2014 Kansas State University Combined Research and Extension Annual Report of Accomplishments and Results

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I. Report Overview

1. Executive Summary

2014 saw the celebration of the 100th anniversary of the Cooperative Extension Service. K-State Research and Extension is a success story we must continue to celebrate for the next 100 years. This country's land-grant universities merge teaching, research, and extension into one system. Nowhere else in the world do universities do that. This integration has propelled our country into a world leader, particularly in food and agricultural production. As we celebrated our successes, we were also developing our Vision 2025 Strategic Plan for K-State Research and Extension.

K-State Research and Extension's statewide presence lends itself to collaborative efforts with local groups, state and federal organizations, and colleagues in other states. Great examples of such collaboration can be seen through the work of our Centers and Institutes. In addition to traditional one-on-one methods of communication, our faculty and staff use technology to deliver research-based programs to clients across the state and beyond, including web-based smart phone applications that help our audiences to have the Info needed to make management decisions. Top-notch research facilities and quality faculty draw businesses and funding to K-State and to Kansas. Several high-profile projects are under way in the Biosecurity Research Institute, and infrastructure development for the National Bio and Agro-Defense Facility is in progress.

We continually evaluate our programs to ensure we are making the best use of our resources and reaching out to Kansas' citizens. We have many more tools because of technology, but the purpose has not changed to serve the wants, desires, needs, and dreams of Kansas' citizens. We have established valuable partnerships around the state, the nation, and the world. We accomplish our goals when we have positive impact on individuals, but our ultimate goal is achieved when we also provide social impact. We view new discoveries and engaging people we serve as benefiting both individuals and society.

The demographics of Kansas continue to change. K-State Research and Extension is reaching out to both underserved and traditional audiences through new venues. To increase multicultural competency and sensitivity among our workforce, the COA/KSRE Diversity Programs Office promotes quarterly Navigating Difference training. This program brings systemic change and diversity to the KSRE team and provides cultural competency awareness and skills that they can practically apply in their day to day work.

An emerging and growing effort within KSRE is the Multicultural Undergraduate and Graduate Summer Research Fellowship. This program specifically targets under-represented populations of students to establish networking relationships back to their respective home institutions, as well as, faculty mentoring by KSRE. Although the undergraduate institutions of these students have not exclusively been from 1890 Land Grants, those institutions have heavily dominated the applicant pool to date. Other schools are 1994s, Hispanic serving institutions and historically Black Colleges and Universities. The KSRE fellow program places these students in a laboratory or field setting with a K-State Research and Extension scientist to work on a focused set of research goals that can be accomplished in the eight-week program. This program has a specific goal of growing the minority populations of students within graduate programs in the College of Agriculture and across other partner Colleges represented within K-State Research and Extension.

Hispanic youth and their families are actively participating in 4-H in Southwest Kansas. They are discovering the value of 4-H as an organization that empowers young people to learn new skills, build their confidence and grow into capable, responsible adults. The purpose of the pilot project is to engage

Hispanic youth and their families, primarily in Southwest Kansas, in safe and active learning experiences that are grounded in positive youth development. The goal is to establish new clubs in which the youth fully participate in 4-H and engage in relevant and age appropriate programming in science, health, and leadership development. In addition, support and guidance will be provided to parents in helping their children set and achieve their goals and aspirations for the future. A new specialist position will be added in the Department of 4-H Youth Development with a focus on reaching new youth and adult audiences.

Kansas 4-H has a long tradition of training leaders for the future. The Citizenship in Action program encourages teenagers to learn more about how government functions and how to actively participate in the legislative process. Also, the 4-H SET program focuses on preparing more youth who are proficient in science, engineering, and technology. Youths are learning skills in such areas as global positioning systems and computer interface.

Research on bioenergy production and use continues to increase with attention given to such projects as evaluating capacity of biomass production in soil and climatic conditions of Kansas. Moreover, projects are ongoing looking at biomass densification, storage and deconstruction. Overcoming these hurdles will be key for the technical and economic viability of the biofuels industry.

Climate change and its influences on management decisions for agricultural systems in Kansas is a collaborative research initiative with partners like Wichita State University, University of Kansas, and the overall Global Research Alliance on Agricultural Greenhouse Gases. A project is underway to develop educational programs on climate-related information to rural Kansans.

FTEs have been adjusted with reduced numbers in extension positions. This occurs through elimination of positions through vacancies and realignment of specializations through formation of districts. At this time, 45 counties have formed 16 districts.

