Lignocellulosic Biomass Using Low-Moisture Anhydrous Ammonia (LMAA) Process for Improved Enzyme Saccharification and Fermentation Yields. Inventors: Hicks, Kevin; Nghiem, Nhuan; Taylor, Frank; Kim, Tae Hyun. Filed 10/28/2011.

Depolymerization of Polylactic Acid: Methoxide Chemistry (Potassium and Sodium Compounds) Based Depolymerization of Polylactic Acid. Inventors: Srinivasan, Gowrishankar; Grewell, David. Filed: 1/24/2012.

Crop Residue Spreading: Combination Residue Spreader and Transition Pathway from Combine Chopper to Blower. Inventors: Birrell, Stuart; Dilts, Mark; Schlesser, Benjamin. Filed 2/6/2012. Patent #8,177,610 issued 5/15/12.

Oil Extraction from Microalgae: Oil Extraction from Microalgae. Inventor: Wang, Tong. Filed: 3/13/2012.

Effective Oil Separation from Microalgae with Isopropyl Alcohol (IPA) and Efficient Oil Recovery by Temperature Differential: Oil Separation from Microalgae. Inventors: Wang, Tong; Yao, Linxing. Filed 4/24/2012.

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	4	30	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Biorenewable companies and agricultural producers attending on-site educational activities: workshops, conferences, industry roundtable discussions, field events, and professional development.
  Not reporting on this Output for this Annual Report

Output #2

Output Measure

- Number of individuals who subscribe to newsletters and access web-based resources that address biorenewable issues.

Year	Actual
2012	174633

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of producers and service providers who increase their awareness of new crop opportunities and varieties appropriate for bioenergy production.
2	Number of Iowa feedlots that regularly feed DGS to reduce cost of grain.
3	Number of individuals agricultural producers who learn new technologies related to biomass production, harvest, storage, and transportation.
4	Number of individuals who increase their knowledge in production/harvesting/storage systems.
5	Number of individuals who increase their knowledge in understanding business systems.
6	Number of businesses that increase renewable fuels production.

Outcome #1

1. **Outcome Measures**

   Number of producers and service providers who increase their awareness of new crop opportunities and varieties appropriate for bioenergy production.

   Not Reporting on this Outcome Measure

Outcome #2

1. **Outcome Measures**

   Number of Iowa feedlots that regularly feed DGS to reduce cost of grain.

   Not Reporting on this Outcome Measure

Outcome #3

1. **Outcome Measures**

   Number of individuals agricultural producers who learn new technologies related to biomass production, harvest, storage, and transportation.

   Not Reporting on this Outcome Measure

Outcome #4

1. **Outcome Measures**

   Number of individuals who increase their knowledge in production/harvesting/storage systems.

   Not Reporting on this Outcome Measure

Outcome #5

1. **Outcome Measures**

   Number of individuals who increase their knowledge in understanding business systems.

2. **Associated Institution Types**

   - 1862 Extension
   - 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	3000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
In the highly volatile renewable energy industry, access to information is a critical element in maintaining profitability. Information for the general public and direct technical assistance is provided to help sustain the industries growth.

What has been done
Working with a network of land-grant universities and experts around the country including the Livestock Information Center at CSU, subscribers receive a newsletter that keeps stakeholders informed about trends and current issues in the renewable energy industry sector that can impact the profitability of renewable energy production facilities and livestock producers who depend on feedstocks and by-products used by or produced by these facilities.

Results
Information from the newsletter was reprinted or used by permission in over 20 other publications or reports. Email correspondence from the subscribers continues to validate this newsletter as a valuable resource for current and relevant information. Six media interviews were generated from these newsletters.

4. Associated Knowledge Areas

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

Outcome #6

1. Outcome Measures

Number of businesses that increase renewable fuels production.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	3

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Growth in new renewable energy production plants has slowed dramatically. However, there is continued interest in improving efficiencies of existing plants and for introducing the next generation of renewable fuel feed stocks to the industry sector.

What has been done
Technical assistance was provided to 2 existing renewable fuels companies that were restructuring their financing. Additionally, a full feasibility study was conducted for a large facility that is generating ethanol from a non-traditional feed stock.

Results
The technical assistance provided by Value-Added Ag Extension to a new production facility assisted in the launch of a plant that had a 52 million dollar investment and created 38 new jobs when at full capacity. Two additional plants were able to restructure their debt portfolio to improve profitability and remain in operation.

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
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities

Brief Explanation

Future demand and supply of traditional energy sources will significantly impact outcomes of energy programs. Price volatility in petroleum and farm commodities also adds complexity, financial risk and business uncertainty. The current economic climate does not provide much profitability. Prolonged low margins could damage investor confidence. Feedstock commodities must be produced at attractive prices; drought and other natural disasters could be devastating to these new ventures. Government support and regulatory

programs are important in the early stages to compete against well-established industries and gain market footholds. The public needs to be better educated regarding the economics of renewable fuels, which will require investment in education and extension outreach. Most of all, funding for research and outreach activities is critical.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Technical assistance provided by Value-Added Ag Extension to a new renewable fuel production facility assisted in the launch of a plant that had a $52M investment and created 38 new jobs when at full capacity. Two additional plants were able to restructure their debt portfolio to improve profitability and remain in operation.

Key Items of Evaluation

Assisting renewable fuel production plants in maximizing their efficiency helps them continue to operate effectively and provide jobs in a local market.

V(A). Planned Program (Summary)

Program # 10

1. Name of the Planned Program

Youth Development

☑ Reporting on this 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
806	Youth Development	100%		0%	
	Total	100%		0%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	47.0	0.0	0.0	0.0
Actual Paid Professional	14.8	0.0	0.0	0.0
Actual Volunteer	380.0	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
889330	0	0	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
889330	0	0	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
2213547	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Increase the number of youth reached in 4-H programs.
- Strengthen statewide volunteer management infrastructure.

