

2013 Iowa State University Combined Research and Extension Annual Report of Accomplishments and Results

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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 2013 reflects reporting under the five USDA priority areas, and is organized under nine broad, interdisciplinary programs:

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

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. The method of calculating research FTEs/SYs was adjusted for 2013 to include professional staff (PYs), per USDA guidance. We had not included research PYs in the past.

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.

Total Actual Amount of professional FTEs/SYs for this State

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	380.0	0.0	150.0	0.0
Actual	383.9	0.0	307.5	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 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:

- Ad hoc 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.

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

1. Method to identify individuals and groups

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

Brief explanation.

- 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)
- Meeting specifically with non-traditional groups
- Survey specifically with non-traditional groups
- Meeting specifically with non-traditional individuals
- Survey specifically with non-traditional individuals
- Meeting with invited selected individuals from the general public
- Survey of selected individuals from the general public

Brief explanation.

In addition to the ongoing needs assessment of ISU Extension and Outreach stakeholders, a comprehensive needs assessment of lowans was conducted in 2010 to get a representative sample of all lowans 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

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 stakeholder

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 used 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
8660357	0	7061439	0

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	7731224	0	7921210	0
Actual Matching	7731224	0	7921210	0
Actual All Other	20599696	0	56529861	0
Total Actual Expended	36062144	0	72372281	0

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous				
Carryover	5434711	0	6797305	0

V. Planned Program Table of Content

S. No.	PROGRAM NAME
1	Childhood Obesity - Prevention
2	Climate Change
3	Community and Economic Development
4	Families: Expanding Human Potential
5	Food Safety
6	Global Food Security and Hunger
7	Natural Resources and Environmental Stewardship
8	Sustainable Energy - Biofuels and Biobased Products
9	Youth Development

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%		99%	
704	Nutrition and Hunger in the Population	25%		1%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	5.0	0.0	1.4	0.0
Actual Paid Professional	1.3	0.0	0.6	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
82391	0	71468	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
82391	0	71468	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
43670	0	369112	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.

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 related to nutrition and children).

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	3500	20000	13000	10000

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

Patent Applications Submitted

Year: 2013
 Actual: 1

Patents listed

Method of Making Fatty Acid N-Acylalkanolamines. Inventors: Wang, Tong; Wang, Xiaosan. Filed: 4/24/2013.

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	0	6

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
2013	39216

Output #2

Output Measure

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

Year	Actual
2013	30641

Output #3

Output Measure

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

Year	Actual
2013	1771

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.

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Percent of youth participants reporting increased intake of fruit.

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

Percent of youth participants reporting increased intake of vegetables.

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Percent of youth participants reporting increased physical activity.

Not Reporting on this Outcome Measure

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
2013	1386

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 training has been provided to >1300 childcare providers in Iowa.

Results

More than 77.6% of participants reported preparedness to make changes 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 priority programming. Priority 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. To evaluate priority programs (i.e. childcare training), online surveys are capturing evaluation/impact data. Due to EFNEP program evaluation changes during Iowa Fiscal Year 2013, evaluation data were not available. Additionally, enrollment in Live Healthy Iowa Kids decreased greatly due to programming changes. Furthermore, childcare trainings are now being offered by other state agencies as a free online course, which resulted in decreased participation in the Extension-delivered trainings. For those who attended Extension childcare training, results suggest more than

70% of participants felt prepared to apply health promoting dietary behaviors in the childcare settings.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Childcare training evaluation results indicate >70% of attendees are prepared to apply health-promoting dietary behaviors in the childcare settings. Future evaluation may include monitoring childcare center progress via the Environmental Rating System.

This year's report does not include EFNEP program evaluation for youth due to changes in evaluation and programming. Conversation with the Iowa Department of Public Health (IDPH) has led to changes in the youth EFNEP programming in the state of Iowa. While EFNEP youth programming provided in schools has phased out over the past two years, ISU Extension and Outreach is preparing to launch a new program within the next 18 months. ISU Extension and Outreach anticipates partnering with the Summer Food Service program in rural and micropolitan sites beginning in June 2015. This eliminates competition between the SNAP-Ed and EFNEP programs in urban schools during the academic year and provides programming in conjunction with much needed summer meals to a high-risk, rural audience. This summer programming will allow more flexibility in scheduling and providing greater opportunity for richer engagement with food including the potential for integrating a gardening experience. Evaluation data for this EFNEP programming will include monitoring pertinent health behaviors linked to obesity.

Key Items of Evaluation

Childcare training is conducted statewide to improve policies, practices and the environment relative to obesity. Currently ISU Extension and Outreach conducts nine different childcare trainings (i.e. food safety, fruit and vegetable variety, meal planning, food allergies, role modeling, linking literacy with food, MyPlate). Each training is two hours in length and includes experiential learning opportunities. At the completion of each training, an evaluation is conducted to assess achievement of learning objectives and effectiveness of the training. Participants self-report readiness and intent to implement specific policies or practices in their childcare setting. Over three-quarters (77.6%) of participants reported intent to implement policy or practices in their 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	5%		4%	
104	Protect Soil from Harmful Effects of Natural Elements	35%		0%	
132	Weather and Climate	25%		14%	
135	Aquatic and Terrestrial Wildlife	0%		5%	
202	Plant Genetic Resources	0%		63%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	0%		10%	
303	Genetic Improvement of Animals	0%		4%	
605	Natural Resource and Environmental Economics	25%		0%	
608	Community Resource Planning and Development	10%		0%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	4.2	0.0	4.1	0.0
Actual Paid Professional	2.3	0.0	4.7	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
257900	0	488195	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
257900	0	488195	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
221348	0	2191171	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

In 2014 Extension programming relevant to climate change will be included in the ANR Food Security Program assisting farmers and landowners in adapting to the impacts of extreme weather fluctuations on crop and livestock production by reducing risk.

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

2. Brief description of the target audience

Targeted audiences are those with whom research and education can make a difference, and who can benefit from and apply research-based information, such as those whose production systems are affected by climate change, as well as those who consult or influence the decision-makers of these growers and producers. Extension programming efforts focused on producers who had excessively wet and cold soils in the spring, thereby delaying or preventing corn and soybean planting and those who experienced drought. These growing conditions impacted the quality of harvested grain, which in turn, had consequences related to feedstuffs.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	34334	43500	0	0

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

Patent Applications Submitted

Year: 2013

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	1	10	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of current year citations of climate related publications.

Year	Actual
2013	1

Output #2

Output Measure

- Number of current year climate relevant educational programs.

Year	Actual
2013	8

Output #3

Output Measure

- Number of acres under recommended adaptation strategies for production agriculture and natural resources management, including invasive species, pest management, pollutant loads, wetlands.
Not reporting on this Output for this Annual Report

Output #4

Output Measure

- Of the _____ number of participants, the number that adopt recommended adaptation strategies for production agriculture and natural resources management, including invasive species, pest management, pollutant loads, wetlands.

Year	Actual
2013	2625

Output #5

Output Measure

- Number of producers and landowners who adopt BMPs after severe flooding.
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 under recommended adaptation strategies for production agriculture and natural resources management, including invasive species, pest management, pollutant loads, & wetlands.
2	Of the _____ number of participants, the number that adopt recommended adaptation strategies for production agriculture and natural resources management, including invasive species, pest management, pollutant loads, & wetlands.
3	Number of producers and landowners who adopt BMPs after severe flooding.
4	Number of producers indicating adoption of recommended practices because of drought conditions.

Outcome #1

1. Outcome Measures

Number of acres under recommended adaptation strategies for production agriculture and natural resources management, including invasive species, pest management, pollutant loads, & wetlands.

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Of the _____ number of participants, the number that adopt recommended adaptation strategies for production agriculture and natural resources management, including invasive species, pest management, pollutant loads, & wetlands.

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

Number of producers and landowners who adopt BMPs after severe flooding.

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Number of producers indicating adoption of recommended practices because of drought conditions.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	2625

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Drought conditions during the growing season ended up reducing corn yields by 25% across Iowa when compared to expected trend-line corn yields. Iowa has 13.7 million acres of corn each year, and this loss could represent reduced production of about six hundred million bushels of corn, reducing Iowa farm income by billions of dollars. Some counties approached a 55% reduction in corn yields compared to their 10 year average. Forage production fell similarly, reducing the feedstuffs available for cattle operations across Iowa.

What has been done

Iowa State University Extension responded by holding 65 "Drought Meetings" across Iowa during the months of June, July and August, which attracted 2625 attendees. Over 750 cornstalk samples were tested for potentially toxic levels of nitrates. Drought years historically cause problems well past the growing season, so 22 fall and winter beef meetings were held attracting 324 cattle producers. Drought management fact sheets were developed and shared, a central drought web page was maintained, and useful information was shared statewide through the media.

Results

75% of participants from fall and winter beef meetings increased their understanding of drought related feedstuff issues. Three different surveys showed that between 66 to 80 percent of attendees were monitoring feeds for toxic nitrate levels, based on our recommendation, and an average of 43% made ration changes to insure adequate nutrition without toxicity risks for their livestock. As a result of educational efforts, 90% of one surveyed audience and 48% of another conducted substantial aflatoxin monitoring of their grain to ensure safety of grain in the supply chain. 90% of service providers surveyed shared ISU information with their clients. 76% of a surveyed group said they were better prepared to work with their crop insurance adjustors in the wake of substantial yield losses from drought. 81-87% of producers surveyed in different areas of Iowa indicated that they scouted for excessive spider mite populations in their crops. On average, 43% had to treat for this pest, based on ISU recommendations. One survey showed that these respondents represented 3 million acres of crops. Yield increases average 2.5 bushels per acre when treating for this pest.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

75% of participants from fall and winter beef meetings increased their understanding of drought related feedstuff issues. Three different surveys showed that between 66 to 80 percent of attendees were monitoring feeds for toxic nitrate levels, based on our recommendation, and an average of 43% made ration changes to insure adequate nutrition without toxicity risks for their livestock. As a result of educational efforts 90% of one surveyed audience and 48% of another conducted substantial alfatoxin monitoring of their grain to ensure safety of grain in the supply chain. 90% of service providers surveyed shared ISU information with their clients.

76% of a surveyed group said they were better prepared to work with their crop insurance adjustors in the wake of substantial yield losses from drought. 81-87% of producers surveyed in different areas of Iowa indicated that they scouted for excessive spider mite populations in their crops. On average, 43% had to treat for this pest, based on ISU recommendations. One survey showed that these respondents represented 3 million acres of crops. Yield increases average 2.5 bushels per acre when treating for this pest.

Key Items of Evaluation

Of respondents representing 3 million acres of crops, 43% (on average) had to treat for this spider mites, based on ISU recommendations. Yield increases average 2.5 bushels per acre when treating for this pest.

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: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	25.0	0.0	5.1	0.0
Actual Paid Professional	9.3	0.0	1.8	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
600018	0	228603	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
600018	0	228603	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
1751433	0	554116	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Conducted workshops and educational efforts with community organizations, individuals and leaders to assist developing and implementing plans for physical and social community improvements.
- Conducted research and outreach to communities on planning, zoning, resource management, and community and economic development activities using a variety of information dissemination methods.
- Held training sessions to improve skills of local government officials, community leaders and individuals.
- Provided long-term, disaster-recovery planning assistance to aid Iowa communities that suffered from flooding or other disasters.
- Conducted participatory research, outreach and training with leaders, workers and individuals to improve the effectiveness and skills of leaders and volunteers in community organizations.
- Faculty participated in relevant multistate research committees: NC1030 and NC1034.

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?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	52260	735622	1016	0

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

Patent Applications Submitted

Year: 2013
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	0	10

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of articles, publications, reports, plans.

Year	Actual
2013	296

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Community visioning and design: Communities completing quality of life projects.
2	Community planning: Community plans/projects initiated.
3	Community planning: Communities with improved civic functioning.
4	Community economic development: Communities participating in economic development events.
5	Community economic development: Number of jobs created or retained.
6	Community planning: Communities participating in training sessions.
7	Extension education, leadership training, and economic development through university collaborative.
8	Indirect contacts reached through Latino community outreach and economic development programming.

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
2013	32

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 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 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 7 Iowa towns plus the 7 Amana Colonies villages. ISU Extension CED completed 15 I-WALK (Iowans Walking Assessment Logistics Kit) projects in 14 Iowa towns to help 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 LA Community design studio worked with Mapleton to identify strategies for its long-term recovery from a devastating tornado in 2011.

Results

Seven visioning communities and the Amana Colonies received conceptual design plans, feasibility studies, and implementation planning assistance. As a result, Mapleton received two ILR Project grants for planting and a REAP grant to develop a conservation area; and Fonda received a \$50,000 REAP grant to improve a park. In 2013, the Community Design Lab created proposals for Maquoketa, Centerville, Waukon, and the 6th Avenue Neighborhood in Des Moines. The CDL also assisted Carver Elementary School in Des Moines in planning a school garden.

The Community Design Studio developed proposals for Mapleton that addressed trails, infrastructure, and community lighting. The I-WALK project produced SRTS reports for 15 school districts.

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
2013	38

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 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

Sixteen community design projects were completed through the College of Design's PLaCE program, which partners design classes/individual students with communities and organizations in need of design and planning assistance. The ILR Community Visioning Program provided technical landscape and transportation planning assistance to 7 Iowa towns plus the 7 Amana Colonies villages. The Community Development Data Information Analysis Lab (CD-DIAL) conducted six surveys for five clients: Ottumwa, Oelwein, Waukon, Cerro Gordo County, and Ames. CED Extension partnered with Waukon, Ottumwa, and Maquoketa to conduct community assessment and planning assistance through the Communities to Community (C2C) program.

Results

The PLaCE projects yielded 14 community reports; one design-build project including landscaping and interior design was completed for the House of Hope in Waterloo through PLaCE as well. Seven visioning communities and the Amana Colonies received conceptual design plans, feasibility studies, and implementation planning assistance. Communities are using the CD-DIAL surveys results as part of their long-term planning activities, such as county health improvement plans, housing plans, and economic development plans. C2C communities are conducting strategic planning based on the economic, demographic, and design analyses conducted by CED Extension faculty and staff.

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
2013	630

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Iowa municipal employees and planning officials must 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 Great Recession, particularly in terms of housing and jobs. State, county, and local government revenues are down because of the slow economy as well, so local government staff need information about planning fiscal-year budgets. Legislative and economic issues also impact nonprofit organizations.

What has been done

The Extension CED 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 workshops on finance, budgets, effective meetings and parliamentary procedures, annual urban renewal, and intergovernmental relations. Associate professor and Extension specialist Gary Taylor conducted eight Introduction to Planning and Zoning workshops. Taylor also worked with the Iowa DNR to develop a series of online videos on flood management ("Flooding in Iowa").

Results

In 2013, 299 municipal professionals were trained at the OSLGP municipal professionals certification program. Extension CED and the Iowa League of Cities trained 271 participants on Annual Urban Renewal, 368 on City Finance, 322 on effective meetings and parliamentary procedures, 32 on intergovernmental relations, 67 on improved citizen participation, and 6,043 on budgets. Two-hundred-forty-six planners attended planning and zoning workshops and 174 nonprofit employees attended nonprofit management academies in Linn and Marshall Counties.

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

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	61

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 recent 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

Extension CED is part of the Iowa Retail Initiative (IRI), a collaboration to create thriving rural communities. Extension CED maintains two specialists in Latino entrepreneurship and community development who work with Latino business owners, families, and youth. The Communities to Community program offers a two-year schedule of bundled design, educational, business and leadership development services available through Extension CED and the College of Design. Extension CED maintains partnerships and shares joint positions with the Keokuk Area Chamber of Commerce, the City of Fairfield, West Liberty (WE-LEAD), Cedar County (CCEDCO), and the regional development organization of Southwest Iowa (SWICO). Extension CED continued to conduct tours through its successful Road Scholar Program.

