

2014 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 2014 incorporates the five USDA priority areas; however, they are not reported on as separate and distinct programs. Climate Change, while a program in the 2014 Plan of Work, is instead being reported under the Global Food Security and Hunger program; Childhood Obesity has been incorporated into Health and Well-being; Food Safety has been split up, with consumer education falling under Health and Well-being, while production related programming has been folded into Global Food Security and Hunger. Therefore, of the eight programs in our Plan of Work, we are reporting on only seven broad, interdisciplinary programs:

- Climate Change - **not reporting**
- Community and Economic Development
- Families: Expanding Human Potential
- Global Food Security and Hunger
- Health and Well-being
- Natural Resources and Environmental Stewardship
- Sustainable Energy - Biofuels and Biobased Products
- Youth Development

Note there have been wholesale changes in outputs for a couple programs as a result of the reviewer comments on the 2013 Annual Report of Accomplishments and Results.

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

For research FTEs, there is a significant discrepancy between the 2014 Plan of Work and this annual report. This is due both to the method of calculating research FTEs/SYs (adjusted to include professional staff (PYs)) and to the inclusion of all program FTEs, regardless of funding source, rather than only those supported by Hatch funding, per USDA guidance and clarification.

Finally, some numbers were reported for the national outcomes and indicators, in both the seven NIFA selected and through Google Forms. All of the numbers duplicate what has been reported in the program outcomes.

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, 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: 2014	Extension		Research	
	1862	1890	1862	1890
Plan	377.0	0.0	149.0	0.0
Actual	378.1	0.0	494.2	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

Merit review: ISU Extension and Outreach continued to monitor and adjust the plan of work 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. Program leaders monitor feedback from stakeholders in the above reporting mechanisms as well as through departmental reviews, program evaluation by Plan of Work teams and program evaluation as part of externally funded projects, and work with team leaders to make necessary course corrections. North Central Regional Program Directors provide periodic oversight, guidance, and course corrections on logic models and joint program implementation and evaluation.

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

III. Stakeholder Input

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

- Use of media to announce public meetings and listening sessions
- Targeted invitation to traditional stakeholder groups
- Targeted invitation to non-traditional stakeholder groups
- Targeted invitation to traditional stakeholder individuals
- Targeted invitation to non-traditional stakeholder individuals
- Targeted invitation to selected individuals from general public
- Survey of traditional stakeholder groups
- Survey of traditional stakeholder individuals
- Survey of the general public
- Survey specifically with non-traditional groups
- Survey specifically with non-traditional individuals
- Survey of selected individuals from the general public

Brief explanation.

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

- 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 ongoing 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.

The ISU Extension and Outreach program development process includes a program needs assessment phase to inform program development. ISU Extension and Outreach conducted a state-wide needs assessment in the Fall of 2013.

Three options were outlined for conducting the 2013 Needs Assessment:

Option A: Pre-Meeting Survey and Needs Assessment Planning Session

Council members and staff identified key informants for a pre-meeting survey. Key informants are community leaders and decision makers who are knowledgeable about the community and can accurately identify priority needs and concerns. Key informants are representative of the broad and diverse population in the county/region. Stakeholders were invited to a county/regional planning process led by ISU Extension and Outreach staff. Key stakeholders are similar to key informants; however, they usually are partners or past/present recipients of ISU Extension and Outreach programming.

Option B: Focus Groups

Council members and staff identified key informants for a focus group. Key informants are community leaders and decision makers who are knowledgeable about the community and can accurately identify priority needs and concerns. Key informants were representative of the broad and diverse population in the county/region.

Option C: Existing Data Approach

Council members and staff identified key informants and utilized community wide needs assessment data that had recently been conducted by other partners or communities.

This needs assessment process was in addition to ongoing efforts through the following:

- Formal advisory boards, by far the most common method employed, specifically invite representation from the organizations and agencies that work in a given area, and may also include producers nominated by extension program specialists, and representatives of the program specialists, campus specialists and campus researchers.
- Web-based needs assessment and listening sessions are open to the public. Targeted groups are identified and contacted. Steering committees identify key individuals to ensure that the invitation list represents the broad spectrum of stakeholders.
- Use of developed mailing list or a random survey of current and potential clientele.
- External Focus groups include information from peer groups. Conduct needs assessments informally via routine contacts with target audience or formally via surveys.
- Extension state and field specialists serve on multiple county and state advisory committees where needs are identified and used to shape program efforts.
- Extension specialists acquired a very good knowledge, increased through hundreds of personal contacts, telephone calls, e-mail messages and blog comments received each year from potential clientele, of the individuals and groups that will have interest in their programs. Recommendations are also received from county-based Extension staff, campus faculty and staff, and commodity/producer organizations.
- Participants provide personal contacts for our planning process; much attention is paid to major client groups and their boards of directors and other key influences. Suggestions from university administration are an excellent source of contributors.

- Staff are members of coalitions and taskforces at the state and local level that continually review and check changing needs against operational plans.
- Meeting with representatives from state agencies regularly allows for input from consultants to districts throughout the state. Attendance at state and national meetings allow input from individuals, as do email contacts from the web site.
- Media and surveys are used to identify interested stakeholders. State staff hold conversations with individuals in more than 30 key state agencies and state organizations to share information and seek input.

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

1. Methods for collecting Stakeholder Input

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

Brief explanation.

Iowa State University Extension and Outreach conducted a state-wide needs assessment in the Fall of 2013 utilizing:

- Pre-Meeting Survey and Needs Assessment Planning Session
- Focus Groups
- Existing Data Approach

In addition and on an ongoing basis:

- Meetings with traditional stakeholder groups and individuals are the most common method used.
- Listening sessions with current and potential clients were held.
- Conducted 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.

The ISU Extension and Outreach program development process includes a program needs assessment phase to inform program development. ISU Extension and Outreach conducted a state-wide needs assessment in the Fall of 2013.

The Programming Process

Our product is our programs. From county to campus, there are many people involved in assessing needs, designing education, developing programs, implementing learning activities and evaluating how we are doing in reaching our mission.

Needs Assessment Process Outline for County Extension Councils, Staff & Key Community Stakeholders

While there is no one perfect needs assessment model, the following process is designed for regional extension education directors to help Extension council members, staff and key stakeholders:

1. identify important current needs/issues in their community/region;
2. sequence those needs/issues from most important to least important;
3. identify the needs/issues that fit with ISU Extension and Outreach's mission and vision and utilize the resources Extension and Outreach can bring to a community to address identified needs and thus improve quality of life in Iowa; and

4. identify the needs/issues that do not fit with Extension and Outreach's mission and vision and encourage external partners to take leadership in addressing these needs/issues.

The **Ag and Natural Resources (ANR)** subject matter teams that work most closely with farmer and natural resource managers engaged stakeholders and chose a method they believe best represented the sector they serve. They gathered input through regional focus groups of producers, discussions with industry thought leaders or agency staff and state-wide random sample survey of industry participants to identify both significant challenges and emerging opportunities. The information collected was evaluated by the subject matter teams, prioritized and where appropriate, incorporated into programming for the coming one to one to five year period. In many cases the information is affirmation of current program priorities, although some teams did change priorities in the 2016 plan of work.

Brief Explanation of what you learned from your Stakeholders

Needs Assessment Summary 2013 identified the following needs:

Youth:

- Youth who are productive citizens and effective leaders
 - Community leadership succession
 - Increase community engagement
 - Adult mentoring and volunteer opportunities
 - Keep rural America strong
 - Improve adult leadership

- Youth who are literate and ready in STEM
 - Compete globally
 - Better solve future problems
 - More creative and critical thinking
 - More female scientists
 - Improve the future workforce

Community and Economic Development:

- More economic development in communities
 - Create and retain jobs
 - Retain youth, adults, and families
 - Individual and family sustainability
 - Maintain and increase community capability
 - Involve youth

Extension and Outreach to Families:

- Family Life (examples: relationships, communication, parenting, time and stress management, mental health/disability, pregnancy prevention, bullying, youth development, etc.)
- Financial Stability (examples: money management, cost of living, estate planning, investments, internet scams, etc.)
- Child Care (examples: cost, quality, access, etc.)
- Health and Health Care Coverage (examples: environmental issues, nutrition, obesity, physical exercise, outdoor education and recreation, healthy children, food safety, insecurity, and systems,

etc.)

- Growing Older (examples: intergenerational issues, health, retirement, caregiving, death, etc.)
- Community Capacity (examples: leadership development, visioning, collaboration, knowledgeable local government, and access to education (literacy), housing, jobs, social networks, and resources, etc.)

Agriculture and Natural Resources:

Farm Management:

- Intergenerational transfer. This would include beginning farmers, retiring farmers, estate planning, equipment sharing, etc
- Overall financial situation for Iowa farmers and where we might be going in the next few years
- Ability to access land, both purchase and renting.
- Work with women farmers and landowners

Natural Resources and Stewardship

- Iowa Nutrient Reduction Strategy
- Manure Management
- Water Management / Drainage
- Energy
- Precision Ag
- Timber, wildlife and habitat conservation and management

Iowa Beef Center

- Land access. Better utilization of land for grazing opportunities
- Effective integration of young producers and future generations into beef production
- How do we increase production efficiency?
- Risk management, marketing, and price discovery.
- How do we better utilize genetic information in both the cow-calf and feedlot sector?
- Benchmarking and data management.
- Maintaining a competitive edge in cattle feeding.
- Herd Health

Crops Team

- Nitrogen/manure management/NRS
- Weed resistance/management
- Insect resistance/management
- Forages/cover crops
- Farm economics, profits
- Disease/nematode management

Dairy Team

- Beginning Farmers, Retiring Farmers and intergenerational transfers
- Price volatility and risk management
- Expansion
- Environmental compliance and stewardship
- Human resource management

- Production technology and efficiency

Horticulture

- Invasive species
- High tunnel production
- Production practices and efficiency
- Cover crops
- Consumer horticulture and Master Gardner
- Work with partner organizations

Value-Added Ag

- Human Resource Management
- Business Development and Planning
- Technical assistance in the scalability and profitability of local food networks
- Food safety training, technical assistance and risk management
- Technical assistance to new and emerging agriculture production and processing enterprises

Iowa Pork Industry Center

- Environmental regulations and odor
- Production practice compliance (welfare, antibiotics)
- Animal health management
- Social acceptance
- Profitability and risk management

Common themes

- Water quality / nutrient strategy
- Farm transition: retirement and beginning farmers
- Farm financial health and risk management
- Human resource management

Other often mention topics

- Local foods and small farm and acreage
- Ag literacy
- Technology use and analysis "Big Data"

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
9564584	0	7737044	0

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	8059160	0	8460993	0
Actual Matching	8059160	0	8460993	0
Actual All Other	15379538	0	65750627	0
Total Actual Expended	31497858	0	82672613	0

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous				
Carryover	6363844	0	5937534	0

V. Planned Program Table of Content

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

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Climate Change

Reporting on this Program

Reason for not reporting

Climate Change has been discontinued as a separate and distinct program; all reporting has been incorporated into the Global Food Security and Hunger program.

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2014	Extension		Research	
	1862	1890	1862	1890
Plan	2.7	0.0	1.2	0.0
Actual Paid	0.0	0.0	0.0	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

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

V(D). Planned Program (Activity)

1. Brief description of the Activity

Priorities for 2014-2018 will be to assist farmers and landowners in reclaiming flood-degraded soils and adapting to the impacts of extreme weather fluctuations (drought and high temperatures) on crop and livestock production.

2. Brief description of the target audience

As programming is developed, audiences will be targeted. Targeted audiences must be 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. Audiences include farmers and landowners who are returning flooded soils to production through adaptation of science-based reclamation strategies, and crop and livestock farmers impacted by the 2012 drought.

3. How was eXtension used?

{No Data Entered}

V(E). Planned Program (Outputs)

1. Standard output measures

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

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

Patent Applications Submitted

Year: 2014

Actual: {No Data Entered}

Patents listed

{No Data Entered}

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2014	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of current year citations of climate related publications.

Year	Actual
2014	0

Output #2

Output Measure

- Number of current year climate relevant educational programs.

Year	Actual
2014	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of producers that adopt recommended adaptation strategies for production agriculture and natural resources management, including invasive species, pest management, pollutant loads, wetlands and nutrient reduction.
2	Number of producers and landowners who adopt BMPs after extreme weather events.

Outcome #1

1. Outcome Measures

Number of producers that adopt recommended adaptation strategies for production agriculture and natural resources management, including invasive species, pest management, pollutant loads, wetlands and nutrient reduction.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

{No Data Entered}

What has been done

{No Data Entered}

Results

{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #2

1. Outcome Measures

Number of producers and landowners who adopt BMPs after extreme weather events.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

{No Data Entered}

What has been done

{No Data Entered}

Results

{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

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

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 2

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: 2014	Extension		Research	
	1862	1890	1862	1890
Plan	7.9	0.0	0.8	0.0
Actual Paid	8.0	0.0	2.5	0.0
Actual Volunteer	5.5	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
934357	0	356852	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
934357	0	356852	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
2251250	0	488036	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.
- Developed a data portal through which city and county governments will be able to access a wide range of products using local finance, economic, and demographic data, all available from one website.
- ISU Extension CED and the Iowa Association of Regional Councils (IARC) entered into a joint position agreement, allowing IARC to continue its rapid growth with a new, full-time executive director and allowing ISU Extension and Outreach to create better connections between the university's community and regional planning department and ISU Extension and Outreach's capacity to connect to cities, counties, businesses and nonprofits.
- 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

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	52677	352480	0	0

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

Patent Applications Submitted

Year: 2014
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2014	Extension	Research	Total
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Actual	0	0	19
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V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of articles, publications, reports, plans.

Year	Actual
2014	277

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	Community visioning and design: Number of communities receiving planning and design assistance.
8	Minority community and economic development: Number of people in underserved populations receiving assistance.

Outcome #1

1. Outcome Measures

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

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Community planning: Community plans/projects initiated.

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

Community planning: Communities with improved civic functioning.

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Community economic development: Communities participating in economic development events.

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Community economic development: Number of jobs created or retained.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	715

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. Small business and jobs creation is particularly important for sustaining family income for many people during economic recovery. Many communities in Iowa lack the resources necessary to develop innovative projects and initiatives designed to improve their economic growth. The recent recession and the property tax cut have further affected economic growth in these communities and they are looking for innovative ways to attract new residents, visitors, and businesses.

What has been done

CED specialists worked with small business owners and entrepreneurs to start or strengthen their businesses, to assist them with writing business plans and navigating the business permit process. Extension CED is part of the Iowa Retail Initiative (IRI), a collaboration to create thriving rural communities that involves College of Design studios in community economic development projects. Extension CED shares joint positions with the Keokuk Area Chamber of Commerce, the City of Fairfield, West Liberty (WE-LEAD), and Cedar County (CCEDCO), and the regional development organization of southwest Iowa (SWICO). Extension CED continued to conduct tours through its Road Scholar Program.