The extreme and continuing drought took a heavy toll on summer crops in most of Kansas. In addition to efforts to increase yields through plant breeding trials, K-State researchers have made other important contributions recently to grain sorghum profitability. For example, herbicide-resistant sorghum technology will help with in-season grass control in sorghum; nitrogen fertilizer management research allows producers to reduce nitrogen use while maintaining yields; improved stalk quality will support the weight of higher yields; greater cold tolerance would allow sorghum producers to plant earlier and use longer season hybrids than they currently grow and increase yields. Research efforts through K-State's Great Plains Sorghum Improvement and Utilization Center help increase sorghum acreage in Kansas so producers can make better use of water and other valuable resources now and in the future.

We are effectively using our statewide network of offices to share research-based information related to the environment, families, communities, and production agriculture. We used input from external and internal groups to develop a strategic plan for K-State Research and Extension to begin addressing five grand challenges: global food systems, water, health, developing tomorrow's leaders, and community vitality. These challenges directly or indirectly affect all Kansans and we are not going to solve these challenges alone. By developing partnerships within Kansas, across the United States, and internationally, we are educating and working with the next generation of students, scientists, and extension educators. The new ideas and knowledge developed through research and shared by extension will be used to solve the five grand challenges. This plan will provide direction and closely align with the university's plan to be a Top 50 research institution by 2025.

Total Actual Amount of professional FTEs/SYs for this State

Year: 2014	Extension		Research	
	1862	1890	1862	1890
Plan	422.0	0.0	266.0	0.0
Actual	385.0	0.0	266.0	0.0

II. Merit Review Process

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

- Internal University Panel
- Combined External and Internal University Panel
- Expert Peer Review

2. Brief Explanation

All new and renewing K-State Research and Extension Action Plans/Projects undergo a review process coordinated locally at the department or unit level, with input, as needed or requested from the experiment station grants and contracts office. Department heads and unit leaders are given latitude to employ strategies for evaluation of new plans and projects for their scientific merit and their relevance to programmatic focus. Guidance is provided to unit heads and unit leaders regarding the process by which review may take place. Most employ a panel of on-campus reviewers; many use a combination of on and off-campus expert reviews; and a few choose to utilize completely external off-campus review. This past year, at least two model review outlines were made available for review of new and continuing projects. Department heads and unit leaders could utilize these review templates as written or add/modify elements of the review to fit unique nuances specific to their respective discipline or to accommodate special input from stakeholders. When reviews are complete, the Department Head or Unit Leader meets with the applicant(s) to discuss the reviews and identify necessary revisions. A final revised version of the proposal is reviewed by the Associate Director for Research and/or Extension, and approved as appropriate for final review by National Program Leaders at USDA/NIFA. This process ensures that action plans adequately and appropriately address issues that make a positive difference in the lives of stakeholders. On a regular basis, as projects are conducted, investigators and team leaders meet with stakeholders from all sectors to validate the goals, objectives, and on-course progress of the program. This process does not change from year to year.

III. Stakeholder Input

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

- Survey of traditional stakeholder groups
- Survey of selected individuals from the general public
- Other (Survey of underserved, minority groups)

Brief explanation.

K-State Research and Extension is rich with advisory panels, teams, councils, and committees through every discipline of research and extension work. In Kansas, local Cooperative Extension is

organized with elected Program Development Committees (PDCs). Individuals throughout the community are targeted to seek election for their experience and interest broadly in needs and issues of agriculture, family, youth, and community. Six individuals are elected to each of the four committees in all counties across the state. This equates to roughly 2500 private citizens taking an active roll as stakeholders in setting programmatic priorities for extension programming at the local level. Each year, the individuals involved in leadership activities of these local councils are invited to a one-day training and dialog event at four locations across Kansas. This all day meeting includes updates on their roles and responsibilities as stakeholders for the extension program.

In 2009, a system-wide survey was conducted to focus on issues of agreed importance for which K-State Research and Extension must focus. Stakeholders from all 105 counties in Kansas provided feedback and input into the prioritization process. The survey consisted of a series of seven strategic opportunities and several statements within each opportunity to describe the work plan focus. Stakeholders provided feedback on those statements as to their relative importance to Kansas. That process has resulted in areas of emphasis for our on-going research and extension plans. Every academic discipline and our outstate research and extension centers also operate with advisory groups. Those advisory groups are recruited through defined criteria to see that a broad set of interests and backgrounds are represented. Typically, advisories meet with administration and faculty once or twice annually to review progress on key initiatives and to gather input on future directions and priorities for the discipline or the center. No changes in 2014.

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 Surveys

Brief explanation.