Results

The C2C program has generated \$106,488 for the Extension CED unit through partnerships with Ottumwa, Maquoketa, and Waukon. The IRI program has worked with local businesses in Spencer, Dubuque, Ottumwa, and Maquoketa on branding and merchandising. The Iowa Retail Initiative has also established projects in Shenandoah, Red Oak, and Clarinda. Through Alliant Energy's Hometown Rewards, Fairfield residents reduced their energy use by 8.5% and commercial customers cut energy use by 8%. Since 2012, 1,800 volunteer hours have been spent planting trees in Fairfield and Extension CED helped the community weatherize 2 homes. In 2013, the Road Scholar Program assisted 86 businesses, with a direct economic impact of \$203,615.

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

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	952

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Due to the 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

Community development specialists worked one on one with small business owners and entrepreneurs to start or strengthen their businesses and to assist them with writing business plans and navigating the business permit process. Community development specialist Frank Owens was involved in starting and supporting 18 local/regional housing trust funds with a dollar value of \$10,029,720 in new and rehabilitation housing construction in 2013.

Results

In 2012-13, nearly 700 jobs were created or retained. Approximately 200 businesses were started or assisted with help from Extension CED. Of those, 37 were minority entrepreneurs. The new and rehabilitation housing construction resulting from housing trust funds generated approximately 140 jobs in Iowa (80 jobs due to direct effect and 60 jobs due to indirect and induced effects).

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
2013	33

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Many Iowa communities lack the resources necessary to develop innovative projects and initiatives designed to improve economic development and quality of life for their citizens. The influx of immigrants to the state, particularly to Iowa's rural communities, creates the need for support to new Iowans who do not understand the US tax system, health-care system, and other aspects of US residency, as well as the need for long-time residents to adapt to their communities' changing demographics. Iowa's Healthiest State Initiative has created desire among Iowa communities to improve residents' wellness through education and changes to the built environment to make their towns safer and more convenient for physical activity. As local, state, and federal budgets become more limited, communities often turn to nonprofit organizations for financial and planning assistance.

What has been done

CED Extension conducted leadership training through Developing Dynamic Leaders, the Nonprofit Management Academy, GIS workshops, planning and zoning workshops, and financial accounting courses. Community to Communities (C2C) helps 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 decision making. Community development specialists help community leaders address issues such as housing, disaster recovery, and reduced financial resources. Through programs such as the College of Design's design camps for middle- and high-school students and JUNTOS, CED Extension educate youth on career options as well as strategies for pursuing higher education.

Results

Roughly 100 volunteers in 14 communities completed participatory planning through the Community Visioning Program, while 2,589 teachers, parents, students and local leaders in 15 school districts (14 towns) evaluated safe routes to school through the I-WALK program. The College of Design design camps were attended by 324 middle- and high-school students. CED specialists trained 420 middle-school students on diversity and the JUNTOS program assisted 12 families with higher education planning.

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development

Outcome #7

1. Outcome Measures

Extension education, leadership training, and economic development through university collaborative.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Civic engagement is a key to successful community development; however, many communities lack the knowledge or resources to effectively engage their citizens and stakeholders. Training in leadership, building social capital, developing economic development strategies, and long-term planning is not always available or affordable. In light of the increase in number and severity of natural disasters in the Midwest, disaster preparedness, response, and recovery are particularly critical issues for many communities.

What has been done

Extension CED established a partnership with the City of Dubuque and the University of Wisconsin Extension to create a program for conducting research and outreach programming focused on community leadership development, Extension education, and community leadership in response to natural disasters. The University Community Development Collaborative is housed in Dubuque and staffed by a full-time, tenured faculty member who is shared by ISU and UW, and two ISU community development specialists.

Results

As a result of this unique partnership, ISU, UW, and the University of Illinois are hosting the 2014 Community Development Society Conference in Dubuque, where much of the city's economic development programs will be showcased at the national level. Collaborative staff have also successfully applied for two grants: "Longitudinal Study of Rural Community Social Capital, Amenities, and Quality of Life" (\$488,807) is follow-on of two earlier studies of Iowa towns and will provide an instrument for measuring changes in social climate of rural communities and the effectiveness of development strategies over the last 20 years; "Philanthropic Preparedness, Resiliency and Emergency Partnership Curriculum Development" will develop a curriculum for nonprofit organizations on disaster preparedness, response and recovery.

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development

Outcome #8

1. Outcome Measures

Indirect contacts reached through Latino community outreach and economic development programming.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	500000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The demographics of Iowa communities are changing. According to the 2010 US Census, 5% of Iowa's population is Latino, almost double that of the 2000 Census, in which Latinos made up 2.8% of the state's population. Woods & Poole Economics, Inc. projects that the Latino population in Iowa will reach 9.1 percent of the state's population by 2030. Since 2002, the number of Latino-owned businesses in the state has grown by nearly 60%.

What has been done

ISU Extension and Outreach Community and Economic Development (CED) has already been aggressively employing outreach strategies for this growing demographic. Since 2006, community development specialist Himar Hernandez has been working with minority businesses, community leaders, and new Iowa residents. ISU and University of Minnesota developed a proposal to assess financing and technical assistance needs of underserved entrepreneurs and identify barriers separating them from service providers. In 2012, a second community development specialist with expertise in Latino community and economic development joined the Extension CED staff.

Results

Extension CED's Latino outreach received national attention when the city of Ottumwa and CED specialist Himar Hernandez were featured on NBC's TODAY Show on Friday, April 12, 2013, in a piece on how communities adapt to changing populations. The TODAY Show learned about Ottumwa and Hernandez's work there in an article in the Wall Street Journal on November 8, 2012. The topic involved increasing Hispanic populations in the Midwest. Hernandez was mentioned for his work with Latino entrepreneurs in Iowa through ISU Extension and Outreach. Since the late '90s, the Latino population in Ottumwa has increased from virtually 0 to 20 percent. In late March a TODAY Show news crew visited Ottumwa to learn how the community has

changed and adapted to its newest residents. Hernandez was asked about his work helping entrepreneurial Latinos who are interested in starting their own business. The former Ottumwa mayor Dale Uehling told TODAY about the Latino population changes his city underwent and how the community responded while he was in office. Several Latino business owners and a representative from the school district were also interviewed.

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 because 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%		33%	
703	Nutrition Education and Behavior	20%		0%	
704	Nutrition and Hunger in the Population	5%		0%	
801	Individual and Family Resource Management	20%		5%	
802	Human Development and Family Well-Being	50%		28%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	0%		29%	
805	Community Institutions, Health, and Social Services	5%		5%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	55.0	0.0	7.1	0.0
Actual Paid Professional	16.6	0.0	2.8	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
1086128	0	334137	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
1086128	0	334137	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
2281254	0	810733	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 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, NC1172, NE1039, 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?

eXtension is linked on ISU Extension web pages and provides access to additional financial management resources and the Ask an Expert feature. 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.

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	107460	2088745	18146	16212

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

Year: 2013
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	0	40

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, couple relationships, and aging.

Year	Actual
2013	42618

Output #2

Output Measure

- Number of professionals involved in programs related to child care, aging, couple relationships, and parenting.

Year	Actual
2013	7990

Output #3

Output Measure

- Number of individuals participating in family finance educational programs.

Year	Actual
2013	7404

Output #4

Output Measure

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

Year	Actual
------	--------

2013 131

Output #5

Output Measure

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

Year	Actual
2013	1401

Output #6

Output Measure

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

Year	Actual
2013	22

Output #7

Output Measure

- Number of adults who participate in programs on food, nutrition, and health.

Year	Actual
2013	296646

Output #8

Output Measure

- Number of youth participants in programs on food, nutrition, and health.

Year	Actual
2013	5409

Output #9

Output Measure

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

Year	Actual
2013	481

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 professionals trained to assist families (certification programs).
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	Percent of individuals improving personal and family financial management skills.
12	Percent of individuals making progress toward financial goals.
13	Percent of professionals or volunteers who are better prepared to apply or teach financial management skills.

Outcome #1

1. Outcome Measures

Number of parents improving parenting skills.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	3022

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Parenting education reduces tax dollar expenditures by helping to create stable families, reduce reliance on public assistance, and reduce risk behaviors. Lack of parenting knowledge and skills exist among parents who abuse children. Adolescent delinquency, violence and alcohol/drug abuse problems are associated with the environments in which they are raised, including how they are parented. Children who begin school without basic language and literacy skills have difficulty learning to read. Reading level at end of 3rd grade predicts graduating from high school. Students who don't complete high school will cost Iowa \$87 million in reduced tax revenues over their lifetime, \$1.8 million per year in additional welfare costs, face higher unemployment, have increased health issues, and will be incarcerated at a rate 10 times greater than their peers.

What has been done

Number of parents participating in parenting workshops through ISU Extension and Outreach: 5685, with more reached via newsletters, podcasts, blogs, and websites. Research- and evidence-based curricula implemented included the Strengthening Families Program for Parents and Youth: 10-14. This program reached 650 parents and youth in Iowa (and 28,750 outside Iowa) to reduce youth substance abuse and other challenging behaviors. Family Story Teller, a family literacy program, reached 342 parents and children. Together We Can, a co-parenting program, reached 780 parents and children. Growing Strong Families, a home visitation program, reached 453 parents & children. Juntos Para Una Mejor Educacion, designed to increase knowledge and skills of Latino families to bridge the gap from high school to college reached 108 parents and youth.

Results

Of the parents who participated in ISUEO sequential parenting education programs, 89% percent (n = 3022/3384) improved one or more critical parenting practices. For every dollar spent on the

Strengthening Families Program for Parents and Youth 10-14, \$9.60 is saved by reducing youth substance abuse and other risky behaviors. Funding and resources of \$40,871 in volunteer time, meeting space, incentives, donations of supplies and materials was contributed by Iowa communities to implement PROSPER. Of the parents who participated in the Growing Strong Families Program, 85% (n=188/221) improved or maintained healthy family functioning, problem solving and communication. After participating in Juntos Para Una Mejor Educacion, 54 Latino parents reported feeling more confident working with their child's school, increased monitoring of their youth's homework, and improved communication with their youth about school, college or other future plans.

4. Associated Knowledge Areas

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

Outcome #2

1. Outcome Measures

Number of professionals trained to assist families (certification programs).

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	7767

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Effective family life education relies heavily on quality implementation, and specifically how individuals are trained, supervised, and supported in their work with families. 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 sources.

What has been done

Professionals in Iowa were trained by ISU Extension and Outreach staff in a variety of research- and evidence-based curricula, as well as evidence-informed practices, to deliver early childhood, parenting, relationship and caregiver education directly to families (N= 6,799). An additional 968 individuals were trained outside of Iowa to deliver the Strengthening Families Program for Parents

and Youth: 10-14.

Results

The PROSPER Program used external evaluators to observe and monitor program fidelity of the Strengthening Families Program for Parents and Youth: 10-14. For the family component, 29 observation forms were completed (48% Return Rate, M=.89, SD=.14). For the school component, 26 external observations were completed (M=.90, SD=.09).

Post surveys completed by professionals who participated in the Healthy Relationship and Marriage Education Training (HRMET) revealed: 1) 96.3% of professionals increased knowledge and efficacy to effectively assist parents in developing healthy couple relationships; and 2) 97.8% of professionals identified relevant tools and practiced skills they could apply to their work with families.

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
2013	5640

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Iowa has the highest ranking in the nation for dual-earning parents. Iowa State University research examining Iowa's child care found that much of Iowa's child care quality is 'poor' or 'mediocre'. Overall, 20% of all observed Iowa child care was listed to be 'good.' Nearly 20% of the observed infant child care centers in Iowa offered 'poor' quality care; none were offering 'good' quality care. Of the observed family child care homes, 40% offered 'poor' quality. Of family child care providers, 34% 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 (ERS) program provided child care professionals with self-assessment, sequentially based instruction and guidance in developing a program improvement plan to strengthen the quality of early childhood education. Early Childhood Consultants working for Child Care Resource and Referral and 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.

Results

Directors/supervisors (N=166) and child care or preschool teachers (N=772) participated in the NSO program, completing 22,028 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=441) participating in the Early Childhood Environment Rating Scale training indicated that 87% of participants could better identify strengths and limitations, prioritize changes and develop a workable plan for program improvement. Early childhood education consultants received coaching and consultation training. In the I-Consult program, 47 early childhood education consultants learned and demonstrated skills in coaching and consultation and 30 earned an I-Consult credential. Participants reporting gains in knowledge and program improvement reported working with a total of 52,000 children and 37,000 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
2013	181

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. Eleven percent of family caregivers report that caregiving has caused their physical health to deteriorate. Improved self-care practices by family caregivers leads to reduced reliance by caregivers on health care and public services.

What has been done

ISU Extension and Outreach trained volunteers (N=33) implemented the Powerful Tools for Caregivers program to 207 family caregivers. Powerful Tools for Caregivers is a series of 6 classes designed to empower family caregivers of older adults to take better care of themselves.

Results

Of the 181 family caregivers who completed the evaluation survey, 100% reported increased self-care practices (increased exercise, use of relaxation techniques, health self-care) after participating in Powerful Tools for Caregivers. Participants also increased self-confidence in the caregiver roles and improved management of emotions.

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.

Not Reporting on this Outcome Measure

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
2013	45

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The 2010 Dietary Guidelines for Americans recommend that adults participate in moderate physical activity for 30 minutes per day on five days of the 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 an income above \$75,000.

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. 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, 45.2% of participants increased the amount of

physical activity in which they regularly participated. In addition, by the completion of the program, 82.4% of participants reported meeting the physical activity recommendations set by the 2010 Dietary Guidelines for Americans. These results showed improvement from the FY12 results of 36.7% of participants increasing physical activity and 70.1% meeting physical activity recommendations.

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
2013	83

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 healthy nutrition behaviors such as: 1) thinking about healthy food choices when deciding what to feed their families, 2) preparing foods without adding salt, and 3) using 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 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. 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, 83% of participants showed improvement in at least one nutrition practice. This result fell behind the FY12 result in which 91% of participants showed improvement in at least one nutrition practice. Of these participants, 57% more often thought about healthy food choices when deciding what to feed their family, 44% more often prepared foods without adding salt, and 70% more often used the "Nutrition Facts" to make food choices.

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
2013	86

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 resource management skills such as: 1) planning meals in advance, 2) comparing prices of foods, and 3) using grocery lists. These are skills that can prevent or alleviate food insecurity. Behavioral Risk Factor Surveillance System data from 2009 indicated that more than 10% of lowans struggled with food security. In 2009, Iowa State University Extension staff surveyed food pantry participants and found that the majority were food insecure with over half experiencing very low 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, 49% more often compared prices when shopping, and 56% more often used a grocery list. Furthermore, 43% of these participants reported that they less often ran out of food before the end of the month (improved their food security). This is the same as FY12 in which 86% 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

Percent of individuals improving personal and family financial management skills.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	59

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Repeated studies document consumers' limited knowledge and skills to manage personal and family finances effectively. Financial management skills help families prioritize competing goals, use limited resources efficiently, reduce financial stress, and maximize well-being. Skills in accessing, evaluating and using reliable sources facilitate making informed decisions in a constantly changing financial marketplace. Consumers who are knowledgeable and skilled financial managers are more likely to make wise financial decisions associated with major life events and reduce risks to their long-term financial security.