Results

In 2014, 715 jobs were created or retained. More than 100 businesses were started or assisted with help from Extension CED. Of those, 46 were minority entrepreneurs. The new and rehabilitation housing construction resulting from housing trust funds generated approximately 80 jobs in Iowa (50 jobs due to direct effect and 30 jobs due to indirect and induced effects). More than 800 businesses were expanded or improved, and CED specialists trained 377 business leaders/entrepreneurs. The Road Scholar program assisted 72 businesses, with a direct economic impact of \$829,463. IRI facilitated projects with ISU design studio classes and nearly 40 locally-owned businesses.

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.

Not Reporting on this Outcome Measure

Outcome #7

1. Outcome Measures

Community visioning and design: Number of communities receiving planning and design assistance.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	66

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

A gap exists between demand for planning and design services to rural Iowa communities and the availability of those services. Many smaller communities in Iowa face 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. A combination of factors such as aging infrastructure, resistance to additional taxation, depopulation, and lower population density are pushing small local governments' budgets to their limits. Legislative and economic issues also impact nonprofit organizations.

What has been done

The Iowa's Living Roadways (ILR) Community Visioning Program assists small Iowa towns in developing design plans that reflect the values and identity of the community. I-WALK evaluates walkability for school children and older adults. The PLACE program partners design classes/individual students with towns and organizations needing design and planning assistance. The Community Design Lab assists towns with design challenges at multiple scales and sees projects through to implementation. The LA Community design studio worked with Mapleton to identify strategies for its long-term recovery from a 2011 tornado. CD-DIAL conducts

surveys for communities as part of their long-term planning activities. C2C conducts strategic planning based on economic, demographic, and design analyses. Extension CED trains local governments, COGS, and nonprofits.

Results

Ten visioning communities received conceptual design plans, feasibility studies, and implementation planning assistance. ISU Extension CED completed I-WALK (Iowans Walking Assessment Logistics Kit) projects at 8 schools in 3 towns to help create safe routes to school and conducted I-WALK for older adults in 4 towns. The I-WALK project produced SRTS reports for 8 school districts and 4 reports on walkability for older Iowans. The Community Design Studio presented proposals to Mapleton that address walkability, nature play, a trailhead, a trail extension and a campground. CDL provide design assistance to 7 communities. The PLACE projects in 20 communities yielded 12 reports, as well as 5 graphic design projects for which students generated deliverables such as logos, templates, and posters. Communities are using the CD-DIAL conducted surveys for 5 communities. CED Extension partnered with 3 communities to conduct community assessment and planning assistance through the C2C program. CED Extension conducted Planning & Zoning workshops in 7 communities. CED's Geospatial Technology Program conducted GIS short courses for 6 groups (communities). CED Extension trained nonprofit employees in 6 communities.

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development

Outcome #8

1. Outcome Measures

Minority community and economic development: Number of people in underserved populations receiving assistance.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	299

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

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. 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. As the immigrant population grows, the demand for Latino business and community development assistance grows.

What has been done

ISU Extension and Outreach Community and Economic Development (CED) continues to aggressively employing outreach strategies for this growing demographic. One-third of CED Extension field staff is fluent in Spanish. CED Extension added a Latino community development specialist in West Liberty, and is working to fill Latino community development specialists in Sioux City and Des Moines County. Alliant Energy awarded CED Extension a \$62,451 grant to conduct Latino energy-efficiency outreach. Through programs such as JUNTOS, CED Extension educates youth on career options as well as strategies for pursuing higher education.

Results

CED specialists provided JUNTOS training for 42 Latinos and provided New Iowan technical assistance (e.g., citizenship training) for 112 people in minority populations. CED specialists assisted 46 Latino entrepreneurs in starting or expanding their businesses. PLACE and IRI assisted 7 Latino business owners with on branding/community identity. CED specialists conducted focus groups for 70 Latino residents in 4 communities, determining that Latinos were not using Alliant Energy's resources and that few understood the benefit of energy-efficiency programs. Based on the results of the study, CED specialists have developed and have started conducting energy-efficiency programming to the Latino population with a second grant from Alliant Energy of \$75,046. CED sponsored a conference on civic engagement that 22 Latinos attended.

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. 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, focus groups were conducted in 10 communities to obtain feedback from specific demographics for the development of transportation enhancement concepts. Extension sociology will continue the annual Iowa Farm and Rural Life Poll. The I-WALK project surveyed teachers and conducted mapping workshops with parents and children in 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's Community Design Lab helps 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 (I-WALK, Community Visioning, CDL). 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 # 3

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%		32%	
801	Individual and Family Resource Management	30%		23%	
802	Human Development and Family Well-Being	50%		21%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	0%		23%	
805	Community Institutions and Social Services	20%		1%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2014	Extension		Research	
	1862	1890	1862	1890
Plan	15.5	0.0	2.9	0.0
Actual Paid	8.2	0.0	3.9	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
793220	0	395101	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
793220	0	395101	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
2074468	0	1001755	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Short term and in-depth sequential educational programs were directed toward individuals, families, professionals and community leaders through one-on-one education, workshops, meetings, conferences, online learning, and social and mass media to strengthen their knowledge and skills. We developed products, curriculum, and other educational resources for use in training, technical assistance, and facilitation of community advocacy. Faculty participated in relevant multistate research committees NC1030, NC1171, NE1039.

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, policy makers, businesses, community members and leaders, adults, older adults, education professionals, and employers.

3. How was eXtension used?

ISU Extension and Outreach resources were promoted and linked to eXtension (e.g., Science of Parenting blogs, podcasts, specific publications), and eXtension was promoted as a resource to parents/primary caregivers. Additionally, eXtension resources were actively promoted to Iowa early care and education and family support professionals through conference displays, health fairs, and social media. The eXtension-Family Caregiving resource is linked on the Powerful Tools for Caregivers web page. This resource is also shared with newly trained class leaders. Links to personal finance Ask the Expert, FAQs, a US Trustees-approved financial management course for bankruptcy filers, and webinars appear on ISU webpages and efforts were made to publicize this resource to our audiences.

V(E). Planned Program (Outputs)

1. Standard output measures

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	50988	78220	22840	10087

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

Patent Applications Submitted

Year: 2014
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2014	Extension	Research	Total
Actual	8	11	18

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
2014	56276

Output #2

Output Measure

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

Year	Actual
2014	10779

Output #3

Output Measure

- Number of individuals participating in family finance educational programs.

Year	Actual
2014	7651

Output #4

Output Measure

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

Year	Actual
2014	161

Output #5

Output Measure

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

Year	Actual
2014	2660

Output #6

Output Measure

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

Year	Actual
2014	11

Output #7

Output Measure

- Number of professionals trained to provide education and/or support to families.

Year	Actual
2014	1149

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of parents improving parenting skills.
2	Percent of professionals trained to provide education and/or support to families.
3	Percent of early child care programs improving learning environments and teaching strategies.
4	Percent of caregivers 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 individuals improving personal and family financial management skills.
7	Percent of individuals making progress toward financial goals.
8	Percent of professionals or volunteers who are better prepared to apply or teach financial management skills.
9	Number of communities reporting taking actions to improve circumstances for older Iowans.
10	Number of professionals trained to provide education and/or support to families.

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
2014	527

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. Reading level at end of 3rd grade predicts high school graduation. Over one-fifth (21.8%) of Iowa 11th graders are below grade level for reading and substantially higher for Latinos (38.6%). The four year high school graduation rate in Iowa is 89.63% with only 79.5% Latino students graduating. Youth who fail to complete high school are estimated to cost Iowa \$87M in reduced state tax revenues over their lifetime; \$2M per year in additional welfare costs; and are at high risk of being unemployed or incarcerated; and having poorer physical/mental health. Increasing parental involvement in school and parental academic motivation promotes academic success among Latino youth.

What has been done

Parents and caregivers in and outside of Iowa participated in workshops through ISU Extension and Outreach programs. Thousands more were reached via newsletters, podcasts, blogs, and Websites. Research- and evidence-based curricula implemented include: SFP 10-14 (Strengthening Families Program: For Parents and Youth 10-14) to prevent youth substance abuse; Family Story Teller, a family literacy program; Together We Can: Creating a Healthy Future for Our Children, a program focused on strengthening alliance between parents who have young children; Growing Strong Families, a home visitation program focusing on parenting, nutrition, health and family finance skills for parents of children 0-5 years; and Juntos Para Una Mejor Educación, a program that increases knowledge/skills of Latino youth and their parents/caregivers to help youth complete high school and pursue higher education.

Results

Half of the parents (56 out of 119) who participated in Together We Can: Creating a Healthy Future for Our Children reported a strengthening of their relationship with their partner after

program participation. All parents who completed surveys after participating in Juntos Para Una Mejor Educación (n=91) reported specific actions they took to be more engaged with their child's education. ISUEO trained professionals to deliver SFP 10-14. Parents who participated in retrospective pre-post-test surveys after participating in SFP 10-14 improved their communication skills with their family members (92%; n=106).

4. Associated Knowledge Areas

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

Outcome #2

1. Outcome Measures

Percent of professionals trained to provide education and/or support to families.

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

Percent 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
2014	85

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Iowa currently ranks second in the nation for the percentage of young children with employed parents. More than 70% of Iowa children from birth through age 6 are in child care. Demand is high for quality early childhood programs. By 2020, the number of child care professionals is expected to increase nationally by 20%.

What has been done

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. The Better Kid Care New Staff Orientation program provided 16 hours of instruction for preschool and child care center staff and 6 hours of online instruction for child care center directors. 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

200 directors/supervisors and 850 child care or preschool teachers participated in the NSO program, completing 14,800 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 ($n=486$) participating in the Early Childhood Environment Rating Scale training indicated that 85% 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, 38 early childhood education consultants learned and demonstrated skills in coaching and consultation, 17 consultants earned an I-Consult credential, 5 earned an I-Consult mentor credential. Participants reporting gains in knowledge and program improvement reported working with a total of 47,000 children and 35,560 families.

4. Associated Knowledge Areas

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

Outcome #4

1. Outcome Measures

Percent of caregivers 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
2014	100

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

During a year, 29% of the U.S. population provides care for someone who is chronically ill, aging, living with a disability, or living with a family member or friend. According to research the impact on caregivers is three-fold: physical, emotional, and financial. The latest Stress in America survey results indicate caregivers report being in poorer health than the rest of the nation's population with higher rates of high cholesterol, high blood pressure, overweight/obesity, and depression. Additionally, 11% 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

ISUEO-trained class leaders led Powerful Tools for Caregivers programs in their communities. This program is a series of six classes designed to empower family caregivers to take better care of themselves.

Results

264 family caregivers participated in Powerful Tools for Caregivers programs and 100% of the 219 family caregivers who complete the evaluation survey reported increased self-care practices (increased exercise, use of relaxation techniques, health self-care) after participation. Participants also increased self-confidence in their 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 individuals improving personal and family financial management skills.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	82

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Empirical research documents consumers' limited knowledge and skills to manage personal and finances effectively. Financial management skills help families prioritize competing goals, develop plans for use of limited resources, reduce financial stress, and maximize economic well-being. Skills in accessing, evaluating and using reliable, unbiased and noncommercial information facilitate making informed decisions in an increasingly complex financial and policy environment. Consumers who are knowledgeable and skilled decision-makers are more likely to make wise financial decisions, access appropriate financial products and services, and reduce risks to their long-term financial security.

What has been done

Financial management skill-building programs were attended by 7,505 adults. Sequenced workshops focused on basic budgeting, record keeping, credit management and banking services. Online courses targeted young families learning to take control of finances, and first-time homebuyers and those saving and investing participated in online courses. Individuals seeking health insurance coverage under provisions of the Affordable Care Act participated in health insurance literacy workshops. Five-week financial management workshop series focused on women and skill- and confidence-building. Electronic and hard copy publications, news releases, a blog and web-based resources reached consumers with timely, researched-based financial management information.

Results

Following participation in at least two basic financial management workshops, 83% of participants reported improved financial management skills, including record keeping, planning, and monitoring of spending to avoid overdrafts. Following a 5-week course focused on women, 80% had begun to use or had improved their record-keeping systems and 45% had developed skills to organize permanent records so that someone else could take over management in case of illness or death. Pre- and post-test evaluations of workshops showed improvement in confidence and knowledge for five measures of health insurance literacy.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #7

1. Outcome Measures

Percent of individuals making progress toward financial goals.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	76

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 as stagnant wages fail to keep up with rising prices for consumer goods and services. 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 economic well-being. Failure to set and achieve goals often leads to mismanagement of financial resources and significant social and economic costs to families and to society.

What has been done

Financial management skill-building programs were attended by 7,505 adults. Sequenced workshops focused on the goal-setting process and addressed specific financial goals (e.g., basic financial management, readiness for home purchase, saving and investment goals, and appropriate health insurance coverage. Online courses focused on young families learning how to take control of finances and those wanting to develop habits of saving and investing in products consistent with financial goals. Workshops engaged pregnant and young mothers in developing goals related to spending controls and gaining access to community resources. Money Talk workshops helped women establish/update financial goals, assess insurance coverage, set investment goals, and develop estate planning objectives. Electronic and hard copy publications, news releases, a blog/ web-based resources augmented face-to-face programs and reached consumers with timely, research-based information about goal setting and effective strategies for management.

Results

Following participation in at least two sequential basic money management workshops, 73% of participants reported that they had made progress toward a financial goal. Among participants in

5-week financial planning workshops for women, 59% had started or increased an emergency savings fund, 80% had taken additional steps to reduce consumer debt, 75% had taken steps to improve retirement preparedness, and 59% had assessed the adequacy of legal preparedness for future life events. The proportion of online learners who made progress toward specific saving and investing goals, using pre- and post-test evaluations were: those who had assessed the adequacy of emergency savings increased from 74% to 90%; those who had estimated retirement savings needs increased from 53% to 72%; and those who had developed an investment philosophy and assessed their risk tolerance increased from 53% to 90%.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #8

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
2014	95

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 -- often called "teachable moments." Evidence supports that integrating financial education into existing, on-going programs and venues that consumers frequent is more effective than stand-alone, one-time offerings. Training professionals and volunteers to teach financial skills can be very effective in extending outreach and changing behaviors. Iowa middle and high schools now require financial literacy education, but research show teachers lack skills to teach this subject. Studies also show that close acquaintances are often the preferred source of financial information and advice. Rural Iowa lacks sufficient free tax preparation sites and volunteers to assist low- and moderate-income tax filers complete returns at no cost and assure access to eligible credits that frequently lift consumers out of poverty and provide resources for basic needs.