- Organize staffing structure based on curricular/issues programming.
- Design learning experiences and conduct training with Extension and Outreach staff, volunteers, Iowa State University staff, and community and state partners that contribute to the life skill outcomes of leadership, citizenship, communications, and learning in environments that meet youths' needs in long-term settings (clubs, after school programs, and other out-of-school time).
- Build state and community level capacity to ensure policies and opportunities are based on the principles and practices of positive youth development.
- Collect data on statewide volunteer training delivery and 4-H club youth enrollment.
- Train staff and community groups on best practices of positive youth development, youth in governance, after school programming, youth/adult partnerships, volunteer development, healthy living (including childhood obesity), STEM (including food safety), citizenship, leadership, communication, and the arts.
- Utilize online volunteer development training system for 4-H volunteers.
- Implement multi-faceted marketing infrastructure to communicate positive youth development principles, practices, and programming successes via news releases, brochures, on-line training, and webinars.
- Partner with state and national entities to report after school outreach data.
- Conduct 4-H Afterschool programming across Iowa.
- Work with other states' 4-H Youth Development staff to evaluate the positive impact of 4-H participation in young people's lives.

4-H Afterschool

- 167 Extension and Outreach staff, 249 after-school staff, and 834 volunteers trained in youth development principles, practices, and 4-H curricula
- 16,908 children and youth K-12 engaged in 4-H Afterschool programming
- 53 4-H Afterschool Clubs developed statewide
- 653 4-H Afterschool community partners

4-H Youth Science

- 9 new environmental education programs formed reaching over 80 youth
- 1,485 educators, Extension staff, and volunteers trained to utilize youth science curricula
- 31,634 enrollments in science, engineering, and technology curricula.
- $256,000 in funding was secured for the establishment of an Iowan North Central Region STEM Hub.

Service Learning

- Secured NCVS grant of $500,000 to implement Reach Out Iowa (ROI)
- Conducted 193 service learning training sessions with 4,000 youth
- Provided over $100,000 to communities to support more than 100 service learning projects
- 4,000 youth participants partnered with community volunteers benefitting 13,000 Iowans
- More than 60% of 50 partner organizations now engage youth in leadership positions

4-H Volunteer Development

- 1,919 volunteers participated in state designed training on youth development principles and practices
- 92 volunteers participated in New Volunteer Training
- 7,590 adult volunteers assisted in the implementation of youth development programs
- 107 volunteers and 43 staff attended state level training planned and implemented by volunteers
- 26 staff participated in Everyone Ready; on-line volunteerism professional development program

2. Brief description of the target audience

- K-12 youth
- Adult and youth volunteers
- Federal, state, community, and Iowa State University level leaders, collaborations, organizations, and agencies
- Extension educators
- K-12 teachers

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	7590	50266	105538	24562

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

Patent Applications Submitted

Year:	2012
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of youth who retain membership in 4-H clubs after 1 year of membership.

Year	Actual
2012	3824

Output #2

Output Measure

- Number of volunteers completing one training/yr.

Year	Actual
2012	1919

Output #3

Output Measure

- Number of youth who participate in 4-H Afterschool.

Year	Actual
2012	16908

Output #4

Output Measure

- Number of local partnerships initiated or strengthened.

Year	Actual
2012	2792

Output #5

Output Measure

- Number of new clubs developed using innovative and emerging 4-H club models.

Year	Actual
2012	82

Output #6

Output Measure

- Number of 4-H livestock exhibitors certified in Food Safety and Quality Assurance (FSQA).

Year	Actual
2012	10975

Output #7

Output Measure

- Number of 4-H'ers enrolled in Foods, Nutrition, Physical Health, Fitness, and Sports project areas.
  Not reporting on this Output for this Annual Report

Output #8

Output Measure

- Number of pre-service teachers and educators trained in Connecting Learning & Living Curricula on connecting youth with MyPyramid concepts and understanding the origins of food.

Year	Actual
2012	446

Output #9

Output Measure

- Number of youth reached by educators trained in Connecting Learning & Living Curricula (agriculture, environmental, food, and nutrition emphasis).

Year	Actual
2012	8891

Output #10

Output Measure

- Number of youth and adults trained using climate curricula.
  Not reporting on this Output for this Annual Report

Output #11

Output Measure

- Number of youth and adults trained using sustainable energy curricula.
  Not reporting on this Output for this Annual Report

Output #12

Output Measure

- Enrollments in Foods, Nutrition, Physical Health, Fitness, and Sports curricula areas.

Year	Actual
2012	46192

Output #13

Output Measure

- Enrollments in Science, Engineering, and Technology curricula areas.

Year	Actual
2012	31634

Output #14

Output Measure

- Enrollments in Citizenship, Leadership, and Communication curricula areas.

Year	Actual
2012	16053

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Percentage of pre-service teachers and educators who participate in CLL training will self-report a 1 to 3-point increase in confidence/knowledge in teaching MyPyramid concepts and the origins of food.
2	As reported by educators, percentage of youth participating in CLL lessons who increased their knowledge of the MyPyramid and making healthy food choices.
3	As reported by educators, percentage of youth participating in CLL lessons who made healthy food choices; tried new foods; and made healthier food choices during snacks, lunch, and class parties.
4	As reported by educators, percentage of youth participating in CLL lessons who increased their knowledge regarding growing food from plants.
5	As reported by educators, percentage of youth gardeners participating in CLL lessons who improve their vegetable consumption.
6	Percentage of 4-Hers ages 12-18 taking the FSQA certification test who self-report improved techniques and practices in livestock drug injections, record keeping, and food product safety and biosecurity.
7	Percentage of youth participating in sustainable energy workshops who self-report increased knowledge of what sustainable energy means, the importance of sustainable energy, and/or promising sustainable energy technologies.
8	Percentage of youth participating in climate change workshops who self-report increased knowledge of the causes and/or consequences of climate change.
9	Percentage of 4-H'ers in grades 4-6 taking the FSQA certification test who self-report improved techniques and practices in livestock drug injections, record keeping, and food product safety and biosecurity.
10	Percentage of youth participating in Iowa 4-H STEM programs who self-reported an increase in STEM process skills necessary to be successful in STEM courses and careers.
11	Percentage of youth from randomly selected 4-H clubs who self-report they demonstrate outstanding communication practices in sending and receiving written, visual, and oral message after being engaged in 4-H club experiences.
12	Percentage of youth from randomly selected 4-H clubs who self-report they demonstrate productive citizenship practices by being fair and trustworthy, identifying community needs, organizing service learning projects, and participating in community issues after being engaged in 4-H club experiences.
13	Percentage of youth from randomly selected 4-H clubs who self-report they demonstrate effective leadership practices in working with others, listening to others' ideas, sharing one's own ideas, and handling conflict respectfully after being engaged in 4-H club experiences.
14	Percentage of youth from randomly selected 4-H clubs who self-report they demonstrate successful learning practices by creating project learning goals, analyzing the strengths and weaknesses of different ideas, using time efficiently, and applying lessons learned to new experiences after being engaged in 4-H club experiences.
15	Percentage of youth who self-report an increase in civic engagement knowledge and intent to engage in service projects in their communities.