What has been done

Financial management skill-building programs were attended by 7,404 adults. Sequenced workshops focused on basic budgeting, record keeping, credit management and banking services. Online courses targeted young families learning how to take control of their finances; first-time homebuyers who assessed affordability and financing options; and investors wanting to achieve specific long-term goals. A five-week workshop series targeted women and covered basic planning skills, risk management, investing and legal issues. Electronic and hard copy publications, as well as news releases, a blog and Web-based resources reached consumers with timely, research-based financial management information.

Results

Following participation in at least two basic financial management workshops, 61% of participants reported improved financial management skills such as developing a spending plan, identifying spending leaks, reducing debt, and developing a system to avoid overdrafts. Following participation in a 5-week workshop series on women and finances, 79% of the participants reported that they had begun to use or update a system for planning and tracking expenses and 70% organized financial records so that someone else could take over at the time of a death.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #12

1. Outcome Measures

Percent of individuals making progress toward financial goals.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	65

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. 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 skill-building programs were attended by 7,404 adults. Sequenced workshops focused on basic budgeting, record keeping, credit management and banking services. Online courses targeted young families learning how to take control of their finances; first-time homebuyers who assessed affordability and financing options; and investors wanting to achieve specific long-term goals. A five-week workshop series targeted women and covered basic planning skills, risk management, investing and legal issues. Electronic and hard copy publications, as well as news releases, a blog and Web-based resources reached consumers with timely, research-based financial management information that could assist consumers in setting realistic goals and developing effective strategies to achieve them.

Results

Following participation in at least two sequential basic money management workshops, 53% of participants reported they had made progress toward their financial goals, 32% took steps to improve a credit score, and 47% had taken steps to reduce debt. Among the participants in the 5-week workshop series on women and finances, 77% had taken steps to improve retirement preparedness and 64% had started or increase emergency savings funds.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #13

1. Outcome Measures

Percent 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
2013	100

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

There is growing evidence of the need to provide financial education at important "touch points" when consumers will find information most relevant. Training professionals and volunteers to teach financial skills can be very effective in extending outreach. Iowa middle and high school

students require financial literacy education, but it was recently documented that Iowa teachers lack skills and confidence to provide instruction in this subject. Other research identifies the importance of qualified teachers as a predictor of student outcomes. Rural Iowa lacks sufficient Volunteer Income Tax Assistance (VITA) sites where low- and moderate-income families can have tax returns filed at no charge, can be assisted with access to eligible credits, and receive information about use of tax refunds. Trained volunteers can process tax returns and help consumers make wise choices.

What has been done

A summer workshop provided in-depth training on research-based middle and high school financial literacy curricula to 60 public school teachers. The three-day workshop emphasized content and pedagogical skills and incorporated varied learning styles. Extension staff trained and provided technical support to 60 community volunteers who were certified by the Internal Revenue Service to process tax returns at 24 rural VITA sites serving 25 counties. A new flyer "Smart Uses for Your Tax Refund" was prepared and distributed to VITA sites and EITC Campaign coalitions to facilitate discussions about the uses of refunds to build financial security and savings. A hybrid or blended financial coaching training course that combines face-to-face and online learning modules was completed by 10 community professionals or volunteers.

Results

Of the teachers who participated in the 3-day summer workshop, 100% reported that they were better prepared to teach financial education to their students. The proportion of teachers who reported that they were "well or very well prepared" to teach this content increased from 26% prior to the workshop to 87% following the workshop. All (N=60) trained VITA volunteers successfully completed an Internal Revenue Service examination and prepared 1,633 tax returns for low- and moderate-income families; 675 of those families qualified for the Earned Income Tax Credit and received a total of \$959,550 in EIC.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

V(H). Planned Program (External Factors)

External factors which affected outcomes

- 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 (loss of faculty and staff)

Brief Explanation

Time, resource, and economic constraints continue to influence program planning,

delivery, and participation rates. Iowa has a very high proportion of rural residents who hold down multiple jobs and lack resources of time and transportation, reducing availability for participation in Extension programs. In this rural 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 that had been traditionally served by ISU Extension staff. Research documents a stigma attached to participation in financial management programs, particularly in rural communities. The diversity of the population in Iowa continues to change and challenges the university's ability to meet diverse educational needs.

A slow economic recovery continues to constrain income growth, particularly among low-income families, and limits the ability of consumers to take actions to improve financial security. Employers face decreasing budgets for employee professional development making it difficult for professionals to afford educational offerings. Extension in this state continues to experience loss of staff. The vacancy of two county-based educators (2.0 FTEs) in urban communities resulted in missed opportunities for programming related to parenting, relationship education, early childhood, and aging. Decreased staff also fuels the demand for more programming via technology. Increasing interest in indirect delivery methods continue for individuals and work organizations. In response, ISU Extension has designed several websites and social media pages, and monitors the use of these pages through "unique visitors" rather than page "hits."

Healthcare reform will also modify the landscape for programming in this plan of work; additional opportunities in preventive health care may be available.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Post then pre-tests administered to Iowa parents who participated in research- and evidence-based parenting education, revealed that 96% (n=2,377) of parents improved one or more critical parenting practices.

Of the 166 directors and 772 child care or preschool teachers who participated in the Better Kid Care New Staff Orientation (NSO) program, preschool teachers (n=772) 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=441) participating in the Early Childhood Environment Rating Scale training indicated that 87% of participants could better identify strengths and limitations, prioritize changes and develop a workable plan for program improvement.

Early childhood Education consultants received coaching and consultation training; in the I-Consult program, 47 early childhood education consultants learned and demonstrated skills in coaching and consultation and 30 earned an I-Consult credential. Participants who reported gains in knowledge and program improvement served 52,000 children and 37,000 families.

Following participation in at least eight health/nutrition lessons, 83% of participants showed improvement in at least one nutrition practice. Of these participants, 57% more

often thought about healthy food choices when deciding what to feed their family, 44% more often prepared foods without adding salt, and 70% more often used the "Nutrition Facts" to make food choices. Additionally, 86% of participants showed improvement in at least one food resource management practice. Of these participants, 57% more often planned meals in advance, 49% more often compared prices when shopping, and 56% more often used a grocery list. Furthermore, 43% of these participants reported that they less often ran out of food before the end of the month (improved their food security).

Following participation in at least two basic financial management workshops, 61% of participants reported improved financial management skills such as developing a spending plan, identifying spending leaks, reducing debt, and developing a system to avoid overdrafts. Following participation in a 5-week workshop series on women and finances, 79% of the participants reported that they had begun to use or update a system for planning and tracking expenses and 70% organized financial records so that someone else could take over at the time of a death.

Post-then-pre surveys were administered to attendees after they participated in Powerful Tools for Caregivers workshops, and 100% (n=181) reported increased self-care behaviors (increased exercise, use of relaxation techniques, health self-care).

Additional findings are reported in results sections of the report. Challenges are attrition in program attendance and non-response among those who are present at the last session of sequential programs. 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

Over 95% of all individuals who participated in Extension parenting education, early childhood, and family caregiving programs have improved one or more professional skills, life skills and overall family functioning. Parenting knowledge and skills were measured via pre- and post-tests and retrospective surveys. Professional skills measured include early childhood coaching and technical expertise, teaching skills in science early learning, and health and safety. Skills and knowledge were evaluated through retrospective survey, recorded observations, and portfolio development.

Pre- and post-surveys indicate that 85% (n=147) of families who participated in Growing Strong Families improved or maintained healthy family functioning, problem solving, and communication. 82% (n=147) of parents increased or maintained social supports, 86% (n=147) were connected to additional concrete supports, and 81% (n=147) increased their knowledge about child development and parenting.

Of the 166 directors and 772 child care or preschool teachers who participated in the Better Kid Care New Staff Orientation (NSO) program, preschool teachers (n=772) 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=441) participating in the Early Childhood Environment Rating Scale training indicated that 87% of participants could better identify strengths and limitations, prioritize changes and develop a workable plan for program improvement. Early childhood Education consultants received coaching and consultation training; in the I-Consult program, 47 early

childhood education consultants learned and demonstrated skills in coaching and consultation and 30 earned an I-Consult credential. Participants who reported gains in knowledge and program improvement served 52,000 children and 37,000 families.

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.

Following participation in at least eight health/nutrition lessons, 86% of participants showed improvement in at least one food resource management practice. Of these participants, 57% more often planned meals in advance, 49% more often compared prices when shopping, and 56% more often used a grocery list. Furthermore, 43% of these participants reported that they less often ran out of food before the end of the month (improved their food security).

Of family caregivers who completed a post-then-pre survey after they participated in Powerful Tools for Caregivers workshops, 100% (n=181) increased self-care behaviors (increased exercise, use of relaxation techniques, health self-care).

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%		12%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	25%		88%	
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: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	20.7	0.0	4.4	0.0
Actual Paid Professional	3.5	0.0	2.4	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
227829	0	235406	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
227829	0	235406	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
939671	0	1818011	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.
- 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 food preservation education to consumers.
- Provide certification training and technical assistance in the dairy, beef and swine industries.
- Faculty participate in the following associated multistate research committees: NC213, NC1023, NC1183, NC1194, NE1048, S294, and S1056.

2. Brief description of the target audience

Food growers, food processors, food plant personnel, foodservice management and staff in commercial and noncommercial operations, consumers, and food stand volunteers will be served.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	6187	300160	100	100

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

Year: 2013
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	0	24

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of lowans receiving food safety certification.

Year	Actual
2013	3592

Output #2

Output Measure

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

Year	Actual
2013	12840

Output #3

Output Measure

- Number of hits on Iowa State University Extension food safety project websites.
 Not reporting on this Output for this Annual Report

Output #4

Output Measure

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

Year	Actual
2013	310475

Output #5

Output Measure

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

Year	Actual
2013	3600

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 individuals who learn about prevention, detection, control and intervention technologies.
4	Number of growers, producers, and food workers completing GAPS, GMPS, HACCP, food safety certification and on farm BMP programs to increase food safety.
5	Number of food handlers receiving food safety training and education in safe food practices.
6	Number of consumers who understand modern livestock practices as they pertain to animal health and comfort, and product quality and safety.
7	Number of adults that increase their awareness of safe home food preservation techniques.

Outcome #1

1. Outcome Measures

Number of people receiving food safety certification.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	3699

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. This evidences a critical need for food safety extension and outreach, which is also a priority item for USDA and FDA and has been the top area of focus within funding. There is a lack of understanding within the food community on the causes of foodborne outbreaks and preventive measures required to prevent or limit these microbes from entering the food supply. The government expects land grant universities to provide research-based extension programming to target the food companies across commodity groups. Short courses, workshops, and webinars target both manufacturers of food and crop producers. Extension food safety team programming is targeted into three main areas: food law, food manufacturing, and food production.

Providing food handlers and decision makers involved in food production, processing and service from farm to fork with knowledge about risks can help in reducing incidents of foodborne illness by leading to better practices.

What has been done

This issue is being addressed from two directions:

Families: Over 1000 lowans (n = 1046) participated in an 8-hour workshop about safe food handling practices and 4,321 participated in food safety sessions related to on farm food safety, safe food preservation, or safe handling of food when working in retail outlets.

Ag and Natural Resources: The Extension food safety team has developed short courses, workshops, and webinars to provide the latest food safety information. Additionally, extension publications and new websites with up to date information sources are available for clientele to

have timely and convenient access.

Results

Families: Over 1000 lowans (n = 1046) participated in an 8-hour workshop about safe food handling practices and 4,321 participated in food safety sessions related to on farm food safety, safe food preservation, or safe handling of food when working in retail outlets.

Ag and Natural Resources: Knowledge assessment surveys were provided at the beginning and end of each program along with a 3-6 month follow-up evaluation. In 2013, 85% of participants indicated knowledge gained and 87% intend to make food safety changes based on Extension recommendations. The follow-up surveys indicated that 97% made at least 1 change in their business related to food safety because of knowledge gained from Extension (return rate of 95% pre and post; 45% 3-6month follow-up).

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

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
2013	63

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 illness.

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. Each lesson includes a component related to food safety.

Results

At entry to the program, 25% (237 of 957 participants) demonstrated acceptable food safety practices (i.e. thawing and storing foods properly). Following participation in at least eight lessons, 62% (598 of 957 participants) at exit 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

Outcome #3

1. Outcome Measures

Number of individuals who learn about prevention, detection, control and intervention technologies.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	90

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

There are many swine issues that impact consumers and producers. Animal wellbeing is a concern for both; proper handling techniques are important for economic and food quality reasons as well. Treating sick animals and timeliness of proper euthanasia techniques are considered as primary importance for the welfare of the pig. Thinking about power failures ahead of time is essential to pig survival and the producer's economic survival. Having emergency action plans is

a piece of economic survival and pig welfare. The environment for the pig is important as well for its wellbeing and the farmer's economic success. Additionally, food safety is a top priority for pork producers and consumers alike.

What has been done

More than 50 workshops were held instructing producers on topics of welfare including euthanasia, timeliness, power outage, handling techniques, facilities, heating/cooling.

Results

More than 1000 operations have completed a workshop on pork quality assurance (PQA Plus) or transport quality assurance (TQA) taught by ISU Extension. Changes in behavior were documented by third party audit. Documented changes in animal welfare, handling and food quality were shown by follow-up farm assessment. For example, producers learned about timely euthanasia, follow-up shows implementation of that learning at 94.87%. Adjusting for adequate sow space was shown to be practiced by 96.33% of the herds. Good heating/cooling and air quality were documented on over 97% of farms. Many other practices such as emergency planning, euthanasia planning, residue avoidance, medical records, and facility upkeep were implemented to improve welfare and increase food safety. Additionally, as result of the education, the percentage of farms making improvements is increasing. Third party audits of 90 farms showed that minor and major non-conformities year over year decreased, dropping from 80 to 63 and from 25 to 9, respectively. A decrease in percent of deads and downers at packer plants (from .22% to .20% -- equivalent to 21,600 hogs valued at \$4.3 million industry wide) can be linked to handling education from these workshops.

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

Outcome #4

1. Outcome Measures

Number of growers, producers, and food workers completing GAPS, GMPS, HACCP, food safety certification and on farm BMP programs to increase food safety.

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Number of food handlers receiving food safety training and education in safe food practices.

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	3600

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 somewhat disconnected from agriculture and food production. At the same time, there is increasing interest and concern within the general population about food safety, quality, and sustainability. While many exercise trust in dairy and other food systems, a segment of anxious but uninformed consumers appear to readily accept viewpoints of anti-livestock/anti-agriculture that are negative about animal care, environmental stewardship, and safety/quality of dairy products.

What has been done

The ISU Extension Dairy Team partnered with Iowa's dairy producer and industry associations, other farm and commodity organizations 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 participants 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.

Results

A total of 3600+ participants were involved in these 3 events with many families and young children, and most participants from non-agricultural backgrounds and 440 post event surveys were completed.

* 99% rated successful/educational (88% rating excellent; 11% rating very good (3.95/ 4.00 rating).

* Prior to the event, 70 had a positive (61% extremely positive) opinion and trust in dairy farms.

- * Post workshop, 99% believed dairies provided the best care and handling of animals.
- * Post workshop, 96% believed dairies are protective of the environment and excel at environmental stewardship.
- * Post workshop, 99% stated dairies provided extremely safe and wholesome milk and dairy products.
- * 100% supported growth of the dairy industry in Iowa.

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 #7

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
2013	4431

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 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

In addition to the >3800 people who called with food preservation questions, 616 adults participated in food preservation education programming. Of these 616 adults, 50 completed online food preservation lessons, 54 attended a food preservation workshop, 12 had their pressure canner tested, and 410 attended a general food preservation class.