What has been done

A 3-day summer workshop provided in-depth training on research-based middle and high school financial literacy curricula to 53 Iowa public school teachers. The workshop emphasized both content and effective pedagogical skills that incorporate varied learning techniques and technologies. Extension staff offered local workshops for 31 high school teachers to introduce a newly revised high school financial literacy curriculum. Staff trained and provided technical assistance to 43 volunteers at 25 rural Volunteer Income Tax Assistance (VITA) sites where 1,649 tax returns were prepared at no cost to the filers. A financial coaching course was attended by 34 community professionals or volunteers who, in turn, work directly with individuals and families on financial management skill building.

Results

All teachers in the 3-day financial literacy curriculum workshop increased their preparedness to teach financial education; the proportion who reported that they were "well or very well" prepared increased from 46% in a pre-test to 87% in the post-test. All (n=43) trained VITA volunteers successfully completed Internal Revenue Service examinations and prepared 1,649 tax returns for low- and moderate income families. 748 of those tax filers qualified for the Earned Income Tax Credit and received a total of \$901,415 -- dollars that are added to local economics and bolster the financial security of at-risk families. Ninety-five percent of the professionals and volunteers who completed a financial coaching workshop series reported that at the conclusion of the series they had both increased their knowledge of financial management and had the skills needed to help someone develop financial goals and spending plans.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #9

1. Outcome Measures

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

Not Reporting on this Outcome Measure

Outcome #10

1. Outcome Measures

Number of professionals trained to provide education and/or support to families.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	1149

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Effective family life education relies heavily on quality implementation, 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.

What has been done

202 professionals in Iowa were trained by ISUEO 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. An additional 947 individuals were trained outside of Iowa to deliver The Strengthening Families Program: For Parents and Youth 10-14.

Results

These professionals work in a variety of positions within family serving organizations such as health care and education-focused agencies. They have direct contact with families and integrate Extension education into their work with families. 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 ($M=.90$, $SD=.09$).

4. Associated Knowledge Areas

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

V(H). Planned Program (External Factors)

External factors which affected outcomes

- 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 (volunteer pool; staff changes)

Brief Explanation

A slow recovery from the recession continues to constrain income growth and limit economic mobility, and Iowa's high proportion of multiple job holders reduces time available for participation in Extension programs. An increasingly diverse population challenges our ability to meet diverse learning needs. Staff and trained volunteers, as well as local Extension councils, are not as prepared as needed to engage and implement educational programming with increasing diverse (e.g., race, socioeconomic status, gender, age) audiences. Additionally, there are fewer trained volunteers to implement programs as widely and as effectively as desired. A new programming model was implemented this year to address changing demographics within the state, creating new geographic areas for staff. This change has impacted relationships with organizations that serve parents and families as staff transition. In regard to educational programming related to child care providers, recent changes in Iowa regulations require annual inspections and background checks for registered home child care providers. As a result, many home providers have chosen to no longer be registered with the state. This situation makes it more challenging to identify providers and provide outreach and education. Related to family finance programming, research documents a stigma attached to participation in financial management education, particularly in rural communities; however, implementation of the first open enrollment in public and private health insurance plans as part of the Affordable Care Act led to a grant-funded initiative by ISU Extension and Outreach to offer health insurance literacy workshops in 2014. This policy change and expansion of resources facilitated the offering of workshops.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Impacts were realized for parents, family caregivers, preschool teachers, child care professionals, individuals interested in financial security, and others. Specific examples include that half of the parents (56 out of 119) who participated in Together We Can: Creating a Healthy Future for Our Children reported a strengthening their relationship with their partner after program participation. All parents who completed surveys after participating in Juntos Para Una Mejor Educación (n=91) reported specific actions they took to be more engaged with their child's education. Within the SFP 10-14 program, 92% (n=106) of parents who participated in retrospective pre-post-test surveys after

participation improved their communication skills with their family members. Family caregivers (100%; n=219) who completed a post-then-pre survey after they participated in Powerful Tools for Caregivers increased self-care behaviors. Preschool teachers (n=850) showed statistically significant ($p < .001$) gains in each of the 11 New Staff Orientation program outcomes leading to improved child care quality, health and safety. Child care professionals (n=486) participating in the Early Childhood Environment Rating Scale training indicated that 85% of participants could better identify early childhood education strengths and limitations, prioritize changes and develop a workable plan for program improvement. Pre- and post-test surveys were administered to participants in selected sequential financial management education programs to assess change in knowledge, attitudes, skills and behaviors. Overall outcomes are: 82% of individuals improved financial management skills; 76% of individuals made progress toward financial goals; 95% of professionals and volunteers were better prepared to help others build financial skills; and Extension-sponsored rural VITA sites helped eligible Iowans access \$901,415 in refundable Earned Income Tax Credits. Challenges include attrition in program attendance and non-response. Lack of control or comparison groups fails to address selection bias in programs offered to the public. Follow-up surveys would assess 'staying power' of program effects. Funding for more rigorous process and impact evaluations would help better assess program impacts.

Key Items of Evaluation

Criteria for educational offerings include a review of a number of statuses, including research- or evidence-base, timeliness, relevance, uniqueness (services not offered by other organizations), sequential design, and potential for impact. Of particular note this year was the implementation of the Affordable Care Act and subsequent opportunity for additional outreach funding, creating a "teachable moment" for health insurance literacy education and evaluation. Overall evaluation efforts regarding education offered to parents, family caregivers, preschool teachers, child care professionals, individuals interested in financial security and others were focused on improving participants' attitudes, skills, and behaviors. Skills were measured through retrospective pre- and post-tests, post-surveys, and observational assessments using in-person and online methods. Results demonstrate improvements in participants' professional or life skills or overall family functioning.

V(A). Planned Program (Summary)**Program # 4****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	4%		0%	
201	Plant Genome, Genetics, and Genetic Mechanisms	0%		5%	
202	Plant Genetic Resources	0%		3%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	0%		5%	
204	Plant Product Quality and Utility (Preharvest)	0%		3%	
205	Plant Management Systems	11%		4%	
212	Diseases and Nematodes Affecting Plants	2%		15%	
216	Integrated Pest Management Systems	9%		2%	
301	Reproductive Performance of Animals	4%		1%	
302	Nutrient Utilization in Animals	4%		17%	
303	Genetic Improvement of Animals	4%		19%	
305	Animal Physiological Processes	0%		4%	
311	Animal Diseases	0%		7%	
401	Structures, Facilities, and General Purpose Farm Supplies	8%		0%	
405	Drainage and Irrigation Systems and Facilities	12%		0%	
503	Quality Maintenance in Storing and Marketing Food Products	0%		5%	
601	Economics of Agricultural Production and Farm Management	10%		1%	
602	Business Management, Finance, and Taxation	9%		1%	
603	Market Economics	8%		8%	
	Total	100%		100%	

V(C). Planned Program (Inputs)**1. Actual amount of FTE/SYs expended this Program**

Year: 2014	Extension		Research	
	1862	1890	1862	1890
Plan	25.8	0.0	35.1	0.0
Actual Paid	23.6	0.0	41.2	0.0
Actual Volunteer	27.0	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
3239688	0	5918516	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
3239688	0	5918516	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
5482760	0	50761323	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.
- Educate both producers and consumers regarding regional food production and marketing.
- Faculty participate in relevant multistate research committees: NC7, NC140, NC205, NC213, NC1023, NC1029, NC1030, NC1034, NC1170, NC1171, NC1177, NC1183, NC1184, NC1194, NC1197, NC1200, NC2040, NE1020, NE1042, NE1227, NE1334, NRSP7, NRSP8, S294, S1053, S1055, S1062, W2009, W2010, W2171, W3002.

2. Brief description of the target audience

Agricultural producers and landowners 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 interested in buying more locally produced food products. Agricultural professionals who serve farmers and influence their decisions regarding production and marketing options.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	110212	25948	0	0

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

Patent Applications Submitted

Year: 2014
 Actual: 10

Patents listed

- * Plant Genes Involved in Nitrate Uptake and Metabolism
- * Materials and Methods For Using An Acyl-acyl Carrier Protein Thioesterase and Mutants and Chimeras Thereof In Fatty Acid Synthesis
- * Methods and Compositions for Plant Pest Control
- * Plus 7 additional filings that have not yet been published

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2014	Extension	Research	Total
Actual	0	0	115

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
2014	110212

Output #2

Output Measure

- Number of producers and agribusiness professionals who subscribed to newsletters and access

web-based resources.

Year	Actual
2014	4661778

Output #3

Output Measure

- Number of producers or agribusiness professionals who gained knowledge in safe pesticide application through attending pesticide applicator Continuing Instructional courses or pesticide safety education programs.

Year	Actual
2014	25433

Output #4

Output Measure

- Number of local food producers attending extension programs.

Year	Actual
2014	1634

Output #5

Output Measure

- Number of popular press articles and publications authored by Extension specialists.

Year	Actual
2014	575

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of increased efficiencies _____ (i.e. % pregnant; increases in yield/unit, such as bushels/acre; lbs product (meat, protein, milk) per animal; lbs feed per gain).
2	Number of producers indicating adoption of recommended practices.
3	Number of producers reporting increased dollar returns per unit of production.
4	Number of dairy producers who developed and implemented new dairy systems to improve efficiency and profitability.
5	Number of people who have been certified in safe pesticide application techniques.
6	Number of producers who increased their awareness of recommended practices.
7	Number of intergenerational transfers or new farm businesses who learn strategies on how to successfully transition farming operations within their family, or understand the risks and opportunities connected to starting a farming enterprise.
8	Number of crop and livestock producers who increase their knowledge on marketing, insurance or USDA program alternatives that are consistent with the risk bearing ability of their businesses and their personal preferences for managing risk.
9	Number of clients who participate in horticulture programs on production methods, market outlets, Best Management Practices, and IPM techniques.
10	Number of dietary professionals that understand modern livestock practices as they pertain to animal health and comfort, quality and safety.

Outcome #1

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	400

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The national beef cow herd is the smallest since 1962. If the national beef cow herd is to grow, it will require improved management of the replacement heifer and first-calf heifer to improve both conception and retention. The 2007-08 National Animal Health Monitoring System (NAHMS) reported that 33% of all culled cows left the herd because they did not conceive during the breeding season, and 15.6% of all culled cows left the herd before 5 years of age. As it takes as many as 5 calves before that replacement female recoups her development costs, implementation of best management practices are critical to ensure profitable herd expansion for cattlemen.

What has been done

The Iowa Beef Center, along with numerous industry partners, sponsored two series of heifer development programs, the first in 2012 focused on the developing heifer and the second in 2014 focused on the yearling heifer. Topics included the latest technologies in beef reproduction, genetics and nutrition. Video recordings of multiple best management practices from both series have been made available through the IowaBeefCenter channel on Youtube. Over 600 producers attend the first series and over 300 attended the second and the Youtube videos have been viewed more than 1800 times. Workshop participants manage more than 51,000 cows and 14,000 heifers.

Results

A 2014 follow-up of the first series showed 63% of participants said they have already implemented at least one of the best management practices that were presented. Sixty-seven percent of participants reported increasing pregnancy rates by an average of 4.8% for their replacement heifers, resulting in a minimum economic benefit of \$262,000 per year over marketing the open replacement heifer. 47% of participants expanded their cow herd, 38%

retained additional replacement heifers, and they also reported an average financial impact to individual operations of \$1170, a total of \$553,000 in added economic value to the participants in this program.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
303	Genetic Improvement of Animals
305	Animal Physiological Processes
311	Animal Diseases
601	Economics of Agricultural Production and Farm Management

Outcome #2

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
2014	569

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

A.

Statewide listening sessions and post-conference surveys indicated several common themes challenging Iowa's beef producers. These included the rising costs and limited access to grazing land, transitioning the business to future generations, and management practices that leave the natural resources in better condition for future generations.

B.

Women are an increasingly important segment of the agricultural producer population. USDA has designated women as an underserved audience. In order to better serve these important farm operators, specific programs have been designed to reach today's women farmers. It has been

recognized that effective educational programming differs between men and women. Annie's Project is an advanced educational curriculum that addresses multiple aspects of the farm business within a framework specifically designed for women.

What has been done

A.

Three multi-state conferences are held in the major cow-calf producing areas of the state, in partnership with Illinois, Minnesota, Missouri, Nebraska and Wisconsin. A combination of keynote speakers and breakout sessions featured topics such as the benefits of manure to crop production, cover crops for grazing and soil conservation, unique feedstuffs from grain production and processing, housing cows in confinement, genetic selection for improved efficiency, and using share agreements to transition the farm business. More than 790 producers attended the three conferences.

B.

Annie's Project is an 18-hour program held in a 6-session class. It addresses production, finance, marketing, human resources, and legal risks and issues on the farm. There are three expected long-term impacts from the program. Participants develop an expanded network of peers and professional service providers. Participants increased their confidence in decision making. Participants will become better farm managers and business partners. A total of 1,240 women attended the program.

Results

A.

End of meeting surveys of participants showed that 70-80% said they planned to make changes to their operation based on information learned at the conference. Follow-up evaluations of 2013 participants showed that 46% modified heifer development to improve growth, conception and longevity, 47% modified cow winter feeding to utilize alternative feedstuffs, and 50% changed cow feeding to reduce feed waste. Participants estimated these changes will increase by an average of \$25 per head. Participants in these three conferences managed >107,000 cattle and >65,000 acres of pasture. Turning Point ("clicker") technology was successful in tracking a change in knowledge of program participants. Specifically, the average response rate to knowledge assessment baseline questions was 47.3%, and the average response rate to identical follow-up questions was 86.9%, indicating that the program was extremely successful in changing knowledge. Producers continue to view the Youtube videos with over 1800 hits since posting it in 2014.

Comments from participants:

- 1) "I would attend this seminar again. As a cattle man who is just starting out, there is a lot of important info to retain. I enjoyed this very much and learned a lot."
- 2) "Every cattle producer should have to take this class. It is a must to see how much money they leave on the table."

Change in producer knowledge as a result of this program will lead to an increase in the number of heifers retained, build Iowa's cowherd, strengthen Iowa's agriculture and enhance the local economy.

B.

A survey was conducted to find out how participants took action after the program. Participants did develop an expanded network of peers and professional service providers. Sixty percent (f = 116) said they had contacted a professional regarding agricultural finance issues. Fifty-two percent (f = 97) said they had contacted a professional regarding agricultural legal issues. Forty-

three percent (f = 78) said they had contacted a professional regarding agricultural production issues. Forty-seven percent (f = 89) said they had contacted another Annie's Project participant. Thirty-five percent (f = 64) said they had contacted a professional regarding agricultural marketing issues. Nineteen percent (f = 35) said they had contacted a professional regarding agricultural human resource issues.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
131	Alternative Uses of Land
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
303	Genetic Improvement of Animals
601	Economics of Agricultural Production and Farm Management
603	Market Economics

Outcome #3

1. Outcome Measures

Number of producers reporting increased dollar returns per unit of production.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	1949

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

A.