Outcome #1

1. Outcome Measures

Percentage of pre-service teachers and educators who participate in CLL training will self-report a 1 to 3-point increase in confidence/knowledge in teaching MyPyramid concepts and the origins of food.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	90

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Iowa ranks 15th highest in obesity/overweight prevalence and is in the bottom 10% of fruit and vegetable consumption in the United States. Youth ages 8 to 18 sit in front of a screen for an average of 7 hours and 23 minutes each day and prefer being indoors rather than going outdoors. Youth and adults are disconnected with the natural environment, where food comes from, and the ability to make good decisions regarding their health and well-being. Together, these situations dramatically increase physical, mental, behavioral, and learning problems.

What has been done
446 teachers, pre-service teachers, extension staff, volunteers, other educators, and community partners attended a CLL training for one of the following: 8 USDA People's Garden (partnership with WSU, Cornell, ISU, U of Arkansas extension services) and Wellmark (health insurance provider) Foundation Healthy Gardens, Healthy Youth grant's school garden intervention sites; 5 ISU and UNI pre-service curriculum and instruction classes, 2 Team Nutrition Iowa Communications Network satellite sessions, and 4 other CLL sessions. They completed and received several MyPyramid/MyPlate concept and origin of food lessons. They also completed pre and post workshop surveys and provided input in other ways. Outcome impact was also collected from a Connecting Learning and Living on-line survey.

Results
* 90% of the training participants reported increases in knowledge, interest, and confidence in delivering MyPyramid/MyPlate and the origins of food. Mostly Ag Ed pre-service teachers represented the other 10% of respondents.
* 100% appreciated and said they would use what they learned and the lessons plans from

training.
* Educators provided 38 examples of students choosing healthy foods, trying new foods, and making healthy choices at lunch, snack time, or home. Examples include: "They chose healthy foods/fruits and vegetables for lunch/snacks/home." (16 comments) "They were more willing to try/tried new foods." (20 comments)
* Educators provided 11 examples of changes in their knowledge related to the origins of food. Examples include: "I didn't know that all food starts from the soil." "I didn't know you could grow these fruits and vegetables in Iowa." "Thank you. I am supposed to teach these concepts but I didn't know how to teach MyPyramid/MyPlate."

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #2

1. Outcome Measures

As reported by educators, percentage of youth participating in CLL lessons who increased their knowledge of the MyPyramid and making healthy food choices.

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

As reported by educators, percentage of youth participating in CLL lessons who made healthy food choices; tried new foods; and made healthier food choices during snacks, lunch, and class parties.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	91

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Iowa ranks 15th highest in obesity/overweight prevalence and is in the bottom 10% of fruit and vegetable consumption in the United States. Youth ages 8 to 18 sit in front of a screen for an average of 7 hours and 23 minutes each day and prefer being indoors rather than going outdoors.

Youth and adults are disconnected with the natural environment, where food comes from, and the ability to make good decisions regarding their health and well-being. Together, these situations dramatically increase physical, mental, behavioral, and learning problems.

What has been done
113 on-line evaluation survey responses were completed by 80% classroom teachers, 9% day care providers, 5% extension program leaders, and 6% volunteer leaders, naturalists, community garden coordinator, Ag-in-the-Classroom educator, health and wellness program leader, and local foods project leader. The surveys represented 8,891 youth participating in ISUEO CLL lessons and activities. The CLL trainings and the majority of the lessons they receive empower them to encourage students to try new foods and make healthy food choices at school, home, and as a personal preference. The Healthy Gardens, Healthy Youth grants in 58 classrooms emphasize those outcomes.

Results
* 91% of the 8,891 participating students chose healthy foods.
* Educators provided 7 examples of changes in knowledge and sharing what they learned regarding MyPyramid. Examples include: "The students struggled with categorizing foods before the lessons were taught. By the end of the lessons, they had to prepare a menu using all the food groups. Over 90% of the class scored at or above 92% on their menu. They shared their menu in the classroom with other students and they took their menus home to share with parents." "They built a food pyramid." "They were able to put foods into food groups." (4 comments), "They put food into food groups at home"
* Educators provided 8 examples of changes in knowledge regarding healthy food choices. Examples include: "They are more aware of what foods are healthy for them." (2 comments) "They discussed healthy food choices." (4 comments) "They tell their parents about healthy foods to eat." (2 comments)
* Educators provided 38 examples of students choosing healthy foods, trying new foods, and making healthy choices at lunch, snack time, or home. Examples include: "They chose healthy foods/fruits and vegetables for lunch/snacks/home." (16 comments) "They were more willing to try/tried new foods." (20 comments)

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #4

1. Outcome Measures

As reported by educators, percentage of youth participating in CLL lessons who increased their knowledge regarding growing food from plants.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	91

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Iowa ranks 15th highest in obesity/overweight prevalence and is in the bottom 10% of fruit and vegetable consumption in the United States. Youth ages 8 to 18 sit in front of a screen for an average of 7 hours and 23 minutes each day and prefer being indoors rather than going outdoors. Youth and adults are disconnected with the natural environment, where food comes from, and the ability to make good decisions regarding their health and well-being. Together, these situations dramatically increase physical, mental, behavioral, and learning problems.