Results

Of those who took part in the online food preservation lessons, results indicated a 1) 50% increase in those who reported high or very high knowledge about foodborne illness; 2) 40.4% increase in those stating high or very high knowledge of safe food handling practices; and 3) 59.2% increase in those reporting high or very high knowledge of recommended canning practices after viewing 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

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

Pending implementation of the Food Safety Modernization Act has raised awareness about risks from improper handling of food along the food chain, particularly proposed standards related to fresh produce. Foodborne illness outbreaks continued, with one outbreak in Iowa and Nebraska from the parasite cryptosporidium garnering national attention, further raising awareness of food safety risks of fresh produce. Economic challenges and increasing numbers of new lowans led to investigation by food entrepreneurs of ways to grow food based businesses. Also, in response to consumer's interest in indirect education resources, ISU Extension and Outreach has designed several websites and social media pages. We are now monitoring the use of these pages through "unique visitors" rather than page "hits," which has resulted in a decrease in numbers. Furthermore, indirect contacts made through the EFNEP program have been reported elsewhere and are no longer included in this report.

Within the food safety grower/farmer population of workshop participants, a reduced number attended the short courses due to weather and scheduling conflicts. Specifically, last spring and this fall it was warmer and growers were working in the fields earlier and

later than most years. Additionally, a hard winter came early which made traveling difficult. Attendance was not as high as we would have liked for the food manufacturer related programming, but this was the first year the course was offered and people were not aware of it. Extension has since started advertising earlier and seeking partners to offer more courses throughout the year.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Families: Through high pass rates (90%) on the national certification exam and food preservation knowledge surveys we know our food safety programs have led to increases in knowledge, with ultimate goal of changes in behavior. Increases in numbers of lowans participating in food safety programming, beyond our targets, indicates there is considerable interest in improving safe food handling practices at all links of the food chain.

Ag and Natural Resources: The food safety team moved to a knowledge quiz standard to assess the amount of knowledge gained as a immediately after a program, and a follow-up 3-6 months later. Before surveys indicated major knowledge gaps in the ability of both growers and food manufacturers to identify food safety risks within their operations. Additionally, these operators were unable to identify mitigation methods to reduce the risks that may cause a foodborne illness. Thus programming targeted these two key areas of identification and control which resulted in higher post and 3-6 month follow-up knowledge assessments. With more than 90% of participants successfully completing a food safety plan, this is our major indicator of success within the short course.

Post-open house dairy tour workshops, 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.

Key Items of Evaluation

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

Ag and Natural Resources: Extension food safety programming such as HACCP, Food Microbiology, Good Agricultural Practices, and Food Law series reached more than 2000 growers, processors, and food manufacturers throughout the U.S. through short courses, workshops, webinars, and speaking events. The Extension food safety team has worked closely with local, state, and federal governments to ensure that the information provided is of the highest priority to these agencies.

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	15%		0%	
131	Alternative Uses of Land	3%		0%	
201	Plant Genome, Genetics, and Genetic Mechanisms	0%		8%	
202	Plant Genetic Resources	0%		2%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	0%		5%	
205	Plant Management Systems	11%		4%	
212	Pathogens and Nematodes Affecting Plants	2%		13%	
216	Integrated Pest Management Systems	9%		3%	
301	Reproductive Performance of Animals	4%		1%	
302	Nutrient Utilization in Animals	4%		11%	
303	Genetic Improvement of Animals	4%		22%	
305	Animal Physiological Processes	0%		6%	
311	Animal Diseases	1%		4%	
401	Structures, Facilities, and General Purpose Farm Supplies	8%		2%	
405	Drainage and Irrigation Systems and Facilities	12%		3%	
503	Quality Maintenance in Storing and Marketing Food Products	1%		7%	
601	Economics of Agricultural Production and Farm Management	9%		2%	
602	Business Management, Finance, and Taxation	9%		0%	
603	Market Economics	8%		1%	
702	Requirements and Function of Nutrients and Other Food Components	0%		6%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	75.6	0.0	73.0	0.0
Actual Paid Professional	24.8	0.0	44.8	0.0
Actual Volunteer	51.0	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
2762250	0	5334978	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
2762250	0	5334978	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
9100517	0	45690850	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, including regional food production & distribution, 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.
 - Faculty participate in the following associated multistate research committees: NC0007, NC0140, NC0205, NC213, NC1023, NC1029, NC1030, NC1034, NC1040, NC1170, NC1171, NC1177, NC1183, NC1184, NC1191, NC1194, NC1197, NC1200, NE1020, NE1034, NE1042, NE1227, NRSP7, NRSP8, S0294, S1032, S1040, S1043, S1053, S1055, W1009, 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. Existing and beginning farmers are increasingly interested in producing 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. 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 lifestyles 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

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	160875	14889279	0	0

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

Patent Applications Submitted

Year: 2013

Actual: 14

Patents listed

Method for the delivery of molecules lyophilized onto microparticles to plant tissues. Inventor(s): Martin-Ortigosa, Susana; Wang, Kan. File date: 10/01/2012.

Concentric Central Pivoting Mechanism With Rack-and-Pinion Based Lateral Motion Control for Automated Mechanical Intra-Row Weed Control. Inventor(s): Tang, Lie; Ahmad, Moud Taufik; Li, Ji; Steward, Brian. File date: 11/09/2012.

Mesoporous Silica Nanoparticles Suitable for Co-delivery. Inventor(s): Wang, Kan; Trewyn, Brian; Valenstein, Justin; Martin-Ortigosa, Susana; Lin, Victor Shang-Yi. File date: 12/06/2012.

Engineered TAL Effector Proteins with Enhanced DNA Targeting Capacity. Inventor(s): Bogdanove, Adam; Bradley, Phil; Doyle, Erin; Stoddard, Barry. File date: 1/3/2013.

TAL Effector-Mediated DNA Modification. Inventor(s): Bogdanove, Adam; Voytas, Daniel; Zhang, Feng. File date: 1/10/2013.

Materials and Methods for Characterizing and Using a 3-ketoacyl-acyl Carrier Protein (ACP) Synthase III (KASIII) for Production of Bi-functional Fatty Acids. Inventor(s): Garg, Shivani; Jin, Huanan; Nikolau, Basil; Yandea-Nelson, Marna. File date: 1/23/2013.

Molecular Cloning of brown-midrib2 (bm2) Gene. Inventor(s): Liu, Sanzhen; Schnable, Patrick; Tang, Ho Man (Holly); Wu (2011), Wei. File date: 1/28/2013.

Nematode Resistant Crops. Inventor(s): Baum, Thomas; Chen, Shiyan; Davis, Eric; Hussey, Richard; Lang, Ping; Mitchum, Melissa; Replogle, Amy; Wang, Jianying; Wang, Xiaohong. File date: 2/6/2013.

Arabidopsis Nonhost Resistance Gene(s) and Use thereof to Engineer Disease Resistant Plants. Inventor(s): Bhattacharyya, Madan; Sumit, Rishi. File date: 3/4/2013.

Method for the delivery of molecules lyophilized onto microparticles to plant tissues. Inventor(s): Martin-Ortigosa, Susana; Wang, Kan. File date: 3/5/2013.

Methods and Compositions for Plant Pest Control. Inventor(s): Baum, Thomas; Davis, Eric; Hussey, Richard; Mitchum, Melissa; Simmons, Carl; Wei, Jun-zhi; Wu, Gusui. File date: 3/13/2013.

Artificial Intelligence for Detecting and Filling Void Areas of Agricultural Commodity Containers. Inventor(s): Darr, Matthew; Kruckeberg, John; McNaull, Robert; Bonefas, Zach. File date: 7/28/2013.

Methods and Compositions for Plant Pest Control. Inventor(s): Baum, Thomas; Davis, Eric; Hussey, Richard; Mitchum, Melissa; Wu, Gusui; Simmons, Carl; Wei, Jun-zhi. File date: 9/6/2013.

Artificial Intelligence for Detecting and Filling Void Areas of Agricultural Commodity Containers. Inventor(s): Darr, Matthew; McNaull, Robert; Kruckeberg, John; Bonefas, Zach. File date: 9/30/2013.

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	62	200	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

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

Year	Actual
2013	101759

Output #2

Output Measure

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

Year	Actual
2013	4068491

Output #3

Output Measure

- Number of increased efficiencies or increases in yield/unit.

Year	Actual
2013	151

Output #4

Output Measure

- Adoption of BMP resulting in increased yields, reduced inputs, increased efficiency, increased economic return, and conservation of resources.
Not reporting on this Output for this Annual Report

Output #5

Output Measure

- Number of producers indicating adoption of recommended practices.

Year	Actual
2013	5

Output #6

Output Measure

- Number of producers reporting reduction in fertilizer used/acre.

Not reporting on this Output for this Annual Report

Output #7

Output Measure

- Number of producers reporting increased dollar returns per acre or reduced costs per acre.

Year	Actual
2013	1878

Output #8

Output Measure

- Number of acres in conservation tillage or other BMP.
Not reporting on this Output for this Annual Report

Output #9

Output Measure

- Number of producers (and other members of the food supply chain) that have increased revenue.

Year	Actual
2013	8

Output #10

Output Measure

- Percent of privately owned agricultural acreage retained during landowner succession due to educational interventions.
Not reporting on this Output for this Annual Report

Output #11

Output Measure

- Number of producers or agribusiness professionals who gained knowledge in safe pesticide application through pest management recommendations.

Year	Actual
2013	3748

Output #12

Output Measure

- Value (in dollars) of increased reproductive efficiency in swine operations.

Year	Actual
2013	100500

Output #13

Output Measure

- Number of women and/or landowners who learn strategies on how to mitigate risk in farming operations in existing operations, as new or beginning farms, or as farms transitioning in ownership.

Year	Actual
2013	592

Output #14

Output Measure

- Number of producers attending high tunnel workshops to learn season-extending strategies to improve overall farm profitability.

Year	Actual
2013	88

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of increased efficiencies _____ (i.e. (% pregnant) or increases in yield/unit - (bushels/acre; lbs product (meat, protein, milk) per animal; lbs feed per gain).
2	Adoption of best practices and technologies resulting in increased yields, reduced inputs, increased efficiency, increased economic return, and conservation of resources.
3	Number of producers indicating adoption of recommended practices.
4	Number of producers reporting reduction in fertilizer used/acre.
5	Number of producers reporting increased dollar returns per acre or reduced costs per acre.
6	Number acres in conservation tillage or other BMPs.
7	Number of farmers and agribusiness professionals who gain knowledge in safe pesticide application through pest management recommendations.
8	Number of farmers or agribusiness professionals who increase profitability or decrease input costs by adopting nutrient management recommendations.
9	Number of producers (and others in the food supply chain) that have increased revenue.
10	Percent of privately owned agricultural acreage retained during landowner succession due to educational intervention.
11	Number of women and/or landowners who learn strategies on how to mitigate risk in farming operations in existing operations, as new or beginning farms, or as farms transitioning in ownership.
12	Value (in dollars) of increased reproductive efficiency in swine operations.
13	Number of producers attending high tunnel workshops to learn season-extending strategies to improve overall farm profitability.

Outcome #1

1. Outcome Measures

Number of increased efficiencies _____ (i.e. (% pregnant) or increases in yield/unit - (bushels/acre; lbs product (meat, protein, milk) per animal; lbs feed per gain).

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Adoption of best practices and technologies resulting in increased yields, reduced inputs, increased efficiency, increased economic return, and conservation of resources.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	151

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

A.

Proper ventilation of swine buildings is important for various reasons. Animal well-being is important, keeping them comfortable in the thermo-neutral temperature zone. Energy use is important to producers and consumers, producers to reduce cost of production and increase competitive position and the public benefits from lower energy use reducing carbon emission. Additionally, proper ventilation increases the health of the animals, reducing the need for treatment medication. Learning how to properly operate swine building ventilation systems is important and beneficial to everyone.

B.

Many Iowa dairy producers (> 40%) are milking in stall barns or antiquated milking parlors where only 25 cows per person per hour are milked. In comparison, other producers are achieving 75 cows milked per person per hour in well-designed milking parlors. This difference represents a person being three times more efficient with use of labor which translates into significant differences in farm profitability between these milking systems.

C.

Growers are interested in developing an integrated production system by adopting production techniques that enhance soil health, crop productivity, and improve long-term farm profitability. Cover crops are emerging as an effective tool to achieve those goals. Cover crops reduce soil erosion, minimize nutrient leaching, suppress weed emergence, and build soil quality and organic matter. Growers want to minimize inputs such as herbicides and fertilizers without compromising crop yield and quality. Utilization of cover crops in vegetable and fruit production adds significant soil organic matter, recycles nutrients, suppresses soil erosion, and improves soil water holding capacity. Alongside growers, consumers are equally interested in methods of crop production and the effects of production techniques on the environment. Growing number of consumers support grower practices that have minimal impact on the environment and are sustainable.

What has been done

A.

Workshop curriculum has been developed, potential audience identified, publicity materials written, invitations to the workshops delivered and workshop location/organization completed. Across the State of Iowa in 2013, eleven workshops were held. The workshops were attended by 237 operations and system flows. The number of pigs influenced by those attending the workshop was 11.7 million pigs and 700,000 sows. A follow-up survey was developed and returned by 156 participating in the workshop.

B.

Every dairy producer in Iowa, and many outside the state, received educational newsletters, factsheets and promotional materials to help increase knowledge to make more profitable decisions on their future milking system. A survey of current users of Automatic Milking Systems (AMS) and Low Cost Parlors (LCP) was done. Data collected from the survey provided economic benchmarks to develop a publication and financial decision-making spreadsheet for dairy producers wishing to implement the AMS and LCP systems. More than 300 producers, along with many industry personnel (total = 589) attended the series of 17 on-farm workshops, with another 200 producers exposed to it through ISUEO Dairy Days programs. Another 200 dairy industry individuals were reached through webinars, and an additional 120 contacts were made through Extension websites. 60 producers attended small focus group sessions and then received individual on-farm visits to assess how to incorporate the AMS or LCP on their dairy operations.

C.

Cover crop training workshops and field days were organized throughout the state that provided comprehensive and in-depth understanding of cover cropping fundamentals, selection, economics, and management criteria for fruit and vegetable cropping systems. Workshops and field days highlighted advantages of cover crops in sustainable crop rotations and their ability to improve soil quality, reduce soil erosion, increase fertility, and manage pest populations. Three on-farm cover crop demonstration plots were set up to engage growers and familiarize them with cover crops.

Results

A.

Substantial changes were reported on 93 out of the 156 returned surveys. Changes documented to the ventilation system will improve animal health while using less energy, decreasing production cost, a win-win educational program. Less energy is good for the environment, less production cost leads to increased competitive position and more jobs and economic growth. Some examples of documented changes include: adjusting inlets (critical for healthy air mixing and reducing cold air animal stress); turn off fans in curtain mode (saving energy); clearing attic opening (reduces load on fan saving energy); adjusting curtains (improves [pig health and saves

energy); improve seal on curtains (results in more efficient fan operation); use static pressure (important for monitoring ventilation performance) and change motor curves in the controller when replacing fan motors (critical for operational efficiency of variable speed fans). One-hundred-seven of the operations estimated an average value of \$2400 from the program for their operations. For those 107 operations, more than \$250,000 was documented as increased value from changes made due to knowledge gained at the ventilation workshop.

B.

A total of 48 dairy operations started and/or completed construction of new efficient milking facilities. 22 facilities were completed and operational by July 2013 (8 automatic milking systems and 14 low cost parlors) and an additional 26 were started and/or completed after July.

C.