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

B.

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 economically beneficial to producers.

What has been done

A.

Examples of Extension programming we use to educate farmers regarding these risks are: 1) Crop Advantage Series that annually covers issues likely to occur in the coming year. Identifying and researching questions like fungicide use on alfalfa, then sharing that information with producers for better decision-making; 2) meeting one-on-one, in-field, with farmers and farm advisors, to help them make decisions for a situation that each year is literally as different as the weather (timely, situational challenges that we help solve through research-based information); 3) on-farm replicated trials to demonstrate the efficacy of different production practices on their own farms.

B.

A ventilation workshop curriculum had been refined, potential audience identified, publicity materials written, invitations to the workshops delivered. Across Iowa in 2014, 15 workshops were held. The workshops were attended by 179 operations and system flows. The number of pigs influenced by those attending the workshop was more than 23 million pigs and over 176,000 sows. A survey was developed and returned by 156 producers who participating in the workshop.

Results

A.

The Crop Advantage Series survey conducted one year after the previous CAS series showed that 79% increased per acre profits over \$5 per acre, and 11% of those had increased profits over \$20 per acre. CAS attendees represented more than 1.3 million acres in crop production. Management changes included corn rootworm management, fertilizer application rate adjustments, and managing after corn stover removal. Five Extension agronomists collected data from 22 farm visits with crop producers. Management help on issues such as replanting after hail, frost or flood; managing sudden death syndrome in soybean, managing after herbicide injury were reported. As a result of these visits, farmers reported increased peace of mind, confirmation of how to proceed after a problem occurred, and increased confidence in future decision-making. Three farmers valued the monetary gains from the visit between \$500 - \$1000, 4 in the \$1000 - \$2500 range, and 9 at more than \$2500 per visit. One Crop Advantage Series workshop dealt with on-farm replicated trials in NW Iowa. Of the 149 workshop participants, 63% had used this information for making decisions on their farm. 71% indicated they had used three or more of the studies in their decision-making for their farm, with 26% more using 1 or 2 studies.

B.

Substantial changes were reported by 108 out of the 156 returned surveys. Sixty-eight percent made changes to their ventilation system based on what they learned from attending the workshops. Changes to the ventilation system will improve animal health while using less energy, decreasing production cost, thus increasing dollar return per pig. Using less energy is good for the environment, while lower production costs lead to an increased competitive position, more jobs and economic growth. Some examples of documented changes include: maintaining and cleaning fan blades and louvers (saves energy and improves performance); adjusting inlets

(critical for healthy air mixing and reducing cold air animal stress); not operating fans in curtain mode (saving energy); clearing attic opening (reduces load on fan saving energy); adjusting curtains (improves pig health and saves energy); reduction of air leaks in curtain and doors (results in more efficient fan operation); use of 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). 108 of the operations estimated an average value of \$5724 from the program for their operation. For those 108 operations, more than \$618,000 was the estimate documented as value from changes made because of the ventilation workshop.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
205	Plant Management Systems
212	Diseases and Nematodes Affecting Plants
216	Integrated Pest Management Systems
311	Animal Diseases
601	Economics of Agricultural Production and Farm Management

Outcome #4

1. Outcome Measures

Number of dairy producers who developed and implemented new dairy systems to improve efficiency and profitability.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	57

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Many dairy producers (> 35% in Iowa) are milking in stall barns or antiquated milking parlors which are achieving only 25 cows milked per person per hour. 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. Adoption of these systems can also spare labor to be used for other areas of dairy profitability including enhanced milk quality, animal health, and reproduction, as well as increased quality of life.

What has been done

In 2013, a major extension initiative focused on milking facility changes. Overall, 48 new milking facilities were started with 22 completed (8 automatic milking and 14 low cost parlors). This initiative continued through 2014 with 57 more producers completing projects as well as a survey of the producers who had already made changes.

Results

In 2014, 57 producers completed cost effective milking facilities (32 automatic milking systems and 25 low cost parlors). In 2012, there were 8 automatic milking farms (14 automatic milking units). As of 2014, there are 48 automatic milking farms encompassing 109 automatic milking units.

4. Associated Knowledge Areas

KA Code	Knowledge Area
305	Animal Physiological Processes
401	Structures, Facilities, and General Purpose Farm Supplies
601	Economics of Agricultural Production and Farm Management

Outcome #5

1. Outcome Measures

Number of people who have been certified in safe pesticide application techniques.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	25433

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Federal and state law requires that all people 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, and lowers risk to families, communities and the environment.

What has been done

Two hundred ninety-five private pesticide applicator training sessions reached 15,377 farmers who apply pesticides. Additionally, live and recorded sessions provided education on safe pest management to 10,056 commercial applicators.

Results

Private pesticide applicators increased the level of reading labels every time they used a pesticide by 25% and increased monitoring for proper growth stages before application of pesticides by 24%. Commercial applicator surveys show an increase of 23% to 99% who calibrate their measuring devices. Using the proper measuring device for dry vs. liquid pesticides increased 16% to 100%. Assuring personal protective equipment was in good condition improved 12% to 100%. Discussion at training has led to Iowa increasing the quantity of pesticide containers for recycling by 52%, to 785,210 pounds -- which ranks third in the country. Of 96 certified handlers surveyed, 54 already understand Iowa's laws pertaining to pesticides, and the other 42 now do because of the training. Many will increase personal protective use because of training. Surveys of 199 commercial fumigators show that 98% complete management plans for every fumigation, a 10% increase. 88% do, or will, read instructions for proper use for respirators they use; and 99% correctly identify pests before fumigating, an increase of 16%.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
205	Plant Management Systems
212	Diseases and Nematodes Affecting Plants
216	Integrated Pest Management Systems
401	Structures, Facilities, and General Purpose Farm Supplies

Outcome #6

1. Outcome Measures

Number of producers who increased their awareness of recommended practices.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	1865

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

A.

The majority of farm producers participate in meetings with their lenders during the loan renewal periods. It is vital that the producer is prepared for discussion of the financial condition of the farm operation. Some useful measures of financial performance can be readily calculated from information found in most farm record books and accounting programs. These financial performance measures or ratios help farmers and lenders to assess profitability, debt capacity and financial risk currently faced by the farm business. Producers should understand what is gauged with various farm financial measurements, along with their intended use, limitations, and the proper method for calculation of each measurement or ratio. While commodity prices and farm profits have been strong in recent years, these prices have decreased significantly from their recent high levels. Agricultural lenders and more experienced producers expressed a desire for programming that would help operators better understand financial positions and prepare for times of lower profitability.

B.

A new trans-national disease has been devastating to local producers with 100% mortality for pigs under two weeks old. This disease abbreviated PEDv spread rapidly throughout the swine industry, killing an estimated 8 million pigs. Slowing the spread of this disease has been important for the financial stability of producers and the economic performance of the swine industry. Producers were educated regarding the recommended practice of new bio-security protocols and shown the economic benefit of adopting these recommendations.

What has been done

A.

As part of several farm financial security educational efforts, the YOUR KEY RATIO program was developed as a 50-minute session presented during the 2014 Crop Advantage Series largely as a break-out session -- so participants had to choose to attend the session. Sessions were presented in Iowa Falls, Fort Dodge, Ames, Sheldon, Okoboji, Storm Lake, LeMars (2), Carroll, Waterloo, Mason City, and in Atlantic (as a full session to all attendees). The program consisted of basic education on several key financial ratios. Participants were provided with informational sheets, sample balance sheets and calculators. Step-by-step instruction was provided on how to calculate the current ratio and working capital, with particular attention given to the impact of deferred taxes on these calculations. Participants performed the calculations during the sessions, following the instructions.

B.

Iowa State Swine Extension team through the Iowa Pork Industry Center was part of the solution for slowing the spread of the disease. Swine producer training increased awareness of PEDv prevention bio-security concepts and resulted in a high percentage of producers adopting the recommended practices. Two emergency regional meetings were held in the fall of 2013, attended by 58 producers to introduce new bio-security concepts such as transport truck sanitation and understanding the clean/dirty line concept. Six additional regional meetings were

held in winter and summer of 2014 to detail and clarify bio-security protocols, reaching over 150 producers. Additionally, these concepts were taught at all certification sessions held during the 2014 winter, including manure application certification (MAC), and pork and transport quality assurance. Over 5000 producers attended these certification sessions. Finally, this bio-security information was presented to over 350 niche swine producers. The information reached key producers that grow the majority of swine in Iowa.

Results

A.

A follow-up survey was sent to all participants, with 500 returned. Of that 500, 39% indicated that the single most important piece of information learned in the session was the impact of deferred taxes on the financial status of the farm; while another 17% indicated the importance of learning about farm financial management in the face of a potential downturn in the farm economy. While 25% of participants indicated they needed to start with farm financial basics, another 64% indicated their desire to increase knowledge of financial management knowledge and strategies.

B.

Results from a post-meeting evaluation of producers who attended MAC certifications, 95% of 1253 indicated the PEDv related information was good or excellent; 91% said the information was useful for their farm. 27% indicated they would be developing a biosecurity plan to help prevent disease spread. A follow-up online survey of producers who attended confirmed that 12 of the 19 had taken specific steps to enhance biosecurity measures at their operation. Responses included: a no-visitor policy, establishing a no-cross line at the site, changing shoes and clothes when going from one production site to another, and stricter cleaning and disinfecting. There were 24 responses citing biosecurity, testing procedures, or management alternatives that they learned about PEDv control would improve production in their operation. 32 of 41 responses said their operation had experienced PEDv. 25 of the 32 said they had success in controlling the disease. Other evidence that Extension education was a factor is a follow-up survey a year later to niche producers that received the bio-security training. 87% of the farms were not infected compared to reports from the industry that half of herds were infected. More evidence of the effectiveness of the training is the low number of infected herds in Fall 2014, indicating producers are doing much better at sanitation and bio-security to prevent the spread of the disease.

4. Associated Knowledge Areas

KA Code	Knowledge Area
311	Animal Diseases
601	Economics of Agricultural Production and Farm Management
603	Market Economics

Outcome #7

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	84

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Developing strategies to access capital for new start-up businesses or transferring land and farm operations from generation to generation is critical to a smooth transition between ownership. Women (traditionally an underserved audience) are key to successful farm business communication. Education is needed to meet both of these needs simultaneously.

What has been done

In conjunction with ISU Extension Farm Management Specialists, VAA staff helped train and prepare educational leaders to conduct Annie's Project farm management programs fostering improved problem solving, record keeping and decision making skills for farm women. In 2012, they worked to develop a curriculum to be taught to farm women called Managing for Today and Tomorrow (MTT), which teaches how business planning, estate planning, retirement and succession planning combine to form a successful farm transition plan.

Results

Six (6) Managing for Today and Tomorrow (MTT) workshop series with a total of 84 female attendees were held in 2014; required coursework and activities means that 100% of the 84 attendees experienced a change in behavior concerning their businesses. In November, VAA followed up with the Walker family near Webster City who participated in the course. The family is making a successful transition to the next generation. An article about their situation was printed in the Fall 2014 STORIES magazine published by the College of Agriculture for their alumni.

4. Associated Knowledge Areas

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

Outcome #8

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	237

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Successful producers and business managers are constantly refining their management skill set, including women. Many women prefer an all-woman learning environment. Resources for learning new risk management strategies and hands-on practice were provide through educational sessions.

What has been done

In conjunction with ISU Extension Farm Management Specialists, VAA staff assisted in training educational leaders that conducted 14 Annie's Project and related farm management programs exclusively for women in Iowa. These sessions fostered improved problem solving, record keeping and decision-making skills for the participants.

Results

9 Annie's Project Classic six-session (18 hrs) workshops reaching 173 women.
 2 Moving Beyond the Basics Financial one-session (6 hrs) workshops reaching 14 women.
 1 Women Managing Cattle three-session (9 hrs) workshop reaching 15 women.
 1 Women Managing Dairy Cattle three-session (9 hrs) workshop reaching 17 women.
 1 Women Marketing Grain three-session (9 hrs) workshop reaching 18 women (9 hours)
 Required coursework and activities means 100% of the 237 attendees experienced change in behavior concerning their businesses. Participants learned strategies that were implemented at their own farms.

4. Associated Knowledge Areas

KA Code Knowledge Area

601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation
603	Market Economics

Outcome #9

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	100

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

High tunnels are an important production tool for fruit and vegetable growers in Iowa evidenced by NRCS EQIP cost-sharing program contracting over 300 new high tunnels in Iowa between 2010 and 2014. High tunnels extend the season, increase productivity, profitability and quality of produce. Producers need education to help them determine if high tunnels are right for them and how to get started.

What has been done

Workshops have been provided in the state to provide education fruit and vegetable growers need to know more about high tunnels and if they are the right tool for them. 10 producers attended an Advanced High Tunnel Workshop in Iowa City in February. 30 producers attended the High Tunnel Production Talk at the Central Ag Field Day at the Horticulture Farm in June. 60 producers attended two sessions of Introduction to High Tunnel Workshops held in November in Independence and Indianola.

Results

Of those producers that attended the Introduction to High Tunnel Workshops, 63% of those who responded were commercial vegetable producers and 75% of those responding had a strong interest in attending an advanced high tunnel workshop for more in depth production details. Tomatoes are the number one crop produced in high tunnels in both volume and total sales. Use of high tunnels helps farmers provide fresh locally grown food to consumers up to 10 months per year allowing consumers greater access to fresh, local foods.

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

Outcome #10

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	6560

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

A.

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

B.

A large percentage of the US population lives in an urban or suburban environment, and are slightly disconnected from agriculture and food production. At the same time, there is increasing interest and concern in the general population about food safety, quality, and sustainability. While

many exercise trust in the 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

A.

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

B.

The ISU Extension and Outreach Dairy Team developed and/or partnered and conducted a variety of educational programs and venues transparently addressing on farm practices and sustainability of dairy and agriculture. 14 joint meetings or interactions were conducted. Examples of these included the Iowa School Nurses annual meeting (n = 150), Gilbert 1st grade students / teachers (131), Boone 4th grade students (47), Northcrest Community Retirement Community (35), and the Iowa Athletic Sports Foundation (60) which included on-farm dairy modules and tours taught by extension faculty and ISU Dairy Science undergraduates. 3 June Dairy Month events and programs similar to above were conducted in NE, NW and central Iowa.

Results

A. (quantitative n=260)

- * 100% ranked this as a highly effective educational event.
- * 100% ranked as a highly credible, understandable source of dairy practices and information.
- * 89% increased post workshop test scores compared to pre workshops scores (74% knowledge increase).
- * Dairy grocer case managers (DGCM) rated this as most highly effective educational training of their careers.
- * 100% DGCM stated they had greater understanding of dairy practices and dairy sustainability.
- * 100% DGCM stated they would use this information with their peers and clients.
- * DGCM estimated individual interactions with > 500 customers/ year and felt they were the sole person at the store to respond to dairy issues and questions.
- * In store dieticians also highly ranked the information and education very highly.
- * 100% planned future use with peers and clients.
- * In store dieticians estimated 300+ individual clients and contacts/ year.