What has been done
113 on-line evaluation survey responses were completed by 80% classroom teachers, 9% day care providers, 5% extension program leaders, and 6% volunteer leaders, naturalists, community garden coordinator, Ag-in-the-Classroom educator, health and wellness program leader, and local foods project leader. The surveys represented 8,891 youth participating in ISUEO CLL lessons and activities. The majority of the CLL lessons focus on how food plants grow. About 25% of the lessons guide youth through actual outdoor gardening experiences. Healthy Gardens, Healthy Youth grants provide funding to start school gardening. Many other CLL participants are actually gardening with youth.

Results
* 91% of the 8,891 participating students learned about growing food from plants.
* 64% (72) of the educators reported using actual gardens.
* Educators provided 83 examples of increased knowledge and skills regarding growing food from plants. Examples include: "They discussed/talked about/shared their new knowledge and skills about growing seeds/plants/gardens." (53 comments) "They talked about what part of the plant/what plants do foods come from." (12 comments)
* Educators provided 23 examples of sharing gardening knowledge and skills with family and others and starting gardens at home. Examples include: "Students showed the gardens to their family and others." (9 comments) "Students asked/helped parents to plant gardens at home." (10 comments) "A group of 4th grade students kept a garden blog." "Forty students signed up to do summer gardening."

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #5

1. Outcome Measures

As reported by educators, percentage of youth gardeners participating in CLL lessons who improve their vegetable consumption.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	94

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Iowa ranks 15th highest in obesity/overweight prevalence and is in the bottom 10% of fruit and vegetable consumption in the United States. Youth ages 8 to 18 sit in front of a screen for an average of 7 hours and 23 minutes each day and prefer being indoors rather than going outdoors. Youth and adults are disconnected with the natural environment, where food comes from, and the ability to make good decisions regarding their health and well-being. Together, these situations dramatically increase physical, mental, behavioral, and learning problems.

What has been done
113 on-line evaluation survey responses were completed by 80% classroom teachers, 9% day care providers, 5% extension program leaders, and 6% volunteer leaders, naturalists, community garden coordinator, Ag-in-the-Classroom educator, health and wellness program leader, and local foods project leader. The surveys represented 8,891 youth participating in ISUEO CLL lessons and activities. 90% of the CLL food lessons focus on increasing fruit and vegetable consumption and that is also the main point of growing the gardens. Healthy Gardens, Healthy Youth grants include fruit and vegetable snack opportunities in 9 classroom lessons, and the Wellmark grant provided funds for the snacks.

Results
* 94% of the 8,891 participating youth ate fruits and vegetables.
* Educators provided 26 examples of students eating more fruits and vegetables for lunch, snacks, in the classroom and at home.
* Students also shared garden produce with their families, other families in needs, and to a Crisis Center.
* 58 Healthy Gardens, Healthy Youth grant sites have provided fruit and vegetable snacks at least 9 times to more than 1,200 students. The same students harvested and ate cool season and warm season crops from their gardens. Cornell has the results of those experiences and will

share them in 2013-14.
* CLL facilitator presented to approximately 130 school foodservice providers how school garden and ISUEO nutrition lessons could help achieve positive outcomes of the new school lunch meal pattern.
* ISUEO CLL participants are working with institutions, Team Nutrition, Farm to School, local food producers, Healthiest State, Blue Zone, HyVee, and other health and nutrition interest groups to increase fruit and vegetable consumption in Iowa.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #6

1. Outcome Measures

Percentage of 4-Hers ages 12-18 taking the FSQA certification test who self-report improved techniques and practices in livestock drug injections, record keeping, and food product safety and biosecurity.

Not Reporting on this Outcome Measure

Outcome #7

1. Outcome Measures

Percentage of youth participating in sustainable energy workshops who self-report increased knowledge of what sustainable energy means, the importance of sustainable energy, and/or promising sustainable energy technologies.

Not Reporting on this Outcome Measure

Outcome #8

1. Outcome Measures

Percentage of youth participating in climate change workshops who self-report increased knowledge of the causes and/or consequences of climate change.

Not Reporting on this Outcome Measure

Outcome #9

1. Outcome Measures

Percentage of 4-H'ers in grades 4-6 taking the FSQA certification test who self-report improved techniques and practices in livestock drug injections, record keeping, and food product safety and biosecurity.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	80

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Providing a safe and healthy food supply has always been a key issue to the American consumer, but in recent years this issue has become even more important to consumers, wholesale distributors, restaurant chains, and foreign export markets with the recall of various foods and the outbreak of food borne illnesses. Not only details on treatments and/or medications given to animals, but also how animals have been raised and treated throughout their lives has become front page news. Consequently, livestock producers continually strive to improve management practices to ensure American citizens have the safest food supply in the world.

What has been done
A comprehensive food safety and quality assurance curriculum program (FSQA) is conducted each year with 4-H'ers. Through the use of a variety of educational materials including video tutorials to hands-on learning, youth learn about animal identification, source verification (when and where the animals are born and raised), biosecurity measures (cleanliness techniques, disease contamination, on-farm disease transmission), drug treatments and injections, quality record keeping, and appropriate animal handling and welfare requirements.