Created awareness among growers, extension personnel, agricultural professionals, and organization leaders about cover cropping options, tools, and benefits. Educated and trained agricultural professionals on cover crop selection tools, cover crop characteristics and their use in fruit and vegetable production systems. One of the on-farm demonstration studies led to the grower planting 90 acres of cover crop in the Fall of 2013. Workshop and field day participants learned about developing diverse and resilient cropping systems through the integration of cover crops in fruit and vegetable cropping systems. The cover crop field day organized at the Horticulture Research Station, Ames, IA, was in collaboration with Lincoln University, Missouri. This regional cooperation increased the impact and reach of our cover cropping program. In order to extend ISUEO's involvement with underserved and underrepresented communities, one of the workshops organized in Fruitland, IA specifically targeted growers from the Amish community in Kalona, IA.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
131	Alternative Uses of Land
216	Integrated Pest Management Systems
305	Animal Physiological Processes
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

Outcome #3

1. Outcome Measures

Number of producers indicating adoption of recommended practices.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	5

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Nitrate leaching is increasingly becoming a problem in Iowa. Ground water contamination due to nitrates that leach out of agricultural fields creates problem for both wildlife and humans. At the end of the growing season, excessive nutrients, especially nitrates, are leached into streams, rivers, and groundwater leading to toxic levels. Reducing excess nutrients can improve water clarity and quality, reduce dissolved oxygen deficiencies, which can lead to fish kills and reduce aquatic biological diversity, and minimize occurrence of taste and odor chemical compounds that impact potable drinking water supplies. Reducing nitrogen in groundwater aquifers and surface water withdrawals also protects private and public drinking water sources.

What has been done

A number of workshops and field days were organized to educate growers about cover crops and their uses. Various educational programs were offered in partnership with Iowa Fruit and Vegetable Grower Association, Practical Farmers of Iowa, and Great Plains Growers conference. On-farm cover crop trials were also set up throughout Iowa to effectively disseminate and demonstrate information on cover crops.

Results

More and more growers have adopted the practice of planting cover crops in the fall. Fruit and vegetable growers planted cover crops such as cereal rye and oilseed radish that have the ability to take up residual nitrogen that would have otherwise leached into our waterways. Apart from reducing nitrate leaching, these cover crops add soil organic matter, improve soil structure, and enhance soil quality and health.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
131	Alternative Uses of Land
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 reporting reduction in fertilizer used/acre.

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Number of producers reporting increased dollar returns per acre or reduced costs per acre.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1878

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Iowa agriculture covers over 90% of the state and is a major Iowa industry. Success in ag production means success for this state. Every year farmers face different challenges -- weather, pests, new technologies, commodity prices. Managing risk in all these areas is a cornerstone to crop production profitability. The Extension goal is to prepare producers to manage these potential issues using scientific knowledge and research results.

What has been done

The Crop Advantage Series program annually covers situations that are likely to occur in production for the upcoming growing season. Farmers are alerted to potential problems that may arise so they are prepared in what to look for. Based on what may be expected to happen in the field, Extension specialists identify and research questions such as fungicide use on alfalfa, then share that information with producers to improve their decision-making. Working one-on-one, in-field, with farmers and farm advisors helps them make decisions for situations that each year can be literally as different as the weather. These are timely, situational challenges that Extension helps to solve through research-based education.

Results

A Crop Advantage Series survey conducted a year following the education that was presented the previous year showed that 86% increased per acre profits over \$5 per acre, and an additional 10% increased profits over \$20 per acre. Attendees represented over 1.2 million acres in crop production. An on-farm visit survey of 64 site visits showed that farmers valued the visit at \$25/acre on an average of 660 acres per farm. For visits that were done with the commercial agronomist or advisor, those advisors indicated a value of \$50 per acre. Five Extension agronomists collected data from 20 farm visits with crop producers. All but one indicated increased profits of more than \$500 per operation from the on-farm visit, with eleven valuing the field visit assistance at more than \$2500, with a total value greater than \$31,500 to these 20 operations. Research and education on alfalfa response to fungicide application increased the knowledge of leaf identification with 53% of meeting attendees, and also of fungicide resistance stewardship with 84%. Later survey results showed increased profits of \$18.30 per acre on 11,600 acres over a two-year period.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
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 acres in conservation tillage or other BMPs.

Not Reporting on this Outcome Measure

Outcome #7

1. Outcome Measures

Number of farmers and agribusiness professionals who gain knowledge in safe pesticide application through pest management recommendations.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	3748

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Federal and state law requires that all individuals who purchase and apply restricted use pesticides and any applicator who applies pesticides for hire be certified according to established standards. This education helps protect people from the risks of direct pesticide exposures, helps them to target use only when needed, reduces off-site damage through runoff and other soil degradation, and lowers risk to families, communities and the environment.

What has been done

About 300 private pesticide applicator training sessions were held throughout Iowa reaching 15,757 individuals. In addition to face-to-face meetings, recorded training sessions in ag weed, insect, disease and seed treatment pesticide management were held 298 times, attracting 1805 applicators. Nine additional training sessions were conducted for 250 agri-businesses employees on safe pesticide use. Safety, personal protective equipment use, and currently relevant pest control issues were covered.

Results

Fifty four percent of the private pesticide applicators surveyed (n=6055) increased their understanding of the difference between mandatory and advisory statements on pesticide labels.

* 46% increased their knowledge on how to get further information on a pesticide, 20% more plan to check nozzle flow for proper application as a result of pesticide education, and 22% indicated increased pesticide label use for determining details of pesticide application.

* 95% now understand the characteristics of and potential points of water contamination in their watershed.

* 90% review label precautions to prevent water contaminations.

Surveyed commercial pesticide applicators (n=2071) indicated that they apply pesticides on as many as 10,000 acres each per person per year. Results show:

* 76% read the label to determine protective clothing needs.

* 89% developed a better understanding of new regulations with mini-bulk pesticide containers.

* 98% changed applicator cleaning procedures to reduce residues left in the sprayer that can cause crop damage.

* 93% increased their understanding on the need for adequate spray coverage and proper product selection required when managing spider mites.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems
216	Integrated Pest Management Systems

Outcome #8

1. Outcome Measures

Number of farmers or agribusiness professionals who increase profitability or decrease input costs by adopting nutrient management recommendations.

Not Reporting on this Outcome Measure

Outcome #9

1. Outcome Measures

Number of producers (and others in the food supply chain) that have increased revenue.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	8

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Rural communities need all the economic advantages they can use to strengthen their vitality. Ensuring that local businesses are able to effectively compete requires management strategies that many small communities are unable to provide.

What has been done

The Value Added Agriculture Program (VAAP) at Iowa State University Extension created a system to evaluate the feasibility of USDA loan applications from small businesses. The study is conducted according to USDA-RD 4279-B called "A Guide for Completion of Feasibility Studies." Our scope of study is based on five areas: economic, market, technical, management and financial. In 2013, VAAP conducted four feasibility studies and four market analysis studies,

looking specifically at the market potential for these 8 businesses, which ranged from aquaculture marketing to rural community housing.

Results

These companies invested \$80,840,000 in Iowa, resulting in an estimated \$136,900,000 in sales and the creation of 279 jobs. A marketing analysis and initial marketing campaign for the Iowa wine industry resulted in the hiring of a full-time marketing specialist for the Midwest Grape and Wine Industry Institute.

4. Associated Knowledge Areas

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

Outcome #10

1. Outcome Measures

Percent of privately owned agricultural acreage retained during landowner succession due to educational intervention.

Not Reporting on this Outcome Measure

Outcome #11

1. Outcome Measures

Number of women and/or landowners who learn strategies on how to mitigate risk in farming operations in existing operations, as new or beginning farms, or as farms transitioning in ownership.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	592

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

A.

More and more women are assuming a leadership role in farming operations. As women assume these leadership roles, greater education is needed on managing profitability, succession and risk mitigation factors for the operations. Technical assistance, training and mentoring are critical factors supplied.

B.

More than 8,000 women are the primary operators of a farm. USDA has designated women as an underserved audience. In order to better educate this group of farm operators, Extension has developed programs to reach women farmers. These programs focus on agricultural marketing, which is often seen as difficult for this audience. Because prices and production costs have been highly variable over the past few years, the ability to manage agricultural margins as crop prices decline is crucial to farm business profitability.

C.

Iowa land values have been consistently increased over the past several years. Now agricultural land stands at record high values. As a result, farm net worth has increased dramatically. With the change in farm net worth, Iowa farm family interest in estate planning has risen. Farmers are looking for assistance in planning for asset distribution to the next generation, as well as the possible transition of the farm to future generations.

What has been done

A.

In conjunction with ISU Extension and Outreach Farm Management specialists, Value Added Agriculture staff trained, prepared and participated in 18 classes for farm women, reaching 244 participants through Annie's Project, Managing for Today and Tomorrow, and Women Managing Cattle classes.

B.

Specific programming has been offered explicitly to women producers. This programming has developed along two fronts. One is through the existing Annie's Project programming effort. Modules within the Annie's framework have been augmented to provide more educational details on agricultural marketing and farm profitability. The other is through the creation of women's marketing clubs. In the clubs, the women receive more individualized training, share marketing experiences and draw support from other participants.

C.

There was a series of estate planning workshops held around the state. These workshops were designed to help people begin the process of developing an estate plan for their farms. In addition there were a series of farm transition seminars held throughout the state. These 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. Finally, individual consultations were provided to help people ascertain their options for transitioning the farm to the next generation.

Results

A.

Survey results showed improved awareness in estate planning, balance sheets and overall farm analysis. Participants ranked increased support networks as the most beneficial aspects of the classes.

B.

The women who participate in these programs have created marketing plans and computed

production costs for their farms. The marketing plans contain details on target prices, target selling dates, and are based on current market conditions. The women have also participated in "Commodity Challenge", an online marketing simulation that allows participants to experiment with marketing strategies under real world conditions. In group discussions, the women shared experiences about crop insurance decisions and purchases, various marketing strategies that they have employed, and the changes in their approach to agricultural marketing.

C.

95% of participants indicated they now had the knowledge of what they needed to take to an attorney visit when preparing an estate plan. 84% of participants were likely to visit an attorney to revise their will based on the information provided during the meetings. More than half of the participants planned to use several of the programming exercises with their heirs and their attorneys.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
216	Integrated Pest Management Systems
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation
603	Market Economics

Outcome #12

1. Outcome Measures

Value (in dollars) of increased reproductive efficiency in swine operations.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	100500

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Increasing efficiency in swine reproduction (more pigs per sow) is increasingly important to

producers and consumers, and has multiple benefits. The need for affordable food is critical to food insecurity low income consumers. Other consumers are looking for food choice (niche swine production). Reproductive inefficiencies producing this choice (niche swine production) for consumers are inherent to this alternative production system because of weather variation and farrow pen layout; therefore, efforts to improve swine reproduction are beneficial to both the consumer and producer. Lowering cost of production helps provide meat protein affordably to the food insecure segment of society and can help provide cost neutral alternative to other consumers. Additionally, being cost competitive in a global economy leads to increased exports resulting in more jobs and value added economic development.

Reproductive efficiency is also important for conservation of resources. Lower pigs per sow increases resources. If more pigs per sow can be raised with less crop acres, there is less need to convert extra environmentally important acres to grow feed crops.

What has been done

Annually, reproductive efficiency is a major programming effort for the Iowa Pork Industry Center. Multi-state Extension advanced swine reproduction conferences are typically held in northeast, northwest Iowa and Nebraska. Additionally, smaller workshops, meeting and webinars have been held to help both commodity and niche swine. Help is also provided to producers through newsletters, websites, and with various one-on-one contact (such as phone, email, office visit, voice over the internet, etc.). Over 61,500 sows were reported for 20 surveys, extrapolated to 50 attendees represents approximately 15% of Iowa's sow herd at these educational events.

Results

Increased learning from the program has shown improvement in reproductive performance. For example, producers learned that chilled pigs have lower survival rates and reported increasing farrowing house temperature during farrowing. More than 50 swine operations improved reproductive efficiency and conserve resources while improving competitive position by attending the conferences. Other changes reported included management of induction, measuring water flow rates, monitoring birth process, using oxytocin properly, gestation housing management, sow feeding and nutritional management and pre-farrowing management. This year a new technology called OvuGel was introduced. Producers reported new learning regarding this technology. Additionally, reproductive changes were reported from last year's training: reproductive performance changes were cited by over 70% of those returning survey. Semen handling was changed, increasing the viability of the sperm resulting in higher farrowing rate. Intra-uterine insemination, or deep artificial insemination techniques were tested on 20% of the operations. Twelve out of the twenty surveys estimated the value of the increased efficiency for their operation averaged more than \$1700 per farm. The businesses represented 150,000 sows. At \$.67 per sow, the total value of the changes resulted in an efficiency increase of \$100,500.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
401	Structures, Facilities, and General Purpose Farm Supplies
601	Economics of Agricultural Production and Farm Management
603	Market Economics

Outcome #13

1. Outcome Measures

Number of producers attending high tunnel workshops to learn season-extending strategies to improve overall farm profitability.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	88

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Interest in local foods continues to grow as consumers look to foster relationships with those producing their food and increase their knowledge of how their food is produced. To assist producers in meeting this increased demand for local foods, Value Added Agriculture and the Horticulture specialists educate producers on season-extending strategies. High tunnels have become important tools for specialty crop producers to increase production of quality crops, extend the season, and increase profitability. In past years, crop production inside high tunnels has suffered due to excessive heat and soil management challenges. The desert-like environment, limited space, and climate control in a high tunnel requires a unique set of crop management skills. Growers need information on strategies that could help alleviate these challenges and risks in high tunnel production.

What has been done

State-wide advanced high tunnel training workshops were organized to educate growers and increase their skills in high tunnel crop production and management. These workshops, comprised of hands-on activities and presentations, provided growers with strategies to mitigate crop stress under high tunnel crop production. Four high tunnel workshops were held -- two introductory sessions and two advanced sessions.

Results

Advanced High Tunnel workshop participants learned about multiple aspects of crop production including fertility, cultural practices, nutrient management, foliar sampling, grafting, budgets, environmental control, post-harvest handling, marketing and pest management. Survey results showed increased knowledge and awareness of budgets, production issues and marketing plans from the high tunnel workshops. Producers indicated profitability of the farm would increase after implementing the practical strategies outlined in the workshops.

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
603	Market Economics

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 (Consumer trends and preferences)

Brief Explanation

Value Added Agriculture programs target the rural economy in Iowa. Drought, flooding and consumer preferences all impact the direction those programs may take, but local foods continues to be driven by increased consumer preferences and trends for local foods. High tunnels allow producers to extend their growing season and mitigate some of the weather concerns that may affect production.

A new farm bill was passed in February 2014. This meant that information was not available to develop and/or present to farmers and stakeholders on components of the bill that may impact agricultural production and marketing.

The success of the program to integrate cover crops in fruit and vegetable production will depend upon many factors beyond the control of Iowa State University and the faculty and staff of the program. These include external forces that impact farmers as well as Iowa State University. In order to integrate cover crops growers need to learn about proper planting and terminating techniques, have the right equipment and resources, and invest in additional seed costs. Farmers and their ability or willingness to adopt new technologies or implement new practices are impacted by factors that affect production and prices and thus short-term profitability. These include natural disasters (drought, flood, frost, etc.), market forces that influence input and output prices (supply and demand, trade agreements, exchange rates, interest rates, monetary policy, consumer preferences etc.), and regulation and policy changes (Farm Bill, EPA, FDA, etc.). Likewise, Iowa State University's ability to deliver the program of work is somewhat dependent on funding levels from conventional federal and state sources, competing priorities of public funding agencies, how competitive faculty and staff are at external grants, and short term priorities caused by natural

disasters.

Increased high tunnel production is being supported by enthusiasm and activity around local foods. Economic factors such as continued weak growth of US economy will hinder the growth in demand for local foods. Conversely, an economic recovery will improve the demand for and growth of local foods. Changes in weather patterns, excessive heat, drought, and erratic weather can negatively impact fruit and vegetable production in the state. High tunnel crop production is an excellent source for season extension in Iowa, but weather factors such as excessive heat could detrimentally affect fruit and vegetable production inside them.