B.

A total of 6300 participants were involved in all the events with 4850 participants involved in the 3 events June Dairy Month programs with many families and young children, and most participants from non-agricultural backgrounds. 372 post June Dairy Month event surveys were completed.

- * 99% rated events as very educational (88% as excellent).
- * Prior to the event, 68% had a positive (61% extremely positive) opinion and trust in dairy farms and agriculture.
- * Post workshop (PW), 99% believed dairies provided the best care and handling of animals.
- * PW, 98% 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.

* Post workshop, 99+% stated modern dairies and dairy practices were impressive and had extreme confidence and trust in dairy farms and the dairy industry. Participant's opinion of modern dairies following the event was positively and significantly increased.

4. Associated Knowledge Areas

KA Code	Knowledge Area
503	Quality Maintenance in Storing and Marketing Food Products

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy

Brief Explanation

The national beef cow herd is the smallest since 1962, due to high feed costs, national droughts, and reduced profitability, but is primed for expansion. While many factors affect profitability of the beef herd, due to substantial developmental costs, failing to get the yearling heifer bred and the first-calf heifer rebred represents one of the largest economic losses for cow-calf producers. The 2007-08 National Animal Health Monitoring System (NAHMS) reported that 33% of all culled cows left the herd because they did not conceive during the breeding season, and 15.6% of all culled cows left the herd before 5 years of age. If the national beef cow herd is to grow, it will require improved management of the replacement heifer and first-calf heifer to improve conception and retention. Because the first-calf heifer has substantially increased energy demands compared to other females in the herd, this group of females is often the most fragile, and many times the hardest to get safe in calf. As it takes as many as 5 calves before that replacement female recoups her development costs, implementation of best management practices are critical to ensure profitable herd expansion for cattlemen.

The emergence of a new swine disease shifted the educational effort of the Iowa Pork Industry Center to increase programming in animal health, specifically disease prevention strategies. Availability of online certification for food safety and animal welfare reduced the time required to education producers for certification programs.

The downturn in crop prices created the external environment that spurred development of the Key Ratios program. While crop agriculture has experienced record high incomes over the past several years, the current and future outlook for crop agriculture indicates rougher financial times over the next couple of years. Agricultural producers, businesses, and related industries are all exploring the impacts the decline in crop prices will have on their businesses and how to best reduce the negative impacts associated with the price declines.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Realized benefits from producers who had made the change to automatic milking systems included:

- Labor efficiency savings of \$44,300 (2 robots) with management labor increase only \$218
 - Cows milked / labor hour: From 21.3 to 185.2 (781% reduction in milking labor)
 - Milking labor costs reduced from \$1.93/cwt milk to \$0.27/cwt milk
 - Producers milked 12% more cows and increased milk production 12%/cow (all cows)
 - 36% reduction in SCC (257,000 to 165,000 cells/ml): AMS and other housing changes
 - Using AMS activity software for reproduction, producers reduced service/conception 19% (2.1 S/C) and increased pregnancy rate 6% (\$25/1% increase in PR so \$150/cow increased profit)
- 100% of AMS producers stated improved quality of life with an average value of \$22,500/farm.

As a result of attending the Heifer Development Clinics in 2012, 63% of participants said they have already implemented at least one of the best management practices that were presented.

- 46% have already or plan to take pelvic measurements of replacement heifers
- 51% have already or plan to score reproductive tracts
- 52% have already or plan to use ultrasound to diagnose pregnancy
- 59% have already or plan to establish a written health protocol

Sixty-seven percent of participants reported increased pregnancy rates by an average of 4.8% for their replacement heifers, resulting in a minimum economic benefit of \$262,000 per year over marketing the open replacement heifer.

Evaluation of participants in swine workshops was accomplished at three levels: end-of-meeting surveys (to capture knowledge gain) using Turning Point audience response technology to capture information regarding real-time learning during the workshops (the electronic audience response technology was also used at a producer annual meeting to capture changes made since previously held workshops); pre- and post-test surveys to determine change in behavior; and follow-up online surveys using Qualtrics survey platform, to again determine change in behavior as a result of recommendations.

Part of becoming a better business partner is sharing information. 88% of respondents shared materials from Annie's Project with their spouse or business partner, and 68% shared materials from Annie's Project with other family members. 75% of respondents said participating in Annie's Project improved their ability to interact with agriculture professionals 'Some' or 'A Great Deal'.

260 survey responses for dairy retail academies were tabulated:

- 100% ranked as highly effective educational event
- 100% ranked as highly credible, understandable source of dairy practices and information.
- 89% increased post workshop test scores compared to pre workshops scores (74% knowledge increase).
- Dairy grocer case managers (DGCM) rated as most highly effective educational training of their careers.
- 100% DGCM stated they had greater understanding of dairy practices and dairy sustainability.
- 100% DGCM stated they would use this information with their peers and clients.

- DGCM estimated individual interactions with > 500 customers/ year and felt they were the sole person at the store to respond to dairy issues and questions.
- In store dieticians also highly ranked the information and education very highly.
- 100% planned future use with peers and clients.
- In store dieticians estimated 300+ individual clients and contacts/year.

372 post event surveys for Dairy Month Open House Events (4850 participants) were tabulated:

- 99% rated events as very educational (88% as excellent).
- Prior to the event, 68% had a positive (61% extremely positive) opinion and trust in dairy farms and agriculture.
- Post workshop (PW), 99% believed dairies provided the best care and handling of animals.
- PW, 98% 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.

Post workshop, 99+% stated modern dairies and dairy practices were impressive and had extreme confidence and trust in dairy farms and the dairy industry. Participant's opinion of modern dairies following the event was positively and significantly increased.

Key Items of Evaluation

Realized benefits from producers who installed automatic milking systems included: Labor efficiency savings of \$44,300; 781% reduction in milking labor; milking labor costs reduced from \$1.93/cwt milk to \$0.27/cwt milk; milked 12% more cows and increased milk production 12%/cow (all cows); 36% reduction in SCC (257,000 to 165,000 cells/ml); increased pregnancy rate 6% (\$25/1% increase in PR so \$150/cow increased profit); and 100% of AMS producers stated improved quality of life with an average value of \$22,500/farm. Sixty-seven percent of participants reported increased pregnancy rates by an average of 4.8% for their replacement heifers, resulting in a minimum economic benefit of \$262,000 per year over marketing the open replacement heifer. Participants in this program reported an average financial impact to their operation of \$1170, which equates to \$39 added value per heifer developed, or \$553,000 in added economic value. As a result of improved beef profitability, 47% of participants expanded their cow herd, 38% retained additional replacement heifers. One participant's comment highlighted the value he realized: "This program gave me more confidence to continue expanding, keeping more raised heifers other than [those] purchased." This expansion of the cowherd will not only help support a strong cow-calf industry, but also adds value to Iowa's economy and ensures a consistent supply of high quality, affordable beef for the consumer.

Swine owners/managers who responded to surveys influence the production for more than 23 million pigs at one of 15 ventilation workshops. Changes were documented that reduced energy cost and increased pig health resulting in an estimated value of \$5,724 per participant (108 respondents @ \$5724/participant = \$618,192). More than 5000 swine producers were educated regarding how to implement new bio-security protocols in their operations. For 2014 the number of cases of the new swine disease was dramatically lower. Increased sow immunity and vaccines are part of the reason for this reduction; the new bio-security protocols recommended by Extension played an important role in the reduction of the spread of this new disease abbreviated PEDv.

Annie's Project has reached its first decade in Iowa having started in 2004. To summarize its impacts, past participants of Annie's Projects were surveyed. Results are outlined in the outcomes and results listed above. One area that can be hard to quantify, but is a major aspect of Annie's is that participants gain increased confidence in decision making on the farm. Comments from survey respondents about the impact Annie's Project had on their confidence: "I took the course at a time when my husband and I were just beginning to transition into the leadership role on the farm, and have since taken over the operation and then had his parents pass on. It gave me a confidence in making leadership decisions that I might not have had otherwise."

Evaluations for the YOUR KEY RATIO program showed the need for additional programming in the farm financial area. As a result, the ISU extension farm management team has developed additional programming to assist producers as they manage the financial aspects of their operations.

For the dairy retail academies with grocery chains and open house dairy tour workshops for consumers and the general public, evaluations showed 99+% stated modern dairies and dairy practices were impressive; respondents had extreme confidence and trust in dairy farms, the dairy industry, and product quality and safety. Participant's opinion of modern dairies following the event was positively and significantly increased.

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Health and Well-being

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
503	Quality Maintenance in Storing and Marketing Food Products	10%		0%	
703	Nutrition Education and Behavior	40%		22%	
704	Nutrition and Hunger in the Population	15%		0%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	10%		1%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	15%		73%	
723	Hazards to Human Health and Safety	10%		4%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2014	Extension		Research	
	1862	1890	1862	1890
Plan	1.1	0.0	1.0	0.0
Actual Paid	3.9	0.0	3.0	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
372654	0	415685	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
372654	0	415685	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
877989	0	2293124	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Conduct workshops and meetings. Workshops include ServSafe® Certification food safety, food preservation, HACCP implementation, GAPS preparation, childcare provider training, food assistance outreach, etc.
- Develop and deliver educational materials and resources and curriculum (i.e., EFNEP, SNAP-Ed, web-based tools and Extension nutrition and health publications).
- Provide training and technical assistance such as fundamental food safety training for volunteer staffed events, line level employees, and general nutrition and health training for childcare providers; respond to specific questions related to application of food safety principles.
- Facilitate community advocacy.
- Faculty participate in relevant multistate committees: NC213, NC1023, NC1183, NC1194, S294, NC170, NE1048, S1056, W2192.

2. Brief description of the target audience

School aged youth, child care providers, school staff and other adult mentors of youth, and older adults. Adult lowans in the workforce, participating in food assistance programming, and community health outreach programs. Food growers, 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

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	18939	1952426	1853	31205

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

Patent Applications Submitted

Year: 2014
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2014	Extension	Research	Total
Actual	9	19	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

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

Year	Actual
2014	33058

Output #2

Output Measure

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

Year	Actual
2014	4401

Output #3

Output Measure

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

Year	Actual
2014	382487

Output #4

Output Measure

- Number of professionals working with youth and/or adults receiving training related to nutrition,

physical activity, and health promotion.
Not reporting on this Output for this Annual Report

Output #5

Output Measure

- Number of hits on Iowa State University Extension nutrition/health pages and publication downloads.
Not reporting on this Output for this Annual Report

Output #6

Output Measure

- Number of lowans receiving education related to home food preservation.

Year	Actual
2014	4741

Output #7

Output Measure

- Number of lowans receiving food safety certification.

Year	Actual
2014	1565

Output #8

Output Measure

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

Year	Actual
2014	9246

Output #9

Output Measure

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

Output #10

Output Measure

- Number of grain producers receiving education about Food Safety Modernization Act.
Not reporting on this Output for this Annual Report

Output #11

Output Measure

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

Year	Actual
2014	135

Output #12

Output Measure

- Number of unique visitors on Iowa State University Extension nutrition/health pages and publication downloads.

Year	Actual
2014	200969

Output #13

Output Measure

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

Year	Actual
2014	1367821

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.
6	Percent of adults reporting increased fruit and vegetable intakes.
7	Percent of adults reporting increasing minutes of physical activity.
8	Percent of adult EFNEP/FNP graduates who made a positive change in food resource management skills such as not running out of food.
9	Number of people receiving food safety certification.
10	Percent of adults reporting increased knowledge of safe home food preservation techniques.
11	Percent of adult EFNEP/FNP graduates with a positive change in food safety practices.
12	Number of growers, producers, and food workers completing GAPS, GMPS, HACCP, food safety certification and on-farm BMP programs to increase food safety.
13	Number of food handlers receiving food safety training and education in safe food practices.
14	Percent of adult EFNEP/SNAP-Ed graduates who made a positive change in food resource management skills such as not running out of food.
15	Percent of adult EFNEP/SNAP-Ed graduates with a positive change in food safety practices.

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 Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	73

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 >1,900 childcare providers in Iowa.

Results

Over 73% 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

Outcome #6

1. Outcome Measures

Percent of adults reporting increased fruit and vegetable intakes.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
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3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Current program data show that at entry EFNEP and SNAP-Ed clients consumed 1.1 cups of fruits per day and 1.45 cups of vegetables -- well below the DGA recommendation. Additionally, the 2013 Behavioral Risk Factor Surveillance System data show approximately 40% of Iowans consume fruit less than one time per day and 27% consumed vegetables less than one time per day.

What has been done

As part of EFNEP and SNAP-Ed, a series of eight to ten nutrition lessons is taught by paraprofessional nutrition educators to low-income families with children age ten and under and pregnant women/teens. These lessons show participants how to choose nutritious foods, stretch their food dollars, handle food safely, be physically active, and prepare nutritious recipes. Lessons three through seven all 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, 56% of participants increased their consumption of fruits and vegetables. On average, fruit and vegetable consumption among EFNEP and SNAP-Ed graduates increased by 0.6 cups.

4. Associated Knowledge Areas

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

Outcome #7

1. Outcome Measures

Percent of adults reporting increasing minutes of physical activity.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	49

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 per week. The 2013 Behavioral Risk Factor Surveillance System data show that less than half of adult lowans meet these physical activity recommendations. Furthermore, these data show that 82% of lowans do not do not meet aerobic and muscle strengthening guidelines. For those with an income below \$15,000 participating those not meeting guidelines increases to 88%.

What has been done

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

Results

Following participation in at least eight lessons, 49% of participants increased the amount of physical activity in which they regularly participate. In addition, by the completion of the program, 79.8% of participants reported meeting the physical activity recommendations set by the 2010 Dietary Guidelines for Americans.

4. Associated Knowledge Areas

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

Outcome #8

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.

Not Reporting on this Outcome Measure

Outcome #9

1. Outcome Measures

Number of people receiving food safety certification.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	1565

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

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

What has been done

Over 1,800 Iowans (n = 1,890) participated in an 8-hour workshop about safe food handling practices.

Results

Of the 1,890 who participate in the 8-hour certification course workshop, 82.8% (n = 1,565) were successful in earning certification.

4. Associated Knowledge Areas

KA Code	Knowledge Area
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 #10

1. Outcome Measures

Percent of adults reporting increased knowledge 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
2014	48

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 > 4,500 people who called with food preservation questions, 636 adults participated in food preservation education programming. Of these 636 adults, 91 completed the statewide comprehensive food preservation program, 40 had their pressure canner tested and 545 attended a general food preservation class.