Results
In the 2011/2012 program year, 33 counties were randomly selected to have youth enrolled in Food Safety and Quality Assurance training complete a survey. Youth in grades 4-6 were administered a written survey of nine questions regarding how their FSQA techniques and practices were changed in the areas of record keeping, medication administration, animal welfare, and ethics. Of the 1,341 youth who were eligible to receive the survey, 641 youth completed the survey. Of the 641 youth who completed the survey, approximately 80% of the youth indicated they strengthened their behavioral practices after attending the FSQA training courses in the areas of record keeping, medication administration, animal welfare, and ethics. 4-H'ers and livestock producers are being rewarded for superior meat products and for raising their animals in certain environmental conditions. For example, beef animals with no antibiotic treatments or animals that are raised a certain way can receive a premium anywhere between $.05 -$.10/pound for a 4-H'er. Each year, the meat industry spends over $80 million in meat inspection costs. Much of this cost could be reduced at the producer level by educating youth on how to treat and handle their animals correctly. Knowing that a single disease outbreak or a food recall can cause irreversible damage to the U.S. markets, it is imperative to continue to educate youth on the important topics that are covered in this curriculum. Iowa is the top state for both hog production

and egg layer production producing more than $10 billion in livestock value across all commodities, and also generates millions of dollars in agriculture jobs to the state economy. Iowa's 4-H youth are the future farmers and livestock producers of this state and are needed to increase job growth and economic development.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #10

1. Outcome Measures

Percentage of youth participating in Iowa 4-H STEM programs who self-reported an increase in STEM process skills necessary to be successful in STEM courses and careers.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	44

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
According to the Committee on Prospering in the Global Economy of the 21st Century's report Rising above the Gathering Storm, (The National Academies Press, 2007), the United States faces a critical shortage of young people with the skills and training to meet 21st century workforce needs and make scientifically informed decisions. In 2008 a Congressional Research Service (CRS) report (Kuenzi, 2008) urged the immediate need for STEM-related workforce development. The Iowa Department of Economic Development reports: The state's manufacturing sector contributes the largest share of state gross domestic product (GDP) of any major sector with $23 billion contributed in 2009. In order for Iowa youth to be successful in the 21st century they must be prepared with the skills and meet workforce needs.

What has been done
Throughout the state of Iowa, Extension 4-H programs offer STEM learning opportunities for Iowa youth to increase their STEM process skills and improve their positive attitudes toward STEM education and careers through workshops, school enrichment activities, STEM themed camps, after school programs, and clubs as well as individual project work on STEM related topics. Programming provided during these in- and out-of-school opportunities utilized national 4-H curriculum such The Power of Wind, Iowa State University and other Land Grant University

resources such as GEAR Tech 21, and other available science education resources such as those available through NASA and NOAA.

Results

In the 2011/2012 year, youth enrolled in 4-H environmental education programs (covering topics such as, gardening, astronomy, Geospacial navigation, environmental sustainability, nature experiences, ecology, plant science, water quality, conservation, habitat preservation, plant and animal taxonomy, and fish and wildlife service refuge restoration) took the Iowa 4-H Science Self-Assessment. The survey indicated that participants were enthusiastic about science and reported having strong science skills. 71% agreed that they like science, 74% agreed science is useful for solving everyday problems, and 71% agree that there are lots of ways science could be used to solve society's problems. 41% of participants agreed they wanted to pursue a science-related career after graduating from high school. 62% of participants reported they taught others about science through activities such as a demonstration or a presentation at a community meeting and 76% reported helping with a community service project related to science, such as planting trees or cleaning up a stream. For questions related to STEM process skills such as designing a scientific procedure to answer a question or using data to create a graph for presentation to others, 44% of youth reported that participating in 4-H program improved their skill level in completing such tasks. The lower than anticipated percentage of youth reporting change in skills level may be a result of surveying only youth who participated in environmental education programs. We are taking steps in 2013 to evaluate a more representative sample of the offered 4-H STEM programs.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #11

1. Outcome Measures

Percentage of youth from randomly selected 4-H clubs who self-report they demonstrate outstanding communication practices in sending and receiving written, visual, and oral message after being engaged in 4-H club experiences.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	68

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

According to the study, Are They Really Ready to Work? Employer's Perspectives on the Basic Knowledge and Applied Skills of New Entrants to the 21st Century Workforce (2006), "the future workforce is here, and it is ill-prepared." Business leaders reported that "while the three 'R's are still fundamental to every employee's ability to do the job, applied skills such as team work, critical thinking, and communication are essential for success at work. In fact, at all education levels, these applied skills trump back knowledge skills such as reading and mathematics in importance in the view of employers." High percentages of surveyed employers indicated that high school graduates entering the workforce are deficiently prepared in the most important skills--written/oral communications (written = 81% and oral = 53%), professionalism/work ethic (70%), critical thinking/problem solving (70%), ethics/social responsibility (44%), and teamwork/collaboration (35%).

What has been done

All 100 counties offered a county communication event program. 1,741 4-H members participated in public speaking and performance events at the 2012 Iowa State Fair. Increasing communication skills and communication opportunities in the local 4-H club continued to be emphasized at 4-H leader trainings. All Iowa 4-H'ers are expected to demonstrate learning by giving a presentation or demonstration before a group, typically at a club or group meeting. 65 volunteers received training to help members improve the quality of 4-H working exhibits and presentation skills.

Results

622 randomly selected 4-H Club members completed the Iowa 4-H Youth Citizenship, Leadership, Communication, and Learning Self-Assessment Tool. The tool, based on a 5-point Likert scale, examined self-reported changes in 4-H Club members' communication practices after participating in 4-H as compared to before participating in 4-H. On average, 49.4% of 4-H Club members indicated a 1-point increase, 14.1% indicated a 2-point increase, 3.7% indicated a 3-point increase, and .3% indicated a 4-point increase in their communication practices after participating in a 4-H Club.

4-H Club members commonly indicated being involved in 4-H helped a young person strengthen communication practices through... 1) creating demonstrations, presentations, and speeches; 2) speaking in front of groups; 3) expressing ideas and asking for help from 4-H Leaders and judging officials; and 4) working together with a team of different aged people and having to speak and write effectively, listen attentively to others' views, and articulately express one's perspectives.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #12

1. Outcome Measures

Percentage of youth from randomly selected 4-H clubs who self-report they demonstrate productive citizenship practices by being fair and trustworthy, identifying community needs, organizing service learning projects, and participating in community issues after being engaged in 4-H club experiences.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	72

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
According to the National League of Cities, an organization dedicated to helping city leaders build better communities, "by participating in local government, youth gain work experience, acquire new skills, learn responsibility and accountability, develop a greater sense of confidence and empowerment, and forge meaningful connections to other youth and adults. Youth involved in positive activities such as service learning are also less likely to pursue risky behaviors. In addition, youth voice in local decision-making can help city officials enact better policies and programs, especially with regard to youth issues." (National League of Cities -- Youth Civic Engagement http://www.nlc.org/find-city-solutions/iyef/youth-civic-engagement).