An extremely wet and cold spring delayed or prevented corn and soybean planting in a significant percentage of acres. These conditions resulted in an increase in the number of crop insurance meetings Extension conducted. In some cases it wasn't possible for the farmer to change direction on whether or not to buy insurance or which level would be most profitable.

Dairy margins are slim and dairy producers need to adopt and implement efficient strategies and systems to enhance profitability.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Value Added Agriculture measures its educational impact using pre- and post-workshop surveys. One of the major issues that could not be addressed in 2013 was federal farm policy as the farm bill was not passed until 2014. Given the passage of the farm bill in February 2014, federal farm policy will be a significant area of education effort in the coming year.

A total of 48 dairy producers and farms started and/or completed construction of new efficient milking facilities. 22 facilities were completed and operational by July 2013 (8 automatic milking systems and 14 low cost parlors) and an additional 26 were started and / or completed after July.

Growers who attended cover crop field days/workshops and advanced high tunnel workshops expressed satisfaction and gained significant information and knowledge about cover crops and high tunnel crop production. The pre-workshop evaluation on specific topics showed most participants in the 'low' to 'moderate' range of knowledge, but the post-workshop evaluation shifted to 'moderate' to 'high' range. Fruit and vegetable growers who attended the cover crop field day applauded the event as they got an opportunity to see various cover crop species in the field. Growers assessed growth and development of cover crops and evaluated potential benefits such as crops on soil nutrient cycling, quality, and health. On-farm cover crop demonstration trials led to growers seeding increased number of acres in cover crops. These trials served as hotspots for fruit and vegetable growers in the neighboring areas to learn and evaluate cover crops.

Advanced High Tunnel Workshop participants significantly improved their knowledge and understanding of crop management under high tunnels. They learned new techniques and strategies that could be employed to mitigate heat stress inside high tunnels. Hands-on activities during the workshop improved their skillsets on topics such as grafting, irrigation,

and soil fertility management.

Key Items of Evaluation

Visits to the Agricultural Marketing Resource Center (AgMRC) website have increased more than 200 percent in the past three years. High tunnel workshops throughout Iowa have resulted in the construction of 240 new high tunnels since 2010.

Based on a dairy financial decision-making spreadsheet, educational programs and targeted small group discussions and individual farm visits, 48 dairy producers and farms started and/or completed construction of new efficient milking facilities. 22 facilities were completed and operational by July 2013 (8 automatic milking systems and 14 low cost parlors) and an additional 26 were started and / or completed after July.

V(A). Planned Program (Summary)

Program # 7

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%		24%	
111	Conservation and Efficient Use of Water	5%		2%	
112	Watershed Protection and Management	6%		5%	
121	Management of Range Resources	0%		3%	
123	Management and Sustainability of Forest Resources	5%		0%	
124	Urban Forestry	0%		3%	
125	Agroforestry	5%		0%	
131	Alternative Uses of Land	6%		1%	
132	Weather and Climate	5%		5%	
133	Pollution Prevention and Mitigation	6%		10%	
134	Outdoor Recreation	0%		2%	
135	Aquatic and Terrestrial Wildlife	5%		20%	
136	Conservation of Biological Diversity	5%		13%	
141	Air Resource Protection and Management	5%		2%	
403	Waste Disposal, Recycling, and Reuse	5%		3%	
405	Drainage and Irrigation Systems and Facilities	10%		0%	
605	Natural Resource and Environmental Economics	10%		7%	
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

Extension	Research
------------------	-----------------

Year: 2013	1862	1890	1862	1890
	Plan	35.5	0.0	15.4
Actual Paid Professional	18.8	0.0	6.0	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
2090351	0	751943	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
2090351	0	751943	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
2892853	0	2901026	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 will allow for attainment of 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.

Faculty participate in the following associated multistate research committees: NC1034, NC1190, NC1195, S1032, S1042, W2004, W2128, W2188, and W3133.

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

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	69229	1871744	0	0

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

Patent Applications Submitted

Year: 2013
Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	5	37	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
2013	47713

Output #2

Output Measure

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

Year	Actual
2013	1280500

Output #3

Output Measure

- 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 Output for this Annual Report

Output #4

Output Measure

- Number of acres where the adoption of conservation practices was implemented.
Not reporting on this Output for this Annual Report

Output #5

Output Measure

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

Year	Actual
2013	443

Output #6

Output Measure

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

Year	Actual
2013	80

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.

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.

Not Reporting on this Outcome Measure

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.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	443

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

A) Manure from livestock farms can be an economic and environmental asset if properly applied to crop fields. When manure is over applied, it becomes a liability contaminating the environment. The high cost of fertilizer has provided livestock farmers with greater opportunity to use equipment that minimizes the nutrient losses to the air and water. Properly applying manure provides a win-win opportunity to minimize crop input cost while optimizing crop production and protecting the environment.

B) Water quality is important to all citizens for environmental concerns, recreation, aesthetics and public health. Extension is educating Iowa's cattle feeders to proactively modify their facilities to protect water quality. More than 40% of participants who attended beef feedlot facility meetings to learn about best practices have made changes in their operation to reduce manure runoff and protect water quality.

What has been done

A) Iowa State University Extension helps farmers manage their manure through news articles, assisting with manure management plans, and providing education in the manure certification program. Research results presented demonstrate how careful application of the manure provides the optimal crop nutrients and protects the soil, water and air. The program also reviews past environmental spills from other livestock farmers so that steps can be taken to prevent repeating the same mistakes. This program is presented to more than 1000 farmers in Iowa through 65 face to face meetings and many additional DVD viewings.

B) Four programs that focused on understanding Iowa's environmental regulations for beef feedlots were held with over 350 producers attending. All featured BMPs to protect Iowa's waters. Extension partnered with Iowa DNR and EPA, who presented current regulations governing water quality protection.

Results

A) In follow up surveys of the participants, farmers reported on the application rates and methods used to reduce negative environmental impacts on 400,000 acres with an average farm size of 490 acres. The results were:

- * 93% of farmers reported as a result of the training they have a better understanding how water and manure moves in soil.
- * 53% of the farmers reported nitrogen applications rates below 150 lbs. per acre which provides additional water quality protection than is required by law.
- * 36% of farmers reported nitrogen applications between 150 and 200 lbs. per acre which optimizes crop production and still follows state guidelines.
- * 89% applied the manure into the soil to minimize odors and prevent loss of nutrients to the air.

Iowa farmers are using the knowledge gained from manure applicator training along with available technology and equipment to optimize manure applications in protecting the water, soil, and air.

B) Follow up surveys were sent to 139 participants with 25% returned.

- * 80% of respondents said their knowledge of feedlot regulations increased.
- * 63% said they now check their feedlots for manure runoff after attending the feedlot facility program.
- * 48% said they stopped existing manure discharge.
- * 40% removed a man-made conveyance below their yards as a result of attending this program.

Assuming that all participants are considering best practices in the same ways as those responding to the survey, 280 producers have a better understanding of feedlot practices to protect Iowa's water quality, and 140 feeders made some changes in their feed yards to improve manure management and reduce potential water impacts.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
133	Pollution Prevention and Mitigation
135	Aquatic and Terrestrial Wildlife
403	Waste Disposal, Recycling, and Reuse
405	Drainage and Irrigation Systems and Facilities

Outcome #4

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	80

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Loss of nitrogen and phosphorus into the environment is causing water quality concerns in local surface waters and in the Gulf of Mexico. Utilizing appropriate fertilizer rates will maximize economic return to farmers and also lessen the amount of nutrient available for loss from the land into the environment. Nutrient losses can be further lessened by implementing various appropriate conservation strategies.

What has been done

The Natural Resources Conservation Service and Iowa State University Extension partnered in conducting two trainings (one for farmers and one for input suppliers) for those operating in the Mississippi River Basin Initiative area in Delaware, Dubuque, Jackson, and Jones Counties, with an attendance of approximately 40 at each training. Nitrogen management, phosphorus management, and conservation strategies for retaining those nutrients in place were discussed at both trainings.

Results

Participants were asked to rate their knowledge, both before and after the training, on the most economical application rates of nitrogen and phosphorous fertilizer and strategies to reduce nutrient losses into the environment. For both groups, their knowledge on each of these topics improved, with the greatest improvement in being in their knowledge of strategies to reduce nutrient losses.

- * 65% of farmers indicated they would likely adjust their nitrogen and phosphorous fertilizer rates based on what they learned at the training.
- * 55% of the suppliers indicated they would likely adjust their nitrogen fertilizer recommendations.
- * 45% of suppliers indicated that they were likely to adjust their phosphorus fertilizer recommendations.
- * 78% of farmers indicated that they were likely to implement one or more nutrient export reduction strategies.
- * 75% of input suppliers indicated that they would recommend nutrient export reduction strategies to their customers.

If farmers and input suppliers follow through with their plans, farm profits should improve and nutrient losses from the land should simultaneously lessen, improving water quality.

4. Associated Knowledge Areas

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

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

Brief Explanation

A strong farm economy has allowed farmers to try some new practices such as cover crops. At the same time, high corn prices have been an incentive to push for top yields. This, combined with a series of wet springs that have increased the loss of N, has pushed farmers to increase rates of N fertilizer as "insurance" against running short of N on their corn crop.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Evaluation results have been based on farmer's responses to end of meeting evaluations as well as follow-up evaluations done one year later.

Key Items of Evaluation

In follow up surveys, farmers representing 400,000 acres reported that 89% were using nitrogen based manure application rates which optimizes crop production and follows state guidelines for protecting water quality.

V(A). Planned Program (Summary)

Program # 8

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%		13%	
102	Soil, Plant, Water, Nutrient Relationships	8%		25%	
111	Conservation and Efficient Use of Water	8%		0%	
125	Agroforestry	8%		0%	
131	Alternative Uses of Land	8%		0%	
136	Conservation of Biological Diversity	8%		0%	
202	Plant Genetic Resources	0%		5%	
205	Plant Management Systems	5%		12%	
302	Nutrient Utilization in Animals	8%		0%	
401	Structures, Facilities, and General Purpose Farm Supplies	0%		6%	
402	Engineering Systems and Equipment	8%		1%	
403	Waste Disposal, Recycling, and Reuse	8%		0%	
511	New and Improved Non-Food Products and Processes	8%		38%	
601	Economics of Agricultural Production and Farm Management	8%		0%	
602	Business Management, Finance, and Taxation	8%		0%	
605	Natural Resource and Environmental Economics	7%		0%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	5.6	0.0	10.4	0.0

Actual Paid Professional	1.9	0.0	3.5	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
210392	0	476480	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
210392	0	476480	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
24154	0	2194842	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Extension programming will focus on advising farmers interested in biomass production on the risks and potential for crops as biofuels. Extension has formed a 'Corn Stover' team to explore possibilities. The team is made up of multiple partners with interests in biomass. Iowa State University will focus resources and efforts on developing improved crops and plant materials for use as feedstocks to produce biofuels and biobased products while still producing adequate food and feed supplies; developing agronomic practices to produce these feedstocks 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.

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

Efforts in this program focus on basic human needs for environmentally sustainable energy and consumer goods (e.g. building construction materials, plastics and adhesives), 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 Iowans because of the need for inexpensive and environmentally acceptable forms of energy. Producers and landowners need to know the opportunities and risks associated with biomass production and harvest.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	4321	135	0	0

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

Year: 2013
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	11	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of acres of biomass harvested.
 Not reporting on this Output for this Annual Report

Output #2

Output Measure

- Number of people who attend an educational activity to learn about producing biomass.

Year	Actual
2013	2650

Output #3

Output Measure

- Number of producers who increase their awareness of crop production strategies appropriate for bioenergy production.

Year	Actual
2013	116

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of producers who increase their awareness of crop production strategies appropriate for bioenergy production.
2	Number of individuals who increase their knowledge in production/harvesting systems related to biomass crops.

Outcome #1

1. Outcome Measures

Number of producers who increase their awareness of crop production strategies appropriate for bioenergy production.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	116

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Corn stover has typically been used in Iowa for livestock bedding and/or feed. Emerging markets for corn stover include ethanol production and agri-fiber board manufacturing. Biomass from corn stover can be used as a renewable source for cellulosic ethanol production. Cellulosic ethanol developers seek land owners to sign contracts for removing a predetermined quantity of corn stover annually from their farmland. This annual harvest can only be maintained if such harvest is managed in a sustainable manner.

What has been done

There are new opportunities to harvest corn stover in three regions of Iowa -- near Nevada in central Iowa, near Emmetsburg in North Central Iowa, and near Dubuque in eastern Iowa. Iowa State University Extension and Outreach held meetings in these regions to address emerging opportunities related to stover harvesting for the biomass feedstock needs of local industries. A total of 227 participants attended these meetings on the emerging practice of corn stover harvest and 116 completed end-of-meeting evaluations were received.

Results

Participants completing evaluations represented over 174,000 acres or an average of over 1500 acres per participant. Participants were asked to evaluate their level of knowledge on different topics both at the beginning and at the end of the meetings. On a scale of 1 to 5, participants increased their knowledge by

- * 62% on harvest logistics and stover quality
- * 65% on soil quality and soil carbon
- * 56% on nutrient considerations for stover harvest
- * 86% on the topic of economics of stover harvest.

Participants, on-average, doubled their level of knowledge about the industry specific programs being implemented in a 30-mile radius around the manufacturing plants. Panel discussions with producers already engaged in stover harvest increased participant understanding of practices being used in this harvest by 86%.

Through these programs, farmers have a better understanding of how they can sustainably harvest corn stover for bioenergy and industrial production.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
131	Alternative Uses of Land
205	Plant Management Systems
601	Economics of Agricultural Production and Farm Management
605	Natural Resource and Environmental Economics

Outcome #2

1. Outcome Measures

Number of individuals who increase their knowledge in production/harvesting systems related to biomass crops.

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

A market for biomass may not be readily available to farmers.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

The results in participants' gaining knowledge regarding emerging opportunities related to corn stover harvesting for biomass feedstock were evaluated through a pre- and post-meeting evaluation.

Key Items of Evaluation

On a scale of 1 to 5, participants increased their knowledge on corn stover economics, harvest logistics, effect on soil quality, soil carbon, and nutrient considerations by 56 to 86%.

V(A). Planned Program (Summary)

Program # 9

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%		100%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	47.0	0.0	0.0	0.0
Actual Paid Professional	4.8	0.0	0.0	0.0
Actual Volunteer	360.0	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
413965	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
413965	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
3344796	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Broaden youths' short-term and long-term learning opportunities in the program priorities of healthy living (including childhood obesity), STEM (including food safety), citizenship and leadership, and

communication and the arts.

- Strengthen statewide volunteer management infrastructure.
- Organize staffing structure based on priority programs.
- Improve communications with staff, stakeholders, parents, and youth.
- Improve engagement with ISU colleges and faculty to increase youth offerings consistent with current research and educational design.
 - Transition staff time from activity management to program design, delivery, and evaluation.
 - Increase community partnerships to leverage resources for improved client access to programs.
 - Design learning experiences and conduct training for and with Extension and Outreach staff, volunteers, ISU faculty, and community and state partners that contribute to the life skill outcomes of leadership, citizenship, communication, and learning in environments that meet youths' needs.
 - Build state and community level capacity to ensure policies and educational opportunities are based on positive youth development principles and practices.
 - Train staff, faculty, and volunteers on how to create positive youth development learning environments in after school programs, camps, clubs, events, and school and other out-of-school time settings.
 - Analyze county enrollment trends and identify barriers that limit youth enrollment, retention, and participation in 4-H after school, camp, club, special event, and school delivery modes.
 - Implement multi-faceted marketing infrastructure to communicate positive youth development principles, practices, and programming successes via news releases, brochures, on-line training, webinars, etc. with volunteers, Extension and Outreach staff, community partners, and Iowa State University faculty.
 - Partner with state and national entities to collect and report impact data.
 - Work with other states' 4-H Youth Development staff to evaluate/research positive impact of 4-H participation in the lives of young people.