Results

Of those who took part in the online food preservation lessons, there was a: 50% increase in those who reported high or very high knowledge about foodborne illness, a 40% increase in those stating high or very high knowledge of safe food handling practices, and a 55% 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
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

Outcome #11

1. Outcome Measures

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

Not Reporting on this Outcome Measure

Outcome #12

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.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	197

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Increased reported outbreaks of food borne illness have raised awareness of need for on farm food safety plans. In addition, pending Produce Rules as a result of the Food Safety Modernization Act have led to increased requests for farm food safety programs based on GAPS. Further, many retail foodservices are requesting some documentation of food safety assurances.

What has been done

A 6-hour workshop has been offered to fresh produce growers with a certificate of completion given at the end of the session. The workshop covers pre- and post-harvest GAPS. A pre-post workshop assessment is given to assess changes in knowledge.

Results

All producers (100%) answered questions about record keeping of farm food safety practices and water testing after the workshops compared to 41.9% and 46.3%, respectively, who answered these questions correctly prior to the training.

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

Outcome #13

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	5379

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

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

What has been done

Over 5,000 (n= 5,379) participated in food safety sessions related to produce safety, general food safety, and safe handling of food when working in retail outlets.

Results

Participants indicate food safety training prepares them to minimize risks of food borne illness in their work settings.

4. Associated Knowledge Areas

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

723 Naturally Occurring Toxins
Hazards to Human Health and Safety

Outcome #14

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	84

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Effective food resource management is critical to healthy eating behaviors among families with low-incomes. Whether their food resources consist of public benefits or earned income, families need to build skills to maximize available resources to gain the most nutrition for their dollar. Nearly 13% of lowans are food insecure.

What has been done

As part of EFNEP and SNAP-Ed, a series of eight to ten nutrition lessons is taught by paraprofessional nutrition educators to low-income families with children age ten and under and pregnant women/teens. These lessons show participants how to choose nutritious foods, stretch their food dollars, handle food safely, be physically active, and prepare nutritious recipes. Participating families learn shopping and meal planning strategies that minimize waste and stretch expensive ingredients.

Results

Among families graduating from the EFNEP and SNAP-Ed lesson series, 84% improved their food resource management. This data point is measured through questions related to frequency of planning meals, comparing prices, using a grocery list and running out of food at the end of the month.

4. Associated Knowledge Areas

KA Code Knowledge Area

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

Outcome #15

1. Outcome Measures

Percent of adult EFNEP/SNAP-Ed 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
2014	66

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

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

What has been done

As part of EFNEP and SNAP-Ed, a series of eight to ten nutrition lessons is taught by paraprofessional nutrition educators to low-income families with children age ten and under and pregnant women/teens. These lessons show participants how to choose nutritious foods, stretch their food dollars, handle food safely, be physically active, and prepare nutritious recipes. Each lesson includes a component relating to food safety with particular focus on minimizing food waste without compromising food safety.

Results

At entry to the program 21% of program participants demonstrated acceptable food safety practices (i.e. thawing and storing foods properly). Following participation in at least eight lessons 66% of participants demonstrated acceptable food safety practices (i.e. thawing and storing foods properly) at exit.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

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

A slow recovery from the recession continues to constrain income growth and limit economic mobility, and Iowa's high proportion of multiple job holders reduces time available for participation in Extension programs. An increasingly diverse population challenges our ability to meet diverse learning needs. Staff and trained volunteers, as well as local Extension councils, are not as prepared as needed to engage and implement educational programming with increasing diverse (e.g., race, socioeconomic status, gender, age) audiences. Economic challenges and increasing numbers of New Iowans led to investigation by food entrepreneurs of ways to grow food based businesses. Additionally, there are fewer trained volunteers to implement programs as widely and as effectively as desired. A new programming model was implemented this year to address changing demographics within the state, creating new geographic areas for staff. This change has impacted relationships with organizations that serve parents and families as staff transition. Due to EFNEP program evaluation changes during Iowa Fiscal Year 14, evaluation data were not available. Additionally, enrollment in Live Healthy Iowa Kids decreased greatly due to programming changes. Federal and state legislation continues to impact appropriations and policy for nutrition and health programming initiatives. Healthcare reform will also modify the landscape for programming in this plan of work; additional opportunities in preventive health care may be available for ISU extension. 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. Further, Iowa's recent adoption of Food Code 2011 Supplement requires one employee at each foodservice establishment to have certification in food safety through an approved program (i.e., ServSafe). In this state, a grocery store chain has begun employing Registered Dietitians in stores (currently 100). This trend has created competition for programming in rural communities that had been traditionally served by ISU Extension staff. Increasing interest in indirect delivery methods continue for individuals and work organizations. In response ISU Extension has designed several websites and social media pages with monitoring of the use of these pages through "unique visitors" rather than page "hits." Several of the education materials are available on the Spend Smart, Eat Smart, Food Safety, and Nutrition and Health websites. Furthermore, indirect contacts made through the EFNEP program have been reported elsewhere and are no longer included in this report.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Impacts were realized for school aged youth, child care providers, school staff and other adult mentors of youth, adults, and older adults, food growers, foodservice management and staff, and food stand volunteers. Specific examples include the high pass rates (82%) on the national ServSafe certification exam and food preservation knowledge surveys which indicates the 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 indicates there is considerable interest in improving safe food handling practices at all links of the food chain.

EFNEP and SNAP-Ed participants showed high rates of behavior change this year with the majority of participants increasing consumption of fruits and vegetables as well as improvements in physical activity, food resource management and food safety practices.

Key Items of Evaluation

Criteria for educational offerings include a review of a number of statuses, including research- or evidence-base, timeliness, relevance, uniqueness (services not offered by other organizations), sequential design, and potential for impact. Key evaluation indicators regarding the education offered were focused on improving participants' attitudes, skills, and behaviors and measured through childcare training- participant survey collected post-training and then entered into online system for statewide analysis; numbers participating in food safety certification programs; number and percent of those that achieved food safety certification; and the number of those taking part in food preservation programming; and assessment of food preservation programming through a post-pre evaluation method.

V(A). Planned Program (Summary)

Program # 6

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	5%		0%	
102	Soil, Plant, Water, Nutrient Relationships	9%		31%	
104	Protect Soil from Harmful Effects of Natural Elements	5%		1%	
111	Conservation and Efficient Use of Water	10%		0%	
112	Watershed Protection and Management	6%		3%	
121	Management of Range Resources	0%		3%	
123	Management and Sustainability of Forest Resources	5%		0%	
131	Alternative Uses of Land	6%		3%	
132	Weather and Climate	5%		8%	
133	Pollution Prevention and Mitigation	6%		5%	
134	Outdoor Recreation	0%		3%	
135	Aquatic and Terrestrial Wildlife	5%		16%	
136	Conservation of Biological Diversity	5%		7%	
141	Air Resource Protection and Management	5%		0%	
403	Waste Disposal, Recycling, and Reuse	5%		9%	
405	Drainage and Irrigation Systems and Facilities	9%		0%	
605	Natural Resource and Environmental Economics	9%		11%	
608	Community Resource Planning and Development	5%		0%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2014	Extension		Research	
	1862	1890	1862	1890

Plan	14.9	0.0	5.0	0.0
Actual Paid	11.8	0.0	6.8	0.0
Actual Volunteer	26.0	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
1627876	0	913923	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
1627876	0	913923	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
1883320	0	3749686	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 and the impacts of those changes on native plants and animals (wildlands and wildlife).
 - Identify site specific strategies and facilitate the implementation of these strategies to improve air quality and address related concerns such as risks of domestic-wildlife disease transmission, 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.
 - Faculty participate in relevant multistate research committees: NC1034, NC1190, NC1195, W2004, W2128, W2188, W3133.

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.

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

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	42718	11297	0	0

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

Patent Applications Submitted

Year: 2014
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2014	Extension	Research	Total
Actual	12	33	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
2014	42718

Output #2

Output Measure

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

Year	Actual
2014	2621395

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of acres where the adoption of BMPs and conservation practices was implemented.
2	Number of producers increasing the efficiency of manure and crop nutrient utilization while minimizing surface run off and preserving ground water quality.

Outcome #1

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	144270

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Soil erosion and nutrient loss are major problems facing Iowa farmers as higher land prices and rents increase the pressure to maximize production. Eroded sediment along with nutrients is a source of pollution in Iowa streams and rivers. Reducing soil erosion and nutrient loss will maintain the long term production of Iowa farmland, improve water quality for Iowans, and improve water quality in the Mississippi and Missouri rivers leaving Iowa.

What has been done

Iowa State University Extension and Outreach with the Iowa Learning Farms program provided farmers with needed information on cover crops, conservation tillage, and conservation drainage through partnerships with NRCS, Agribusiness and Extension and Outreach programming. Topics included water quality benefits of cover crops, improving soil with cover crops, managing cover crops, utilizing no-till and strip-till, the Iowa Nutrient Reduction Strategy, controlled and shallow drainage, and use of wetlands and bio-reactors for nitrate reduction.

Results

Since 2008, 86% of farmers attending Iowa Learning Farm field days have made a change in their behavior:

- * 37% of farmers increased surface residue management on 83,757 new acres of strip-till or no-till
- * 44% of farmers increased surface residue management on 60,513 new acres of cover crops since 2010
- * Of the 200,000 cover crop acres planted in Iowa last year, 21% of those acres were by farmers attending a ILF/PFI field day or workshop.

Over 1500 growers and service providers participated in ISUEO Western Iowa No-Till Team

events over the last decade, representing approximately 2 million acres. Practices implemented in recent years as a result of WIN team continuing education and demonstration includes over 50,000 acres of cover crops added in the WIN area in 2013 to stabilize soil.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
104	Protect Soil from Harmful Effects of Natural Elements
112	Watershed Protection and Management
133	Pollution Prevention and Mitigation
405	Drainage and Irrigation Systems and Facilities

Outcome #2

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
2014	1526

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

A.

Reducing surface water nitrate (N) and phosphate (P) enrichment by 45% is a requirement for all states in the Mississippi river basin. Iowa is using the voluntary Iowa Nutrient Reduction Strategy plan to make progress toward that goal. Reducing P and N levels with cover crops, and reducing P losses with reduced tillage are important factors for progress toward that goal. Water quality improvement is the ultimate goal.

B.

Emergency action plans to reduce the risk of environmental damage from manure spills are critical to the effort to minimize surface run off. Environmental groups are closely reviewing manure spill investigation reports on file with the Iowa Department of Natural Resources (DNR).

They are checking to see if enforcement action matches AFO/CAFO rules. Iowa law requires that manure spills, regardless of amount, are to be reported to DNR within 6 hours of onset or discovery. Manure spills can have serious environmental impact if manure reaches surface water sources such as streams. The impact to the stream can vary significantly based on existing conditions of the water quality, amount of manure reaching the stream, stream flow, fish and aquatic life present, and designated use (if any) of the stream.

C.

Manure from livestock farms can be an economic and environmental asset if properly applied to crop fields. When manure is mishandled or over applied, it becomes a liability contaminating the environment. Properly application of manure provides a win-win opportunity to minimize crop input cost while optimizing crop production and protecting the environment.

What has been done

A.

The NW Iowa No-till/Strip-till conferences have attracted 302 attendees to two conferences in the past two years. In SW Iowa, an on-going multi-organizational team established the WIN (Western Iowa No-till) team to offer education on these practices, attracting over 1500 attendees to meetings and field days over the past ten years. In SE Iowa, staff have conducted field days, demonstration plots and meetings to share research on successfully incorporating cover crops into their farming operation.

B.

Because of heightened scrutiny of manure management practices and the potential impact on water sources, it is important that livestock producers and manure applicators are well-equipped to 1) prevent manure spills from happening, 2) respond to manure spills in a time-sensitive, safe, and environmentally sound manner, and 3) provide appropriate clean-up and mitigation procedures. The 2014 Manure Applicator Certification (MAC) program reached a total of 1,047 confinement site applicators who attended one of the 72 live certification workshops conducted from January through February 2014.

C.

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 over 1200 farmers in Iowa through 65 face to face meetings and additional DVD viewings.

Results

A.

Surveys collected from 102 participants at the most recent No-till/Strip Till conference in NW Iowa showed that 30 participants increased their number of acres of no-till or strip till on their farms as a result of information presented at previous conferences. Also, of those 102 who responded to the survey, 10 implemented practices learned at the previous conferences on 1-100 acres; 8 implemented practices on 100-200 acres; 19 on 200-400 acres; 10 on 400-1,000 acres, and 5 on more than 1000 acres. A summary of the lowest level in each category would show that at least 22,000 acres have had practices implanted as a result of these sessions. In SW Iowa, cover crops were implanted on over 50,000 acres in 2013 for soil stabilization and nutrient management. 70% of recent attendees will be implementing the N rate calculator, which means an approximate reduction of applied N rates by 3-7%. SE Iowa participants learned 1) that winter

cereals harvested at the boot stage provided the highest feed value, 2) they could increase their forage supplies for livestock operations, and 3) most importantly, that management levels had to increase if cover crops were used.

B.

A total of 1,253 evaluations were completed, a combination of 1047 producers attending a live workshop and 206 who viewed the material by video. When participants were asked if they would be developing an emergency manure spill action plan, 48% responded they already had an emergency action plan; 40% said they plan to develop a plan; 7% said it was not applicable; <1% said they need more information; and 4% did not respond. We received 52 comments directed at the manure spill response scenario. Specific comments about the manure spill ranged from "good exercise" to "makes you think" to "the spill exercise was an eye opener and a good piece of information". Some participants recognized that the situation could be different for each manure spill so they thoughtfully commented on how they might approach different scenarios. On a follow-up survey, 331 out of 343 reported pre-planning is a good idea to prevent manure spills. On this survey 98 out of 376 (26%) respondents indicated they already have a complete emergency action plan; 145 out of 376 (39%) have a plan, but will improve it; and 99 out of 376 (26%) do not have a plan yet, but are working on one. 244 out of 376 (65%) have made modifications to their emergency action plan as result of MAC training.

C.

In follow up surveys of the participants, farmers reported on current practices and plans to reduce negative environmental impacts on over 150,000 acres. The results were:

* 96% of farmers reported as a result of the training they have a better understanding of the need for emergency preparedness planning.

* 48% of the famers reported having already developed an emergency action plan for responding to any manure spills.

* 40% of farmers reported they plan to develop an emergency action plan for responding to any manure spills.

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.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
133	Pollution Prevention and Mitigation
134	Outdoor Recreation
136	Conservation of Biological Diversity
405	Drainage and Irrigation Systems and Facilities
605	Natural Resource and Environmental Economics

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Public Policy changes
- Government Regulations

Brief Explanation

Environmental groups are closely reviewing manure spill investigation reports on file with the Iowa Department of Natural Resources (DNR). They are checking to see if enforcement action matches AFO/CAFO rules.