What has been done
4080 Iowa youth are enrolled in the 4-H Citizenship project. 1204 youth and adults contributed 6017 volunteer hours to improve their communities through the State 4-H Youth Conference and Pioneer Community Improvement grants. Twenty-five Iowa 4-H clubs leveraged $4605 in Pioneer Community Improvement grants into nearly $18,500 in community improvement projects. Four 4-H members served as delegates to National 4-H Conference; 102 Iowa 4-H'ers participated in the national Citizenship Washington Focus program. Fifteen members interviewed for state level Citizenship project awards. Participation in a service activity is an expectation of all Iowa 4-H members and Iowa 4-H clubs.

Results
622 randomly selected 4-H Club members completed the Iowa 4-H Youth Citizenship, Leadership, Communication, and Learning Self-Assessment Tool. The tool, based on a 5-point Likert scale, examined self-reported changes in 4-H Club members' citizenship practices after participating in 4-H as compared to before participating in 4-H. On average, 52.1% of 4-H Club members indicated a 1-point increase, 19.5% indicated a 2-point increase, and .8% indicated a 3-point increase in their citizenship practices after participating in a 4-H Club.

4-H Club members most commonly indicated being involved in 4-H helped a young person strengthen citizenship practices through... 1) being involved in service learning projects to improve one's community; 2) understanding the importance of helping and caring about others; 3) showing respect to others, especially one's elders; 4) working with and learning from other individuals; and 5) emphasizing the importance of giving of one's time/volunteering.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #13

1. Outcome Measures

Percentage of youth from randomly selected 4-H clubs who self-report they demonstrate effective leadership practices in working with others, listening to others' ideas, sharing one's own ideas, and handling conflict respectfully after being engaged in 4-H club experiences.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	67

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
According to Wehmeyer, Agran, & Hughes (1998), youth leadership is part of the youth development process and supports youth in developing: (a) the ability to reflect upon his or her strengths and weaknesses; establish personal and occupational goals; and have the self-esteem, confidence, motivation, and ability to carry them out (including the capacity to develop support networks in order to fully participate in community life and effect positive social change); and (b) the competence to point or direct others on a course of action, influence individuals' opinions and behaviors, and serve as a role model. Evaluations of youth development programs have demonstrated that young people who participate in youth leadership and civic engagement activities consistently get the supports and opportunities needed for healthy youth development (Innovation Center for Community and Youth Development, 2003). Additionally, research shows that youth who participate in developmentally appropriate decision making activities and those who have access to meaningful youth development supports and opportunities are better prepared to make a successful transition to adulthood (Gambone, Klem, and Connell 2002).

What has been done
2,452 Iowa youth are enrolled in the 4-H Leadership project. More than 1,350 community and project clubs provide leadership experiences for members. 582 youth and 72 adults received leadership training during the Iowa 4-H Youth Conference; 70 youth and adults completed Youth-Adult Partnerships training; 22 4-H members represented Iowa at the National 4-H Congress. Forty high school youth provide leadership as members of the State 4-H Council, planning the 4-

H Youth Conference and serving as ambassadors for the 4-H program. 87 youth had volunteer leadership positions with 4-H events during the 2012 Iowa State Fair.

Results
622 randomly selected 4-H Club members completed the Iowa 4-H Youth Citizenship, Leadership, Communication, and Learning Self-Assessment Tool. The tool, based on a 5-point Likert scale, examined self-reported changes in 4-H Club members' leadership practices after participating in 4-H as compared to before participating in 4-H. On average, 50.6% of 4-H Club members indicated a 1-point increase, 14.3% indicated a 2-point increase, and 2.1% indicated a 3-point increase in their leadership practices after participating in a 4-H Club.

4-H Club members most commonly indicated being involved in 4-H helped a young person strengthen leadership practices through... 1) providing opportunities to have officer roles within 4-H Clubs and team leader roles within activities; 2) presenting and voicing personal opinions effectively in front of a group of people; 3) exhibiting characteristics of responsibility, dependability, character, and trustworthiness; 4) cooperating with others within team settings; and 5) role modeling and setting good examples, such as treating others fairly, for younger 4-H'ers.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #14

1. Outcome Measures

Percentage of youth from randomly selected 4-H clubs who self-report they demonstrate successful learning practices by creating project learning goals, analyzing the strengths and weaknesses of different ideas, using time efficiently, and applying lessons learned to new experiences after being engaged in 4-H club experiences.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	69

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
According to the study, Are They Really Ready to Work? Employer's Perspectives on the Basic Knowledge and Applied Skills of New Entrants to the 21st Century Workforce (2006), "the future

workforce is here, and it is ill-prepared." Business leaders reported that "while the three 'R's" are still fundamental to every employee's ability to do the job, applied skills such as team work, critical thinking, and communication are essential for success at work. In fact, at all education levels, these applied skills trump back knowledge skills such as reading and mathematics in importance in the view of employers." High percentages of surveyed employers indicated that high school graduates entering the workforce are deficiently prepared in the most important skills -- written/oral communications (written = 81% and oral = 53%), professionalism/work ethic (70%), critical thinking/problem solving (70%), ethics/social responsibility (44%), and teamwork/collaboration (35%). Additionally, nearly 75% of surveyed business leaders identified creativity/innovation as a top applied skill rising in importance for new entrants in the workforce.