2. Brief description of the target audience

K - 12 Youth

- State Council: 36 high school youth are members of the State 4-H Council; youth participate in leadership and communication training and serve as 4-H ambassadors across the state.
- Schools: There were 50,651 participants in school-based educational experiences through partnerships with local school districts.
 - Camping: 3,292 youth participated in day and overnight camping experiences.
 - Clubs: There were 23,777 4-H community club members.
 - Special Interest: There were 22,282 participants in special interest/short-term educational experiences.
- Afterschool: 3,852 youth participated in afterschool programs utilizing 4-H curricula.

K - 12 Teachers

- K-12 educators: 1,240 participated in ISU supported STEM workshops focused on argument-based inquiry.
- 4-H Educators: 44 state and county 4-H staff participated in STEM training to shift 4-H programming to a stronger STEM focus

Extension and Outreach Educators

- 4hOnline: 47 county and 28 4-H state staff were trained in accurate 4-H enrollment data collection and data management procedures.
- November All Youth Staff Conference: 160 county, regional, and state 4-H staff participated in 3 days of professional development focused on the Iowa 4-H's program priorities of healthy living, STEM, citizenship and leadership, and communication and the arts.

- Spring & Fall YPS: 40 regional and state 4-H staff met to collaborate on the implementation of the Iowa 4-H Strategic Plan.
- STEM webinar/workshops: 61 STEM workshops focused on STEM and STEM practices to enable educators to better assist youth in STEM learning.
- Grow 4-H: 27 4-H staff representing multiple states enrolled in the on- line course Grow 4-H - Building Partnerships to Benefit Youth.

4-H Volunteers

- 1,648 volunteers participated in state designed training on youth development principles and practices
- 1,498 volunteers participated in risk management training
- 256 volunteers and 4-H staff participated in New Volunteer Training
- 65 volunteers participated in Safety Education in Shooting Sports training
- 7,194 adult volunteers and 3,337 youth volunteers assisted in the implementation of youth development programs

- 85 volunteers and 4-H staff attended state level training planned and implemented by volunteers
- Federal, State, and ISU Partners**

- 4-H state staff serve on the National 4-H GPS/GIS task force and NAE4-HA task forces for Animal Science, Communication/Arts, and 4-H Hall of Fame.
- People's Garden Grant included work with USDA and three other land grant universities.
- 4-H staff represent Iowa 4-H as Iowa Collaboration for Youth Development Council members.
- 32 youth participated in the Immersion and Wellness summer camp (ISU Departments of Food & Nutrition and Food Science).
- 24 youth participated in the Design Innovation summer camp (ISU College of Design).
- 4-H staff serve on the ISU K-12 Working Group.
- 148 ISU faculty and staff received training on Youth Activities Program (YAP) policies (in partnership with Office of Risk Management and Office of University Counsel).
- 3 online training modules were developed for ISU faculty and staff use for compliance with YAP training requirements.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	7194	54110	100168	13355

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

Patent Applications Submitted

Year: 2013
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of volunteers completing one training per year.

Year	Actual
2013	1713

Output #2

Output Measure

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

Year	Actual
2013	23282

Output #3

Output Measure

- Number of local 4-H partnerships initiated or strengthened.

Year	Actual
2013	3484

Output #4

Output Measure

- Number of new clubs developed using innovative and emerging 4-H club models.
Not reporting on this Output for this Annual Report

Output #5

Output Measure

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

Year	Actual
2013	6780

Output #6

Output Measure

- Number of 4-H'ers enrolled in Foods, Nutrition, Physical Health, and Fitness project areas.

Year	Actual
2013	34061

Output #7

Output Measure

- Number of 4-H'ers enrolled in Science, Engineering, and Technology (SET) project areas.

Year	Actual
2013	42083

Output #8

Output Measure

- Number of 4-H'ers enrolled in Citizenship, Communication, and Leadership project areas.

Year	Actual
2013	9702

Output #9

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.
Not reporting on this Output for this Annual Report

Output #10

Output Measure

- Number of youth reached by educators trained in Connecting Learning & Living Curricula (agriculture, environmental, food, and nutrition emphasis).
Not reporting on this Output for this Annual Report

Output #11

Output Measure

- Number of unduplicated youth engaged in 4-H learning opportunities.

Year	Actual
2013	100168

Output #12

Output Measure

- Percent of 4-H club members in their senior year of high school who will be attending a college/university/professional school/trade school/institute of higher education within 12 months of their high school graduation.

Year	Actual
2013	88

Output #13

Output Measure

- Enrollments in 4-H Citizenship and Leadership curricula areas.

Year	Actual
2013	45544

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-H'ers in grades 6 - 12 taking the FSQA certification test who self-report improved techniques and practices in livestock record keeping, medications, food product safety, and ethics.
7	Percentage of youth who participated in Iowa 4-H STEM programs who self-reported an increase in STEM process skills necessary to be successful in STEM courses and careers.
8	Percentage of youth from randomly selected 4-H clubs who self-report they demonstrate outstanding communication skills in sending and receiving written, visual, and oral messages after being engaged in 4-H club experiences.
9	Percentage of youth from randomly selected 4-H clubs who self-report they demonstrate productive citizenship skills 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.
10	Percentage of youth from randomly selected 4-H clubs who self-report they demonstrate effective leadership skills 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.
11	Percentage of youth from randomly selected 4-H clubs who self-report they demonstrate successful learning skills 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.
12	Percentage of youth who self-report they demonstrate healthy and safe eating, food preparation, and physical activity practices by eating more fruits and vegetables, making healthier food choices, using safe techniques when working in the garden, implementing safe methods when preparing food, becoming more physically active, and helping their family make healthy food choices after engaging in 4-H learning experiences.
13	Percentage of youth who self-report they positively strengthened their experiences in, and attitudes and aspirations toward liking science, feeling they are good at science, hoping to have a job related to STEM, doing STEM activities that are not school assignments, thinking science will be important to their futures, and believing science is useful for solving everyday problems after engaging in 4-H STEM learning experiences.
14	Percentage of youth who self-report they demonstrate effective STEM processing skills by asking questions that can be answered by scientific investigation; designing an investigation to answer a question; explaining to others how to do an investigation; explaining why things

	happen in an investigation; and creating a graph, table, picture, or display to share information with others after engaging in 4-H STEM learning experiences.
15	Percentage of youth who self-report they demonstrate outstanding communication skills by being confident when speaking in front of others, feeling comfortable asking questions, using good listening skills when others are talking, using technology to express ideas, and creating products to share ideas/information after engaging in 4-H learning experiences.
16	Percentage of youth who self-report they demonstrate productive citizenship by making a difference in communities through service learning projects, solving "real-life" community problems through service projects, planning service learning projects that meet a community's needs, and using service learning skills in the future after engaging in 4-H learning experiences.
17	Percentage of youth who self-report they demonstrate effective leadership skills in working with others, listening to others' ideas before making decisions, and handling conflict respectfully after engaging in 4-H learning experiences.
18	Percentage of youth who self-report they demonstrate successful learning skills by creating learning goals, reviewing a variety of resources, analyzing the strengths and weaknesses of different ideas, identifying what needs to change to achieve goals, and applying lessons learned to new experiences after engaging in 4-H educational experiences.

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.

Not Reporting on this Outcome Measure

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.

Not Reporting on this Outcome Measure

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.

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

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

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

Percentage of 4-H'ers in grades 6 - 12 taking the FSQA certification test who self-report improved techniques and practices in livestock record keeping, medications, food product safety, and ethics.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	83

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

The Iowa 4-H Program uses logic models that act as program development road maps in the areas of planning, implementation, and evaluation. The results indicated in this section are based on animal science-identified logic model outcomes. In the 2012/2013 program year, youth from 33 randomly selected counties who were enrolled in the Food Safety and Quality Assurance training were asked to complete a post-learning survey based on a 5-point Likert scale. Youth in grades 4 - 6 were administered a survey of eight questions regarding how their FSQA techniques and practices were changed in the areas of communication skills, reading feed labels correctly and thoroughly, observing appropriate feed additives and medication, and biosecurity measures. Of the 1,546 youth who were eligible to receive the survey, 766 youth completed the survey. Of the 766 youth who completed the survey, 81.6% of the youth indicated a 3- to 5-point increase in their communication techniques. 81.7% indicated a 3- to 5-point increase in their safe feeds/feed additives practices and 85% indicated a 3- to 5-point increase in their biosecurity techniques.

Youth indicated being involved in 4-H FSQA training strengthened their techniques and practices in the areas of feeling confident when sharing information with others; washing hands, boots and clothing after working with animals; isolating new animals when first brought to the farm to prevent disease spread; and determining what treatment to administer to animals based on feed and/or drug labels.

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. Commodity beef prices are currently at record highs so youth have an economic incentive to produce healthy and efficient animals. 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 #7

1. Outcome Measures

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

Not Reporting on this Outcome Measure

Outcome #8

1. Outcome Measures

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

Not Reporting on this Outcome Measure

Outcome #9

1. Outcome Measures

Percentage of youth from randomly selected 4-H clubs who self-report they demonstrate productive citizenship skills 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.

Not Reporting on this Outcome Measure

Outcome #10

1. Outcome Measures

Percentage of youth from randomly selected 4-H clubs who self-report they demonstrate effective leadership skills 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.

Not Reporting on this Outcome Measure

Outcome #11

1. Outcome Measures

Percentage of youth from randomly selected 4-H clubs who self-report they demonstrate successful learning skills 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.

Not Reporting on this Outcome Measure

Outcome #12

1. Outcome Measures

Percentage of youth who self-report they demonstrate healthy and safe eating, food preparation, and physical activity practices by eating more fruits and vegetables, making healthier food choices, using safe techniques when working in the garden, implementing safe methods when preparing food, becoming more physically active, and helping their family make healthy food choices after engaging in 4-H learning experiences.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	57

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

Sixty teachers, Extension 4-H staff, volunteers, and community partners attended Connecting Learning and Living curricula trainings throughout the state of Iowa. In addition, more than 1,000 Iowa youth participated in the USDA People's Garden (partnership with Washington State University, Cornell University, Iowa State University and the University of Arkansas) and Wellmark Foundation Healthy Gardens, Healthy Youth grant's school garden project which sought to increase fruit and vegetable consumption, empower youth in their communities, contribute toward a sustainable environment and build a national network of school gardens. A new Iowa 4-H Youth Development "Growing in the Garden: Local Foods and Healthy Living" curriculum was developed to support the development of youth-based gardening programs.

Results

The Iowa 4-H Program uses logic models that act as program development road maps in the areas of planning, implementation, and evaluation. The results indicated in this section are based on healthy living-identified logic model outcomes. 215 youth enrolled in 4-H healthy living programming completed the Iowa 4-H Healthy Living Self-Assessment Tool. The tool, based on a

5-point Likert scale, examined self-reported changes in youths' healthy living behaviors and practices after participating in 4-H as compared to before participating in 4-H. On average, 47% of youth indicated a 1-point increase, 8.2% indicated a 2-point increase, and .6% indicated a 3-point increase in their healthy living behaviors and practices after participating in 4-H.

Youth indicated being involved in 4-H helped them strengthen their healthy living practices of ... 1) eating a variety of fruits and vegetables; 2) making healthy food/snack choices; 3) working safely in gardens; 4) safely and carefully handling and preparing food to eat; 5) participating in physically active events; and 6) helping their family make healthy food choices and meals.

Reliability analysis of the 4-H Youth Healthy Living Self-Assessment Tool indicated that the individual questions within the construct of healthy living represented the conceptual meaning of the given construct. The "Before" construct was also significantly correlated with the "After" construct. Further, statistical comparisons of "After" and "Before" responses (all respondents combined) using paired t-tests were conducted for the construct, as well as for the individual indicators within the construct. For the construct, and all individual indicators, the respondents reported statistically higher "After" scores than "Before" scores.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #13

1. Outcome Measures

Percentage of youth who self-report they positively strengthened their experiences in, and attitudes and aspirations toward liking science, feeling they are good at science, hoping to have a job related to STEM, doing STEM activities that are not school assignments, thinking science will be important to their futures, and believing science is useful for solving everyday problems after engaging in 4-H STEM learning experiences.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	47

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 the Governor's Advisory Council STEM Initiative, and other available science education resources such as those available through NASA and NOAA.

Results

The Iowa 4-H Program uses logic models that act as program development road maps in the areas of planning, implementation, and evaluation. The results indicated in this section are based on STEM-identified logic model outcomes. 315 youth enrolled in 4-H STEM programming completed the Iowa 4-H STEM Self-Assessment Tool. The tool, based on a 5-point Likert scale, examined self-reported changes in youths' attitudes, aspirations, and interest in science after participating in 4-H as compared to before participating in 4-H. Regarding attitudes toward science, on average, 29.9% of youth indicated a 1-point increase, 7.3% indicated a 2-point increase, 1.5% indicated a 3-point increase, and .3% indicated a 4-point increase in their attitudes toward science after participating in 4-H. Regarding aspirations in science, on average, 32.6% of youth indicated a 1-point increase, 7.5% indicated a 2-point increase, 3.2% indicated a 3-point increase, and .3% indicated a 4-point increase in their aspirations in science after participating in 4-H. Regarding experiences in science, on average, 40.8% of youth indicated a 1-point increase, 13.8% indicated a 2-point increase, 3.2% indicated a 3-point increase, and .6% indicated a 4-point increase in science experiences after participating in 4-H.

Youth indicated being involved in 4-H positively strengthened their STEM experiences in, and attitudes and aspirations toward STEM in the areas of... 1) liking science, 2) feeling they are good at science 3) hoping to have a job related to STEM, 4) doing STEM activities that are not school assignments, 5) thinking science will be important to their futures, and 6) believing science is useful for solving everyday problems after engaging in 4-H STEM learning experiences.

Reliability analysis of the 4-H STEM Self-Assessment Tool indicated that the individual questions within each of the constructs of aspirations, experiences, and attitudes represented the conceptual meaning of the given construct. "Before" constructs were also significantly correlated with the "After" constructs. 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 indicators within the constructs. For each construct, and all individual indicators, the respondents reported statistically higher "After" scores than "Before" scores.

4. Associated Knowledge Areas

KA Code **Knowledge Area**
806 Youth Development

Outcome #14

1. Outcome Measures

Percentage of youth who self-report they demonstrate effective STEM processing skills by asking questions that can be answered by scientific investigation; designing an investigation to answer a question; explaining to others how to do an investigation; explaining why things happen in an investigation; and creating a graph, table, picture, or display to share information with others after engaging in 4-H STEM learning experiences.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	55

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

The Iowa 4-H Program uses logic models that act as program development road maps in the areas of planning, implementation, and evaluation. The results indicated in this section are based on STEM-identified logic model outcomes. 315 youth enrolled in 4-H STEM programming completed the Iowa 4-H STEM Self-Assessment Tool. The tool, based on a 5-point Likert scale, examined self-reported changes in youths' STEM processing skills after participating in 4-H as compared to before participating in 4-H. On average, 45% of youth indicated a 1-point increase, 9.6% indicated a 2-point increase, and .6% indicated a 3-point increase in their science processing skills after participating in 4-H.