Increases in corn and soybean prices in the past 5-7 years and associated increases in land and rent prices has increased the pressure on farmers to maximize production on all land being farmed. This has resulted in more marginal land being brought back into row crop production. From 2007 to 2014 CRP acres decreased by over 500,000 acres from 1,970,00 to 1,426,00 acres with most of these acres going back into row crop production. This has put and increased pressure on Iowa soil and water resources and increased the need for conservation measures on these acres. In a small measure, counterbalancing the increases in prices has been increases in farm income that have made more farmers willing to try the use of cover crops to build soils and reduce soil erosion. However, with the recent downturn in commodity prices, this may become a tougher sell.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Turning Point audience response technology to capture information regarding true implementation of the learning from the swine workshops.

Data for measuring the impact of Extension natural resources programs were gathered through end-of-meeting evaluations during Manure Applicator Certification Meetings and Iowa Learning Farm surveys one and 6-18 months following participation in field events.

In the end-of-meeting survey of the participants in manure applicator training 1200 participants returned surveys reporting that:

- 48% reported having already developed an emergency action plan for responding to any manure spills.
- 40% reported they plan to develop an emergency action plan for responding to any manure spills.

In follow-up mailed evaluations, participants in Iowa Learning Farm field activities reported that since 2008, 86% of farmers attending Iowa Learning Farm field days have made a change in their behavior including:

- 37% of farmers increased surface residue management on 83,757 new acres of strip-till or no-till
- 44% of farmers increased surface residue management on 60,513 new acres of cover crops since 2010
- Of the 200,000 cover crop acres planted in Iowa last year, 21% of those acres were by

farmers attending a ILF/PFI field day or workshop.

Key Items of Evaluation

One-thousand-forty-seven manure applicators were trained at 72 hands-on workshops regarding emergency planning to reduce the risk of a surface water runoff event. Data from participants gathered electronically showed that 65% (244 out of 376 surveyed) have made modifications to their emergency action plan as result of the training.

Educational events conducted by Extension agricultural engineers have resulted in 83,757 new acres of strip-till or no-till and 60,513 new acres of cover crops since 2010. Of the 200,000 cover crop acres planted in Iowa in 2013, 21% of those acres were by farmers attending a ILF/PFI field day or workshop.

V(A). Planned Program (Summary)

Program # 7

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%		3%	
102	Soil, Plant, Water, Nutrient Relationships	8%		7%	
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%		3%	
205	Plant Management Systems	5%		8%	
302	Nutrient Utilization in Animals	8%		0%	
402	Engineering Systems and Equipment	8%		26%	
403	Waste Disposal, Recycling, and Reuse	8%		0%	
404	Instrumentation and Control Systems	0%		45%	
511	New and Improved Non-Food Products and Processes	8%		8%	
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: 2014	Extension		Research	
	1862	1890	1862	1890
Plan	1.9	0.0	5.5	0.0
Actual Paid	1.1	0.0	3.3	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
149936	0	460916	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
149936	0	460916	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
127095	0	7456703	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 benefits of crops as biofuels. Extension will form a 'Stover team' to explore possibilities. The team will be 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 relevant multistate research committees: NC213, NC1178, NC1183, NC1194, NE1042, S1041, 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

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	2397	374	0	0

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

Patent Applications Submitted

Year: 2014

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2014	Extension	Research	Total
Actual	0	11	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

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

Year	Actual
2014	2397

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.
3	Corn Stover Processing Research Creates New Enterprises

Outcome #1

1. Outcome Measures

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

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	119

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

A.

For the U.S. to be less dependent on fossil fuels, on-farm research is needed to demonstrate the feasibility of growing perennial grasses for biomass that can be converted to biofuel. This effort requires creating awareness among and educating extension educators, industry professionals, and Community Leaders in bioenergy production and marketing issues, especially regarding environmental and society benefits. The goal is to stimulate the adoption of perennial grass production among crop producers, help them make informed economic decisions regarding grass production, and show the value of biochar, a by-product of the pyrolytic conversion of biomass, as a soil amendment.

B.

The volatility of crop production inputs such as fuel and energy presents risks to producers in terms of profitability and environmental impacts. To address these risk factors, Extension programming will focus on production, harvesting, and storage practices to enhance on-farm energy efficiency and energy conservation.

What has been done

A.

Multiple field demonstration plots have been implemented to show producers the best way to establish and manage perennial grasses for biomass on crop land. In addition, 2 sessions at the 2014 Integrated Crop Management Conference were presented on perennial grasses for bioenergy production and nutrient management, attended by 221 people. Two additional sessions were presented on cost of production of perennial biomass crops (51 people attended). A bioenergy exhibit was developed for the Vermeer Dealer Days conference, where several perennial grass plots have been established to show visitors production practices. Data will be collected from these plots. Two perennial grass plots have been established in SE Iowa where field days in 2015 will be conducted.

B.

An educational workshop was developed and delivered by Extension staff to youth age 18-23 to illustrate production and harvesting practices to improve overall energy efficiency and energy conservation in crop production. Examples of crop production practices from the workshop include, but are not limited to, selecting early-maturing crop hybrids to maximize in-field drying of plant biomass and/or grain prior to harvest or increasing the energy efficiency of existing grain drying equipment by adjusting the drying temperature to consume less total fuel.

Results

A.

As a result of attending a biofuels field day, participants' knowledge on 7 topics related to biofuel crop harvest have been significantly improved. Out of 16 people who attended this field day, 12% significantly increased their knowledge regarding the Renewable Fuels Standard and the latest EPA rulings and 14% learned significantly more about precision ag methods for biomass harvest.

Another field day resulted in 58% (n=24) will consider planting a bioenergy crop, such as a perennial grass, if a market developed in their area; 50% will consider using perennial grasses for nutrient management, erosion control, or livestock production; 15.3% provided their email addresses to receive additional information about perennial grasses for bioenergy.

Responses from participants at a field day on perennial grass management resulted in 36% of respondents who said they will consider planting a perennial grass if a market develops in their area (n=36); 70% of respondents who indicated they are producers said they will consider planting a perennial grass if a market develops in their area (n=17); 59% of respondents who indicated they are producers will consider using perennial grasses for nutrient management, erosion, or livestock production (n=17); and about 6% (n=17) currently contract to harvest stover or other biomass for bioenergy production.

B.

Changes in knowledge among 64 workshop participants were measured using pre-test and post-test evaluations. The results indicate a change in knowledge among 39% (n=25) of workshop participants that increasing grain drying temperature from 110 to 120 degrees F can increase energy efficiency by reducing total post-harvest fuel consumption. In addition, 28% (n=18) of participants indicated a change in awareness regarding the use early-maturing crop hybrids to maximize energy conservation by minimizing artificial drying of crop biomass and/or grain.

4. Associated Knowledge Areas

KA Code	Knowledge Area
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102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
131	Alternative Uses of Land
136	Conservation of Biological Diversity
402	Engineering Systems and Equipment
601	Economics of Agricultural Production and Farm Management

Outcome #3

1. Outcome Measures

Corn Stover Processing Research Creates New Enterprises

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

A supply chain was needed to move corn Stover - the stalks, leaves, husks and cobs left after grain harvest - to a new generation of plants that produce ethanol from plant cellulose. The supply chain for corn grain has developed since the 1800s, but moving bales of stover, a bulkier product, needed to be developed over just a few years to feed two ethanol plants opening in Iowa.

What has been done

Agricultural engineers worked with companies that are building cellulosic ethanol facilities. Iowa State researchers at the BioCentury Research Farm studied ways to grow and develop an industrial feedstock supply chain and achieve a high quality, economically viable product for biorefineries, while maintaining soil health and quality.

Project researchers developed supply chain training sessions and educated more than 70 employees of companies created to serve the supply chain. Training sessions focused on five distinct areas: windrowing equipment, baling equipment, managing biomass moisture, maximizing biomass quality and maximizing productivity logistics.

Results

For the 2013 corn stover harvest season the training meant \$225,000 to the local new businesses engaged in feedstock collection.

The team also developed software and data analytics tools focused on providing real-time information to the 15-20 small businesses that are supporting the biomass supply chain in central Iowa. This information is located on an online web portal and provides instant access for each business to monitor machinery performance throughout the harvest season. It also focuses on providing key information to support decisions that each business will make throughout the harvest season to ensure they maintain profitability and continue to grow the biomass supply chain industry.

The process improvement training also led to a 4.5 percent increase in corn stover product density, which reduced the number of semi-trucks on Iowa roads by more than 1,200 a year.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
205	Plant Management Systems
402	Engineering Systems and Equipment
511	New and Improved Non-Food Products and Processes
601	Economics of Agricultural Production and Farm Management

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 8

1. Name of the Planned Program

Youth Development

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
806	Youth Development	100%		0%	
	Total	100%		0%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2014	Extension		Research	
	1862	1890	1862	1890
Plan	14.8	0.0	0.0	0.0
Actual Paid	10.3	0.0	0.0	0.0
Actual Volunteer	352.0	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
941429	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
941429	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
2682656	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Broaden all 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.

- Organize 4-H staffing structure based on the four program priorities and outreach to all Iowa children and youth.
- Transition staff time from activity management to program design, delivery, and evaluation; community and volunteer capacity building; and narrowing the achievement gap of Iowa's underserved youth audiences.
- Improve engagement with ISU colleges and faculty to increase youth program offerings, while reaching diverse children and youth using current research and educational design methodologies.
- Strengthen statewide volunteer management infrastructure to reach diverse volunteer pools.
- Enhance welcoming and inclusive communication and partnerships among 4-H staff, partners, families, children, youth, and volunteers.
- Expand ISU and community partnerships to leverage resources for improved access to 4-H educational programs.
- Design learning experiences and conduct training with 4-H staff, county/regional Extension youth staff, volunteers, ISU faculty, and community and state partners that contribute to cultural competency and 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 cultural competency and positive youth development principles and practices.
- Train staff, faculty, and volunteers on how to create positive youth development and culturally competent learning environments in after school programs, camps, clubs, events, school, and other out-of-school time settings.
- Analyze county enrollment trends and identify barriers that limit diverse youth enrollment, retention, and participation in 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 4-H staff, county/regional Extension youth staff, community partners, Iowa State University faculty, families, youth, and volunteers.
- Partner with state and national entities to collect and report youth development and achievement gap impact data.
- Work with other states' 4-H staff to evaluate and/or research positive impact of 4-H participation in the lives of young people and the communities in which youth live and learn.

2. Brief description of the target audience

K - 12 Youth

- 40 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
- 5,371 youth participated in day and overnight camping experiences
- 27,893 youth in grades 4th - 12th enrolled as 4-H club members
- 16,588 youth participated in special interest/short-term educational experiences
- 25,755 children and youth participated in afterschool programs utilizing 4-H curricula

K - 12 Teachers

- 1,547 K-12 teachers participated in STEM workshops focused on argument-based inquiry and alignment of practices with Next Generation Science Standards
- 42 county Extension youth and 4-H state staff participated in training shifting youth programming to relevant STEM foci
- Extension and Outreach Educators
- 41 county Extension youth and 6 4-H state staff were trained in 4HOnline enrollment data collection and management procedures

- 160 county, regional, and state 4-H staff participated in 3 days of professional development focused on Iowa 4-H's program priorities of healthy living, STEM, citizenship and leadership, and communication and the arts
 - 39 regional and state 4-H staff met to collaborate on the implementation of Iowa's 4-H Strategic Plan
 - 142 county youth and state 4-H staff participated in educational youth development monthly webinars
 - 40 4-H staff representing multiple states enrolled in the on-line course Grow 4-H - Building Partnerships to Benefit Youth
- 4-H Volunteers

- 1,346 volunteers participated in youth development principles and practices training
- 300 volunteers participated in risk management training
- 260 volunteers and 4-H staff participated in New Volunteer Training
- 82 volunteers participated in Safety Education in Shooting Sports training
- 7,049 adult and 3,409 youth volunteers assisted in the implementation of youth development programs
- 70 volunteers and 4-H staff attended state level volunteer training 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
- 4-H staff served on the Iowa Collaboration for Youth Development Council
- 4-H staff served on ISU's university-wide K-12 Working Group
- Iowa 4-H volunteer specialists collaborated with NC Region volunteer specialists to develop the NC Region Volunteer e-Forum training series
- 4-H staff facilitated Youth Activities Program (YAP) policies training with 26 ISU faculty and staff
- 4-H staff initiated collaborative youth programming with ISU Colleges of Agriculture & Life Sciences, Business, Design, Engineering, and Liberal Arts & Sciences for FY15 implementation
- Partnered with National 4-H Council and Chicago Mercantile Exchange to offer Commodity Carnival at 8 county fairs and the Iowa State Fair, reaching 5,725 youth participants
- Iowa 4-H and the Iowa Department of Natural Resources jointly funded a SESS staff position

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	7049	54593	95225	28852

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

Year: 2014
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2014	Extension	Research	Total
Actual	1	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of volunteers completing one professional development training per year.

Year	Actual
2014	1346

Output #2

Output Measure

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

Year	Actual
2014	25755

Output #3

Output Measure

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

Year	Actual
2014	4303

Output #4

Output Measure

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

Year	Actual
2014	7735

Output #5

Output Measure

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

Year	Actual
2014	95225

Output #6

Output Measure

- Enrollments in 4-H Foods, Nutrition, Physical Health, and Fitness curricula areas.

Year	Actual
2014	36488

Output #7

Output Measure

- Enrollments in 4-H Science, Engineering, and Technology (SET) curricula areas.

Year	Actual
2014	42119

Output #8

Output Measure

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

Year	Actual
2014	23236

Output #9

Output Measure

- Enrollments in 4-H Communications and Arts curricula areas.

Year	Actual
2014	28817

Output #10

Output Measure

- Percentage 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
2014	90

Output #11

Output Measure

- Number of children and youth who participate in the camping delivery mode.

Year	Actual
2014	5371

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	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	Percentage of 4-H'ers in grades 4 - 6 taking the FSQA certification test who self-report improved techniques and practices in livestock record keeping, medications, food product safety, and ethics.
3	Percentage of youth who self-report they positively strengthened their attitudes/aspirations/interest 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.
4	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.
5	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.
6	Percentage of youth who self-report they demonstrate productive citizenship skills 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.
7	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.
8	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.
9	Average percentage of youth who self-report improved healthy living practices after engaging in 4-H learning experiences.
10	Average percentage of youth in grades 4-6 who self-report improved food safety and quality assurance practices after engaging in 4-H learning experiences.
11	Average percentage of youth who self-report improved STEM processing practices after engaging in 4-H STEM learning experiences.
12	Average percentage of youth who self-report improved communication practices after engaging in 4-H learning experiences.