What has been done
23,769 4-H'ers enrolled in one or more of the 38 project areas offered. All curriculum materials available to Iowa 4-H members is selected from the National 4-H Curriculum Directory and utilizes the experiential learning model. All 4-H clubs and members are expected to set goals, evaluate progress towards goals, and keep records of activities and evaluate experiences. 100 counties provide a county fair exhibit opportunity for members to share what they have learned. Participating members share their exhibit goals, what was done, and what was learned as part of exhibit conference judging. Camps, conferences and contests provided additional learning opportunities for selected members to enhance and demonstrate skills learned.

Results
622 randomly selected 4-H Club members completed the Iowa 4-H Youth Citizenship, Leadership, Communication, and Learning Self-Assessment Tool. The tool, based on a 5-point Likert scale, examined self-reported changes in 4-H Club members' learning practices after participating in 4-H as compared to before participating in 4-H. On average, 46.5% of 4-H Club members indicated a 1-point increase, 19.2% indicated a 2-point increase, and 3.2% indicated a 3-point increase in their learning practices after participating in a 4-H Club.

4-H Club members most commonly indicated being involved in 4-H helped a young person strengthen learning practices through... 1) defining the purpose or need of projects; 2) creating project learning goals; 3) reviewing a variety of resources related to projects; 4) identifying the strengths and weaknesses of different ideas, solutions, or approaches; 5) reflecting on what is going well and what needs to change during projects to achieve goals; 6) using time wisely to address project goals; and 7) applying what is learned during projects to new experiences.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #15

1. Outcome Measures

Percentage of youth who self-report an increase in civic engagement knowledge and intent to engage in service projects in their communities.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	88

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
In Iowa, 11% of the population lives below the poverty level (US Census), including 13.6% of related children under the age of 18 and 7.7% of individuals aged 65 and older. In 2009, Iowa's drop-out rate increased by 23% (IDOE), and according to the Iowa Youth Survey (2005) 65% of 11th graders do not feel supported in their neighborhoods and 70% do not feel supported in their schools. The statistics below represent some of the contributing factors for people experiencing economic hardship. In Iowa, 6% of Iowa's population is unemployed (USDOL), the highest rate for unemployment in Iowa since 1990. Inability to find affordable housing, eviction foreclosure, domestic violence and lack of employment are factors that contribute most heavily to the fact that 21,000 Iowans were homeless in 2005 (Iowa Statewide Homeless Study). Youth are an untapped resource who could make a difference in their communities, and in turn, could improve their relationships with adults in their communities.

What has been done
The ISU Extension and Outreach 4-H Youth Program created a statewide program called Reach Out Iowa (ROI) with a goal to instill a service learning ethic with 6,900 youth primarily in 6 community sites. The purpose is to create a climate of positive community change that recognizes youths' strengths. Through developing community partners with youth serving agencies, ISU Extension and Outreach staff have:
* Trained 4,000 youth in service learning representing all 99 Iowa counties.
* Provided more than $100,000 to communities across the state, specifically targeting Sioux City, Cedar Rapids, Waterloo/Cedar Falls, Des Moines, Marshalltown, and the Winterset and Adair County.
* Conducted 193 training sessions with youth and community providers
* Supported more than 100 service learning projects that included food and clothing drives; financial literacy education; high school defensive driving simulations; cabin remodels; dissemination of resource and referral information on poverty-related issues; gardening projects at nursing homes; invasive species education; school readiness activities for disadvantaged youth in an inner city; weatherization of homes; and military family support activities.
* Impacted 13,000 Iowans who benefitted from the service learning projects. Approximately 50% of the 13,000 (6,500) benefitting from these projects were economically disadvantaged.
* 50 partner organizations have received training on effective service learning principles and practices and now more than 60% of the organizations engage youth in leadership positions.

Results

Youth experienced significant changes as a result of their participation in service learning projects. Civic knowledge, leadership, community attachment, community responsibility, and personal skills perceptions were greater after the experience as compared to before. Most youth benefitted by working with others and felt included and valued in the project. Their experiences made them care more about needs in their communities and they plan to do other service or volunteer projects. The project met a key performance measure that at least 50 percent of youth would increase their civic knowledge. 87.5% of youth participating in service learning projects indicated they "agree" or "strongly agree" that they plan to do other service or volunteer projects. Recipient organizations were extremely positive about the planning and implementation process. 98% stated that the service learning projects were beneficial to their clients/recipients and that they, too, benefitted from their interaction with the youth and are now more interested in working with youth in the future. Additionally, the project met a key performance measure that at least 75% of recipient organizations would report that the clients/recipients are benefitting from and/or finding the activities provided by the service learning participants to be useful.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Public Policy changes
- Competing Public priorities
- Competing Programmatic Challenges

Brief Explanation

Population shifts continue to concentrate youth in Iowa's 11 most populous counties, with 52% of Iowa's school-aged youth living in those counties in 2012. The impact on the 4-H Youth Development program is the need to devote more resources to programs in those counties, but tight budgets have meant a reduced capacity to fund programs targeted specifically for those counties. Although we were able to partially meet innovative club programing goals with grant funded programs, the ability to sustain these programs when grant funds disappear is unknown.

Focusing attention on specialized innovative program efforts has diluted the amount of resources available to work with more traditional 4-H audiences. Implementation of new and innovative programs to reach new youth audiences is dependent on both the number of youth residing in the area and staff's ability to develop relationships with potential volunteer citizen pools. Acceptance by current 4-H staff and volunteers of innovative and emerging 4-H club models is critical to the success of the programs and has been challenging.

Aligning program outcomes with NIFA priorities, while maintaining and improving a comprehensive 4-H Youth Development program remains a challenge. The Iowa 4-H Youth Program emphasizes broader youth development and life skills outcomes while NIFA priorities are typically more narrowly focused around single topics. This is especially

noticeable in program evaluation efforts of NIFA priorities. However, the Iowa 4-H Youth program has increased efforts to measure knowledge and behavior change of program participants in selected educational programs that match NIFA priority areas (ex: food safety and childhood obesity). We also increased efforts to identify additional STEM opportunities within current educational programs and added staff training on Inquiry Learning methods. The latter efforts were developmental to build capacity for implementation in FY 2013.