Youth indicated being involved in 4-H helped them strengthen their STEM processing skills in the areas of... 1) asking questions that can be answered by scientific investigation; 2) designing an investigation to answer a question; 3) explaining to others how to do an investigation; 4) creating a graph, table, picture, or display to share information with others; 5) explaining why things happen in an investigation; 6) using evidence to defend their ideas; 7) using evidence to evaluate other people's ideas; 8) developing a design or model for solving a problem; 9) developing a way to test a design and use the results to improve the design; 10) sharing responsibilities with team members and letting others do some of the work; 11) using technology in a safe and appropriate manner; and 12) considering ethical implications of technology after engaging in 4-H STEM learning experiences.

Reliability analysis of the 4-H STEM Self-Assessment Tool indicated that the individual questions within the construct of science processing skills represented the conceptual meaning of the given construct. The "Before" construct was also significantly correlated with the "After" construct. Further, statistical comparisons of "After" and "Before" responses (all respondents combined) using paired t-tests were conducted for the science processing skills construct, as well as for the individual indicators within the construct. For the construct, and all individual indicators, the respondents reported statistically higher "After" scores than "Before" scores.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #15

1. Outcome Measures

Percentage of youth who self-report they demonstrate outstanding communication skills by being confident when speaking in front of others, feeling comfortable asking questions, using good listening skills when others are talking, using technology to express ideas, and creating products to share ideas/information after engaging in 4-H learning experiences.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	51

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. 1,655 4-H members participated in public speaking and performance events at the 2013 Iowa State Fair. Competitive events including Robotics Challenge, Cook This! and Livestock Judging contests include oral communication opportunities as part of the event. 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. More than 20,000 4-H members demonstrated written, oral and visual communication skills as they prepared and presented fair exhibits for evaluation.

Results

The Iowa 4-H Program uses logic models that act as program development road maps in the areas of planning, implementation, and evaluation. The results indicated in this section are based on communication-identified logic model outcomes. 315 youth enrolled in 4-H clubs, afterschool programs, and special events completed the Iowa 4-H Citizenship, Leadership, Communication, and Learning Self-Assessment Tool. The tool, based on a 5-point Likert scale, examined self-reported changes in youths' communication practices after participating in 4-H as compared to before participating in 4-H. On average, 43.2% of youth indicated a 1-point increase, 7.2% indicated a 2-point increase, and .3% indicated a 3-point increase in their communication practices after participating in 4-H.

Youth commonly indicated being involved in 4-H helped a young person strengthen communication practices such as... 1) feeling confident when speaking in front of others, 2) feeling comfortable asking questions, 3) using good listening skills when others are talking, 4) using technology to express interests, and 5) creating products to share ideas/information.

Reliability analysis of the Iowa 4-H Citizenship, Leadership, Communication, and Learning Self-Assessment Tool indicated that the individual questions within each of the four respective constructs of citizenship, leadership, communication, and learning represented the conceptual meaning of the given construct. "Before" constructs were also significantly correlated with the "After" constructs. 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 indicators within the constructs. For each construct, and all individual indicators, the respondents reported statistically higher "After" scores than "Before" scores.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #16

1. Outcome Measures

Percentage of youth who self-report they demonstrate productive citizenship by making a difference in communities through service learning projects, solving "real-life" community problems through service projects, planning service learning projects that meet a community's needs, and using service learning skills in the future after engaging in 4-H learning experiences.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	58

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

4,148 Iowa youth are enrolled in the 4-H Citizenship project. 1,236 youth and adults contributed 5,754 volunteer hours to improve their communities through the State 4-H Youth Conference and DuPont Pioneer Community Improvement grants. Twenty-six Iowa 4-H clubs leveraged \$7,625 in DuPont Pioneer Community Improvement grants into nearly \$28,870 in community improvement projects. Four 4-H members served as delegates to National 4-H Conference; 113 Iowa 4-H'ers participated in the national Citizenship Washington Focus program. Twenty-nine 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

The Iowa 4-H Program uses logic models that act as program development road maps in the areas of planning, implementation, and evaluation. The results indicated in this section are based on citizenship-identified logic model outcomes. 315 youth enrolled in 4-H clubs, afterschool programs, and special events completed the Iowa 4-H Citizenship, Leadership, Communication, and Learning Self-Assessment Tool. The tool, based on a 5-point Likert scale, examined self-reported changes in youths' citizenship practices after participating in 4-H as compared to before participating in 4-H. On average, 41.9% of youth indicated a 1-point increase, 14% indicated a 2-point increase, and 2.6% indicated a 3-point increase in their citizenship practices after participating in 4-H.

Youth commonly indicated being involved in 4-H helped a young person strengthen citizenship practices such as... 1) making a difference in communities through service learning projects, 2) applying knowledge in ways that solve real-life problems through service learning projects, 3) working on service projects to meet needs in their communities, and 4) gaining skills that will help them in the future through serving their communities.

Reliability analysis of the Iowa 4-H Citizenship, Leadership, Communication, and Learning Self-Assessment Tool indicated that the individual questions within each of the four respective constructs of citizenship, leadership, communication, and learning represented the conceptual meaning of the given construct. "Before" constructs were also significantly correlated with the "After" constructs. 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 indicators within the constructs. For each construct, and all individual indicators, the respondents reported statistically higher "After" scores than "Before" scores.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #17

1. Outcome Measures

Percentage of youth who self-report they demonstrate effective leadership skills in working with others, listening to others' ideas before making decisions, and handling conflict respectfully after engaging in 4-H learning experiences.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	54

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

2,626 Iowa youth are enrolled in the 4-H Leadership project. More than 1,466 community and project clubs provide leadership experiences for members. 525 youth and 69 adults received leadership training during the Iowa 4-H Youth Conference; 68 youth and adults completed Youth-Adult Partnerships training; 19 4-H members represented Iowa at the National 4-H Congress. Thirty-eight 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. 114 youth had volunteer leadership positions with 4-H events during the 2013 Iowa State Fair.

Results

The Iowa 4-H Program uses logic models that act as program development road maps in the areas of planning, implementation, and evaluation. The results indicated in this section are based on leadership-identified logic model outcomes. 315 youth enrolled in 4-H clubs, afterschool programs, and special events completed the Iowa 4-H Citizenship, Leadership, Communication, and Learning Self-Assessment Tool. The tool, based on a 5-point Likert scale, examined self-reported changes in youths' leadership practices after participating in 4-H as compared to before participating in 4-H. On average, 44.9% of youth indicated a 1-point increase, 8% indicated a 2-point increase, .7% indicated a 3-point increase, and .1% indicated a 4-point increase in their leadership practices after participating in 4-H.

Youth commonly indicated being involved in 4-H helped a young person strengthen leadership practices such as... 1) working together in a team, 2) listening and talking to others before making decisions, and 3) handling conflict respectfully.

Reliability analysis of the Iowa 4-H Citizenship, Leadership, Communication, and Learning Self-Assessment Tool indicated that the individual questions within each of the four respective constructs of citizenship, leadership, communication, and learning represented the conceptual meaning of the given construct. "Before" constructs were also significantly correlated with the "After" constructs. 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 indicators within the constructs. For each construct, and all individual indicators, the respondents reported statistically higher "After" scores than "Before" scores.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #18

1. Outcome Measures

Percentage of youth who self-report they demonstrate successful learning skills by creating learning goals, reviewing a variety of resources, analyzing the strengths and weaknesses of different ideas, identifying what needs to change to achieve goals, and applying lessons learned to new experiences after engaging in 4-H educational experiences.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	64

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

23,777 4-H'ers enrolled in one or more of the 38 project areas offered; 76,391 other youth participated in other 4-H educational programs. All curriculum materials available to Iowa 4-H members is selected from the National 4-H Curriculum Directory and/or other peer reviewed resources. The experiential learning and inquiry based learning models are used as the primary instructional methods. 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

The Iowa 4-H Program uses logic models that act as program development road maps in the areas of planning, implementation, and evaluation. The results indicated in this section are based on learning-identified logic model outcomes. 315 youth enrolled in 4-H clubs, afterschool programs, and special events completed the Iowa 4-H Citizenship, Leadership, Communication, and Learning Self-Assessment Tool. The tool, based on a 5-point Likert scale, examined self-reported changes in youths' learning practices after participating in 4-H as compared to before participating in 4-H. On average, 47.5% of youth indicated a 1-point increase, 14.5% indicated a 2-point increase, and 1.5% indicated a 3-point increase in their learning practices after participating in 4-H.

Youth commonly indicated being involved in 4-H helped a young person strengthen leadership practices such as... 1) creating learning goals; 2) reviewing a variety of resources related to a topic; 3) identifying the strengths and weaknesses of different ideas, solutions, or approaches; 4) thinking about what is going well and needs to change to achieve goals, and 5) applying what was learned to new experiences.

Reliability analysis of the Iowa 4-H Citizenship, Leadership, Communication, and Learning Self-Assessment Tool indicated that the individual questions within each of the four respective constructs of citizenship, leadership, communication, and learning represented the conceptual meaning of the given construct. "Before" constructs were also significantly correlated with the "After" constructs. 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 indicators within the constructs. For each construct, and all individual indicators, the respondents reported statistically higher "After" scores than "Before" scores.

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

52% of Iowa's school-aged youth reside in Iowa's 11 most populous counties compared to 49.5% in 2007. The Iowa 4-H Youth Development Program needs to devote more resources to programs in those counties, but tight budgets have reduced capacity to hire staff or fund programs targeted for those counties. As a result, the number of youth reached (all delivery modes) in urban counties has dropped by 1/3 since 2007 while the number of youth reached in non-urban counties remained static.

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. This is especially noticeable in program evaluation efforts of NIFA priorities. The Iowa 4-H Youth Program, however, has increased efforts to measure program participants' knowledge and behavior changes in selected educational programs that match NIFA priority areas (ex: food safety and childhood obesity). Efforts were broadened to identify STEM opportunities within current educational programs and strong partnerships were built with Iowa STEM Hubs and ISU faculty.

Work to align program outcomes often focused attention on specialized innovative program efforts which diluted the amount of resources available to work with more traditional 4-H audiences. While important for overall program success, this also creates conflict with traditional program partners and supporters. Implementation of new and innovative programs to reach new youth audiences depends 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 and group delivery models is critical to the success of the programs and has been challenging.

Adoption of the Iowa Core Curriculum 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 4-H curricula to identify core standards being met, and revise curricula when necessary to meet core standards required 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 developing a new Iowa 4-H Youth Program Strategic plan to address the challenges addressed above, focus priority efforts, and improve efficiency. A priority for ISU Extension and Outreach is to be the leader of K-12 outreach efforts across

the university, providing program expertise in youth development for all ISU colleges and departments. Planning efforts for this broadened university role meant less time and resources available for program design and delivery.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

The Iowa 4-H Program uses logic models as program development road maps in the areas of planning, implementation, and evaluation. Logic models have been created for STEM, healthy living, citizenship and leadership, and communication and the arts constructs.

- 315 youth enrolled in 4-H clubs, afterschool programs, and special events completed the Iowa 4-H Citizenship, Leadership, Communication, and Learning Self-Assessment Tool and the Iowa 4-H STEM Self-Assessment Tool; 116 females (36.8%) and 199 males (63.2%).
- 215 youth enrolled in 4-H afterschool programs, special events, and school programs completed the Iowa 4-H Healthy Living Self-Assessment Tool; 116 females (54%) and 99 males (46%).
- Self-assessment tools were based on a 5-point Likert scale (where 1 = "not at all" and 5 = "great deal").
- For the healthy living; STEM aspirations, attitudes, and experiences; STEM processing skills; citizenship; leadership; communication; and learning constructs, and all corresponding individual indicators, youth reported statistically higher "After" scores than "Before" scores.
- On average, 47% of youth indicated a 1-point increase, 8.2% indicated a 2-point increase, and .6% indicated a 3-point increase in their healthy living behaviors and practices after participating in a 4-H.
- **Attitudes** toward science, on average, 29.9% of youth indicated a 1-point increase, 7.3% indicated a 2-point increase, 1.5% indicated a 3-point increase, and .3% indicated a 4-point increase in their attitudes toward science after participating in 4-H. **Aspirations** in science, on average, 32.6% of youth indicated a 1-point increase, 7.5% indicated a 2-point increase, 3.2% indicated a 3-point increase, and .3% indicated a 4-point increase in their aspirations in science after participating in 4-H. **Experiences** in science, on average, 40.8% of youth indicated a 1-point increase, 13.8% indicated a 2-point increase, 3.2% indicated a 3-point increase, and .6% indicated a 4-point increase in science experiences after participating in 4-H.
- 45% of youth indicated a 1-point increase, 9.6% indicated a 2-point increase, and .6% indicated a 3-point increase in their science processing skills after participating in 4-H.
- 43.2% of youth indicated a 1-point increase, 7.2% indicated a 2-point increase, and .3% indicated a 3-point increase in their communication practices after participating in 4-H.
- 41.9% of youth indicated a 1-point increase, 14% indicated a 2-point increase, and 2.6% indicated a 3-point increase in their citizenship practices after participating in 4-H.
- 44.9% of youth indicated a 1-point increase, 8% indicated a 2-point increase, .7% indicated a 3-point increase, and .1% indicated a 4-point increase in their leadership practices after participating in 4-H.
- 47.5% of youth indicated a 1-point increase, 14.5% indicated a 2-point increase, and 1.5% indicated a 3-point increase in their learning practices after participating in 4-H.

Key Items of Evaluation

CHILDHOOD OBESITY

The Iowa 4-H Program uses logic models that act as program development road maps in the areas of planning, implementation, and evaluation. The results indicated in this section are based on healthy living-identified logic model outcomes. 215 youth enrolled in 4-H healthy living programming completed the Iowa 4-H Healthy Living Self-Assessment Tool. The tool, based on a 5-point Likert scale, examined self-reported changes in youths' healthy living behaviors and practices after participating in 4-H as compared to before participating in 4-H. On average, 47% of youth indicated a 1-point increase, 8.2% indicated a 2-point increase, and .6% indicated a 3-point increase in their healthy living behaviors and practices after participating in a 4-H. For the healthy living construct and all individual healthy living indicators/items, the respondents reported statistically higher "After" scores than "Before" scores.

Youth indicated being involved in 4-H helped them strengthen their healthy living practices of ... 1) eating a variety of fruits and vegetables; 2) making healthy food/snack choices; 3) working safely in gardens; 4) safely and carefully handling and preparing food to eat; 5) participating in physically active events; and 6) helping their family make healthy food choices and meals.

FOOD SAFETY

The Iowa 4-H Program uses logic models that act as program development road maps in the areas of planning, implementation, and evaluation. The results indicated in this section are based on animal science-identified logic model outcomes. In the 2012/2013 program year, youth from 33 randomly selected counties who were enrolled in the Food Safety and Quality Assurance training were asked to complete a post-learning survey based on a 5-point Likert scale. Youth in grades 4 - 6 were administered a survey of eight questions regarding how their FSQA techniques and practices were changed in the areas of communication skills, reading feed labels correctly and thoroughly, observing appropriate feed additives and medication, and biosecurity measures. Of the 1,546 youth who were eligible to receive the survey, 766 youth completed the survey. Of the 766 youth who completed the survey, 81.6% of the youth indicated a 3- to 5-point increase in their communication techniques. 81.7% indicated a 3- to 5-point increase in their safe feeds/feed additives practices and 85% indicated a 3- to 5-point increase in their biosecurity techniques.

Youth indicated being involved in 4-H FSQA training strengthened their techniques and practices in the areas of feeling confident when sharing information with others; washing hands, boots and clothing after working with animals; isolating new animals when first brought to the farm to prevent disease spread; and determining what treatment to administer to animals based on feed and/or drug labels.