13	Average percentage of youth who self-report improved citizenship and leadership practices after engaging in 4-H learning experiences.
14	Average percentage of youth who self-report improved learning practices after engaging in 4-H educational experiences.

Outcome #1

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.

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

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

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

Percentage of youth who self-report they positively strengthened their attitudes/aspirations/interest 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.

Not Reporting on this Outcome Measure

Outcome #4

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.

Not Reporting on this Outcome Measure

Outcome #5

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.

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

Percentage of youth who self-report they demonstrate productive citizenship skills 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.

Not Reporting on this Outcome Measure

Outcome #7

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.

Not Reporting on this Outcome Measure

Outcome #8

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.

Not Reporting on this Outcome Measure

Outcome #9

1. Outcome Measures

Average percentage of youth who self-report improved healthy living practices 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
2014	56

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Childhood obesity has more than doubled in children and quadrupled in youth in the past 30 years. The percentage of children aged 6-11 years in the United States who were obese increased from 7% in 1980 to nearly 18% in 2012. Similarly, the percentage of adolescents aged 12-19 years who were obese increased from 5% to nearly 21% over the same period. Iowa has experienced a decline (15.1% to 14.4%) in obesity rates among 2- to 4-year-olds from low-income families between 2008 and 2011. Over that period, Iowa's rate fell from a statistically significant decrease according to the CDC. In addition, Iowa youth (10- to 17-years-old) rank 35th (13.6%) the current U.S. childhood obesity state rankings. Yet, there is still much to be done to combat childhood obesity in Iowa and across the U.S. through youth-based nutritional, environmental, and agricultural education programming.

What has been done

250 teachers, Extension 4-H staff, volunteers, and community partners attended Connecting Learning and Living curricula trainings throughout Iowa. In addition, 124 Iowa youth participated in food and nutrition special interest 4-H clubs and the 4-H Cook This! culinary challenge, which sought to increase youth participants' consumption of fruits and vegetables, participation in physical activities in addition to enhancing their knowledge of how to safely handle and prepare food, and make healthy food choices for themselves and their families.

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. A sample of 56 youth enrolled in 4-H healthy living educational 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, 48% of youth indicated a 1-point increase and 8.2% indicated a 2-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 Cook This! Self-Assessment Tool indicated that the individual questions within the construct of Healthy Living represented the conceptual meaning of the given construct. "Before" constructs also were significantly different from "After" constructs. 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 questions within the construct. For the construct and all individual items, the respondents reported statistically higher "After" scores than "Before" scores.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #10

1. Outcome Measures

Average percentage of youth in grades 4-6 who self-report improved food safety and quality assurance practices 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
2014	93

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 2013/2014 program year, youth from 33 randomly selected counties 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, record keeping, and animal drug administration. 508 youth completed the survey. Survey results showed an average of 95.1% of youth indicated a 1- to 4-point increase in their communication techniques. An average of 95% indicated a 1- to 4-point increase in their animal identification and tracking of ill animal practices, and an average of 92.4% youth indicated a 1- to 4-point increase in their medication label usage, appropriate feed additives usage, and drug residue and withdrawal times. Additionally, 73.4% of youth agreed or strongly agreed they want to continue to learn about animal science, 62.8% agreed or strongly agreed they would like to have an animal science job, and 57% agreed or strongly agreed they participate in science activities that are not for school.

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; effectively identifying and keeping track of treated animals; understanding the importance of treatment withdrawal times; and observing feed labels to administer appropriate feed additives.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #11

1. Outcome Measures

Average percentage of youth who self-report improved STEM processing practices 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
2014	37

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The Business-Higher Education Forum's (BHEF) "Increasing the Number of STEM Graduates: Insights from the U.S. STEM Education & Modeling Project" (BHEF.com, 2010) offers insights to increase the number of students who pursue majors and careers in the fields of science, technology, engineering, and mathematics (STEM) at the impetus of the organization's Securing America's Leadership in STEM Initiative. The insights from the project include a role for the 4-H program for increasing the number of STEM college graduates. Increasing that number will require a carefully integrated (in fact, mutually reinforcing) P-12 and higher education strategy. Focusing on improvements to preschool through high school or to higher education alone will not result in sufficiently large increases to achieve the goal of doubling the number of STEM graduates in the next decade. 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 and their adult mentors to increase their STEM process skills and improve their positive attitudes toward STEM education and careers through workshops (on and off ISU campus), 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 The Iowa Governor's STEM Advisory Council's Initiative, NASA and NOAA. The Iowa 4-H program also provides the State Science and Technology Fair of Iowa, a research conference for youth to showcase and present their work and the necessary support needed to for participating youth to conduct research as an opportunity for these youth to experience STEM in an authentic manner supported by an adult mentor.

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. 111 youth enrolled in 4-H STEM programming,

including a state science fair and summer camps, 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 practices after participation in 4-H as compared to before participating in 4-H. On average, 20.4% of youth indicated a 1-point increase, 15.2% indicated a 2-point increase, and 1.8% indicated a 3-point increase in their science processing practices 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 each of the six constructs of citizenship, leadership, communication, learning, career, and science processing practices, represented the conceptual meaning of the given construct. Further, statistical comparisons of "After" and "Before" responses (all respondents combined) using paired t-tests were conducted for each of the constructs, as well as for the individual questions within the constructs. For each construct, and 33 of 39 STEM processing practices individual indicators, the respondents reported statistically higher "After" scores than "Before" scores.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #12

1. Outcome Measures

Average percentage of youth who self-report improved communication practices 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
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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. 2,643 4-H members participated in public speaking and performance events at the 2014 Iowa State Fair. Competitive events comprised of Robotics Challenge, Cook This! and Livestock Judging contests, which included oral communication opportunities as part of the event. Increasing communication skills and communication opportunities in the local 4-H club continue 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. 551 youth who participated in various 4-H camps and 4-H 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 compared to before participating in 4-H. On average, 38.6% of youth indicated a 1-point increase, 13.4% indicated a 2-point increase, .87% indicated a 3-point increase, and .08% indicated a 4-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 "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 questions within the constructs. The respondents reported statistically higher "After"

scores than "Before" scores for each construct and all individual questions.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #13

1. Outcome Measures

Average percentage of youth who self-report improved citizenship and leadership practices 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
2014	51

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

A. Citizenship

Campbell and Erbstein (2012) found through their research for the Journal of Community Youth Development that youth's civic engagement can deepen their civic commitment, extend social capital, create meaningful relationships with adults, foster self-esteem and identity development and build a sense of self and collective efficacy. In addition, individuals' involvement in the community positively impacts not just the participants, but also the larger community.

B. Leadership

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

A. Citizenship

4,038 Iowa youth are enrolled in the 4-H Citizenship project. 862 youth and adults contributed 3,057 volunteer hours to improve their communities through the State 4-H Youth Conference and DuPont Pioneer Community Improvement grants. Fourteen Iowa 4-H clubs leveraged \$2,725 in DuPont Pioneer Community Improvement grants into nearly \$8,431 in community improvement projects. Four 4-H members served as delegates to National 4-H Conference; 84 Iowa 4-H'ers participated in the national Citizenship Washington Focus program. Twenty-two 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.

B. Leadership

2,487 Iowa youth are enrolled in the 4-H Leadership project. More than 1,612 community and project clubs provide leadership experiences for members. 529 youth and 34 adults received leadership training during the Iowa 4-H Youth Conference; 65 youth and adults completed Youth-Adult Partnerships training; 19 4-H members represented Iowa at the National 4-H Congress. Forty high school youth provide leadership as members of the State 4-H Council, planning the 4-H Youth Conference and serving as ambassadors for the 4-H program. 115 youth had volunteer leadership positions with 4-H events during the 2014 Iowa State Fair.

Results

A. Citizenship

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. 530 youth enrolled in various 4-H camps and 4-H 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, 41.7% of youth indicated a 1-point increase, 10.5% indicated a 2-point increase, and 1.4% 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 service their communities.

B. Leadership

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. 570 youth enrolled in 4-H camps and 4-H 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, 38.1% of youth indicated a 1-point increase, 9.6% indicated a 2-point increase, and 1.5% indicated a 3-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.

Overarching Citizenship and Leadership Results

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 "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 questions within the constructs. The respondents reported statistically higher "After" scores than "Before" scores for each construct and all individual questions.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #14

1. Outcome Measures

Average percentage of youth who self-report improved learning practices 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
2014	53

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

23,456 4-H'ers enrolled in one or more of the 38 project areas offered; 71,769 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. 530 youth enrolled in 4-H camps and 4-H 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, 40.9% of youth indicated a 1-point increase, 10% indicated a 2-point increase, 1.8% indicated a 3-point increase, and .1% indicated a 4-point increase in their learning practices after participating in 4-H.

Youth commonly indicated being involved in 4-H helped a young person strengthen learning 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 what 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 "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 questions within the constructs. The respondents reported statistically higher "After" scores than "Before" scores for each construct and all individual questions.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Public Policy changes
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)
- Other (high rates of staff turnover)

Brief Explanation

52% of Iowa's school-aged youth reside in Iowa's 11 most populous counties compared to 49.5% in 2007. High rates of staff turnover, both at the state and county Extension district levels, have reduced consistent outreach capacity targeted toward these counties. As a result, the number of youth reached (all delivery modes) in urban/heavily populated counties has dropped by 1/3 since 2007 while the number of youth reached in non-urban counties has remained relatively static, but is also experiencing a decline in numbers. Persistent staffing fluctuations have also presented barriers in initiating and sustaining educational programs to address youth diversity outreach goals that more effectively serve Iowa's growing ethnic and racial minority audiences.

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. The Iowa 4-H Youth Program 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 Iowa State University faculty.

Adoption of the Iowa Core by the Iowa Department of Education and local school districts presents challenges in the ability of the Iowa 4-H Program to partner with schools. Because local school districts emphasize formal education models, they are often hesitant to engage in non-formal youth development educational offerings. ISU Extension and Outreach 4-H staff continue to evaluate 4-H curricula to identify Iowa Core standards being addressed by 4-H curricula, and revise curricula, when necessary, to meet Iowa Core standards required by local school districts.

Implementation of innovative programs to reach all Iowa children and youth depends heavily on the ability of 4-H staff and volunteers to develop welcoming and inclusive relationships with diverse children, youth, families, community partners, and volunteers. In order for the statewide Iowa 4-H Program and individual county 4-H programs to be relevant and sustainable, support is paramount from 4-H county Extension youth staff, 4-H partners, and 4-H volunteers for emerging 4-H delivery models, varied program content, unique partnerships, and diverse program audience outreach.

In the past year, significant time and attention was required to improve internal operational

and staffing efficiencies. In FY15, a primary priority for ISU Extension and Outreach 4-H is to further develop welcoming and inclusive partnerships and educational experiences with all Iowa children and youth. Iowa 4-H is striving to be the K - 12 leader at Iowa State University, and across the state, by strategically focusing on diverse internal and external partnerships with the intent to narrow the achievement gap of Iowa's underserved youth audiences.

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. Self-assessment tools with indicators corresponding to each construct were completed by 4-H youth participants. The self-assessment tools examined self-reported changes in youths' knowledge and/or practices after participating in 4-H as compared to before participating in 4-H.

- Self-assessment tools were based on a 5-point Likert scale (where 1 = "not at all" and 5 = "great deal").
 - For the healthy living, citizenship, leadership, communication, and learning constructs, and all corresponding individual indicators, youth reported statistically higher "After" scores than "Before" scores.
 - For the STEM processing practices construct, and 33 of the 39 corresponding individual indicators, youth reported statistically higher "After" scores than "Before" scores.
 - On average, 48% of youth indicated a 1-point increase and 8.2% indicated a 2-point increase in their healthy living behaviors and practices after participating in 4-H.
 - An average of 95% of youth indicated a 1- to 4-point increase in their animal identification and tracking of ill animal practices, and an average of 92.4% youth indicated a 1- to 4-point increase in their medication label usage, appropriate feed additives usage, and drug residue and withdrawal times.
 - On average, 20.4% of youth indicated a 1-point increase, 15.2% indicated a 2-point increase, and 1.8% indicated a 3-point increase in their science processing practices after participating in 4-H.
 - On average, 38.6% of youth indicated a 1-point increase, 13.4% indicated a 2-point increase, .87% indicated a 3-point increase, and .08% indicated a 4-point increase in their communication practices after participating in 4-H.
 - On average, 41.7% of youth indicated a 1-point increase, 10.5% indicated a 2-point increase, and 1.4% indicated a 3-point increase in their citizenship practices after participating in 4-H.
 - On average, 38.1% of youth indicated a 1-point increase, 9.6% indicated a 2-point increase, and 1.5% indicated a 3-point increase in their leadership practices after participating in 4-H.
 - On average, 40.9% of youth indicated a 1-point increase, 10% indicated a 2-point increase, 1.8% indicated a 3-point increase, and .1% indicated a 4-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. A sample of 56 youth enrolled in 4-H healthy living educational 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, 48% of youth indicated a 1-point increase and 8.2% indicated a 2-point increase in their healthy living behaviors and practices after participating in 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 2013/2014 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, record keeping, and animal drug administration. 508 youth completed the survey. Survey results showed an average of 95.1% of youth indicated a 1- to 4-point increase in their communication techniques. An average of 95% indicated a 1- to 4-point increase in their animal identification and tracking of ill animal practices, and an average of 92.4% youth indicated a 1- to 4-point increase in their medication label usage, appropriate feed additives usage, and drug residue and withdrawal times. Additionally, 73.4% of youth respondents agreed or strongly agreed they want to continue to learn about animal science, 62.8% agreed or strongly agreed they would like to have an animal science job, and 57% agreed or strongly agreed they participate in science activities that are not for school.

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; effectively identifying and keeping track of treated animals; understanding the importance of treatment withdrawal times; observing feed labels to administer appropriate feed additives.

VI. National Outcomes and Indicators

1. NIFA Selected Outcomes and Indicators

Childhood Obesity (Outcome 1, Indicator 1.c)	
0	Number of children and youth who reported eating more of healthy foods.
Climate Change (Outcome 1, Indicator 4)	
0	Number of new crop varieties, animal breeds, and genotypes with climate adaptive traits.
Global Food Security and Hunger (Outcome 1, Indicator 4.a)	
2496	Number of participants adopting best practices and technologies resulting in increased yield, reduced inputs, increased efficiency, increased economic return, and/or conservation of resources.
Global Food Security and Hunger (Outcome 2, Indicator 1)	
0	Number of new or improved innovations developed for food enterprises.
Food Safety (Outcome 1, Indicator 1)	
0	Number of viable technologies developed or modified for the detection and
Sustainable Energy (Outcome 3, Indicator 2)	
0	Number of farmers who adopted a dedicated bioenergy crop
Sustainable Energy (Outcome 3, Indicator 4)	
0	Tons of feedstocks delivered.