Adoption of the Iowa Core Curriculum standards by the Iowa Department of Education and local school districts presents challenges in the ability of the Iowa 4-H Youth Program to partner with schools. Staff continues to evaluate current 4-H curricula to identify core standards met, revising curricula units where necessary to meet core standards needed for use by local school districts. Because local school districts emphasize formal education models as the best way to align local curricula with state and national standards, schools are often hesitant to engage in non-formal youth development educational offerings through Extension and Outreach.

Significant time was spent planning for staff realignment (to occur FY 2013) to better address the challenges addressed above. A priority for ISU Extension and Outreach is to be the leader for K-12 outreach efforts across the university. It is desired that the Iowa 4-H Youth program will provide program expertise in youth development for all units and departments of ISU. Planning efforts for this increased university role has meant less time and resources available for program design and delivery.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

4-H Youth Citizenship, Leadership, Communication, and Learning Self-Assessment Study

622 randomly selected 4-H club members representing Iowa's 20 Extension and Outreach areas completed the 4-H Youth Citizenship, Leadership, Communication, and Learning Self-Assessment Tool. The tool, based on a 5-point Likert scale (where 1 = not at all and 5 = great deal), examined self-reported changes in 4-H club members' communication, leadership, citizenship, and learning practices after participating in 4-H as compared to before participating in 4-H. 397 females (63.8%) and 225 males (36.2%) completed the self-assessment.

- Reliability analysis of the self-assessment tool indicated that the individual questions within each of the four respective constructs (citizenship, leadership, communication, and learning) represented the conceptual meaning of the given construct. Further, statistical comparisons of "After" and "Before" responses (all respondents combined) using paired t-tests were conducted for each of the constructs, as well as for the individual questions within the constructs. For each construct and each question, the respondents reported statistically higher "After" scores than "Before" scores.
- 49.4% of 4-H Club members indicated a 1-point increase, 14.1% indicated a 2-point increase, 3.7% indicated a 3-point increase, and .3% indicated a 4-point increase in their communication practices after participating in a 4-H club.
- 50.6% of 4-H Club members indicated a 1-point increase, 14.3% indicated a 2-point increase, and 2.1% indicated a 3-point increase in the leadership practices after participating in a 4-H club.

• 52.1% of 4-H Club members indicated a 1-point increase, 19.5% indicated a 2-point increase, and .8% indicated a 3-point increase in their citizenship practices after participating in a 4-H club.
• 46.5% of 4-H Club members indicated a 1-point increase, 19.2% indicated a 2-point increase, and 3.2% indicated a 3-point increase in their learning practices after participating in a 4-H club.

Reach Out Iowa (ROI) Project

As a result of 4,000 youth receiving service learning training via the Reach Out Iowa project, the following impact was obtained:

• Youth participants experienced significant improvement in civic knowledge, leadership, community attachment, community responsibility, and perceptions of personal skills after participating in service learning projects.
• 87.5% of youth participants indicated they "agreed" or "strongly agreed" that they plan to do other service or volunteer projects in their communities.
• 98% of recipient organizations stated the service learning projects were beneficial to their clients and they, too, benefitted from their interaction with the youth and are now more interested in working with youth in the future.
• Focus groups with adults and youth involved in ROI service learning projects indicated that adults in the community, including teachers and project leaders, see teenagers as capable, responsible, and generous when provided with the opportunity to serve. Youth shared they learned communication, teamwork, and leadership skills and experienced a sense of pride and accomplishment in their work.

Key Items of Evaluation

CHILDHOOD OBESITY

As a result of 446 teachers, pre-service teachers, and other educators participating in Connecting Learning and Living (CLL) training on connecting youth with MyPyramid concepts and understanding the origins of food, the following impact was obtained via surveys:

• 90% of the training participants reported increases in knowledge, interest, and confidence in delivering MyPyramid/MyPlate and the origin of food.
• 100% of training participants indicated they would use what they learned and the lessons plans they received with students.
• 113 educators reported that 91% of 8,891 youth that participated in CLL lessons chose healthy foods after completing the lessons.
• 91% of the 8,891 participating students learned about growing food from plants.
• 94% of the 8,891 participating youth ate fruits and vegetables.
• 64% of the 113 educators reported integrating gardens in their lessons with students.
• 58 Healthy Gardens, Healthy Youth grant sites have provided fruit and vegetable snacks at least 9 times to more than 1,200 students.
• Iowa State University Extension and Outreach CLL participants are working with institutions, Team Nutrition, Farm to School, local food producers, Healthiest State, Blue Zone, HyVee, and other health and nutrition interest groups to increase fruit and vegetable consumption in Iowa.
• Educators shared...
  • "The students struggled with categorizing foods before the lessons were taught. By the end of the lessons, they had to prepare a menu using all the food groups. Over 90% of

the class scored at or above 92% on their menu."

- "Students are more aware of what foods are healthy for them."
- "Students chose healthy foods/fruits and vegetables for lunch/snacks/home."
- "Students were more willing to try/tried new foods."
- "Students shared their new knowledge and skills about growing seeds/plants/gardens."
- "Students talked about what part of the plant/what plants do foods come from."
- "Students helped parents plant gardens at home."

FOOD SAFETY

A comprehensive food safety and quality assurance curriculum program (FSQA) is conducted each year with 4-H'ers. Through the use of a variety of educational materials including video tutorials and hands-on learning, youth learn about animal identification, source verification, biosecurity measures, drug treatments and injections, quality record keeping, and appropriate animal handling and welfare requirements.

As a result of 641 youth participating in Food Safety and Quality Assurance training, the following impact was obtained via self-reporting surveys:

- 80% of youth indicated they strengthened their behavioral practices after attending the FSQA training courses in the areas of record keeping, medication administration, animal welfare, and ethics.
- The top three techniques or practices youth indicated they have implemented or changed after participating in FSQA training are
  - Keeping accurate records for identifying animals that are sick
  - Following appropriate drug withdrawal requirements when giving animals medications
  - Understanding that one's practices not only affect their own animals but other animals as well