Following are three examples of processes used to select advisories. First, the Director of K-State Research and Extension and Dean of the College of Agriculture has an advisory that is carefully selected through a nomination process. The individuals invited to serve are selected based upon the target audience represented, gender, race, ethnicity, and leadership. This group meets three times annually to review programs and provide advice to the Dean and Director on key initiatives to strengthen the programs in research, extension, and teaching. A second example is with the State Extension Advisory Council. This group is elected through their leadership on local Extension Boards. Individuals are approached and encouraged to accept nomination to the process. Then their peers go through an election process to identify the representatives they wish to serve on this advisory. This advisory meets twice annually with the Extension director and the administrative team to identify priorities and opportunities to fulfill the mission. Additionally, the Associate Director for Research actively participates on stakeholder boards with direct contact to commodity groups within the state. For example, the Associate Director participates in the Kansas Wheat Alliance and the Kansas Wheat Research Foundation boards. This connection provides guidance to researchers developing varieties and studying problems key to Kansas' wheat production.

In our family programming areas, Program Development Committee (PDC) members were asked to identify people to survey that reflected the demographics of their communities, based on age, gender, race/ethnicity and income. They were asked to identify people that were not familiar with Extension as well as those who were. Each PDC member was asked to deliver a survey to six individuals. Those surveyed were asked to rate on a 1 to 5 scale the need for selected topics within their community. Completed surveys were received from more than 2,000 people and the results are being used locally and at the state level to prioritize work for the next few years.

We provide all of our Extension agents and local Executive Boards with a web-based training tool on techniques for recruiting new Board and PDC members to ensure diversity of

interests and experiences with new members.

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

Brief explanation.

Stakeholder input is a continuous process across the breadth of programming for research and extension educational programs in an effective grass-roots organization like K-State Research and Extension. Stakeholder input happens through local, regional, state, multi-state, and national input processes. The stakeholder input process is a comprehensive effort to seek focus on critical issues and problems needing research and answers that fit well within our defined mission priorities. This input continues throughout planning, project implementation, and program delivery. Specifically, face-to-face meetings that include strategic planning, small group process, and reporting back to the recipient institution are commonly used. Nominal group processes are employed to assure hearing of all voices. With the State Extension Advisory Council, that group is given the task to seek input from others outside of the face-to-face meeting, and to bring that knowledge and experience to the meetings through their sharing of such input. In seeking specific input, we have employed telephone random survey processes to help us understand how well we market our information, education, and programs as an organization. This information goes into a strategic market planning process to help us to reach a broader clientele, especially minority and under-served audiences. We have stakeholder groups who focus on our non-traditional audiences and programming. Specifically, the Kansas Center for Sustainable Agriculture and Alternative Crops operates with an advisory council for the expressed purpose of providing input on projects and ideas across both research and extension. This group assists in identifying opportunities for directing seed grant funds to research and extension faculty to better reach nontraditional needs and audiences. The breadth of advisory groups giving input and sharing needs and ideas range from the traditional Dean's advisory council to advisories working through every academic department and research/extension center to every local Extension office. Within program areas, we have advisors made up of stakeholders in areas of family nutrition, meat science, food science, crop commodity groups, livestock commodity groups, agricultural bankers, and the list goes on. We estimate that at any given time K-State Research and Extension has formal relationships with more than 200 advisory stakeholder groups who provide continuous input and feedback on research and extension initiatives, priorities, and direction. No new processes were employed in 2014.

3. A statement of how the input will be considered

- To Identify Emerging Issues
- Redirect Extension Programs
- Redirect Research Programs
- In the Action Plans

- To Set Priorities

Brief explanation.

Budget priorities are established through input on creating or redirecting funds to a new position or program direction based in part upon discussions with stakeholder groups as we identify priorities they have that match with our funding opportunities. For example, grape and wine industry developments are small in Kansas. Yet, through discussions with that interest group, we have placed resources in a multi-state initiative to bring greater expertise and problem solving to the grape producers and wine makers in Kansas. In 2005, a strategic planning process for the Cooperative Extension mission of K-State Research and Extension was completed. The 34-member task force that worked to complete this process was carefully constructed to involve a balance of key leadership among our broad stakeholders and personnel within our faculty and agent ranks. The purpose of the strategic planning was to identify key principles that must be given attention to assure the future to a relevant, sustainable, quality Extension Service in Kansas. The process included three facilitated all day meetings and interim reports posted on our website to solicit further external input. Focus was given to organizational structure and staffing, resource development, systems of education and information dissemination, and constituent development and marketing. The task force identified a series of recommendations. In 2006, the strategic planning recommendations were distributed widely within and outside the organization and planning and implementation processes developed to address key issues. Some of those issues include strengthening professional development, increasing program depth and focus of our local extension programs, moving forward on multi-county models of program delivery, multistate programming initiatives, and enhanced training for stakeholders in the advocacy process. * In 2007, that strategic planning process has resulted in targeting $275,000 annually over the next three years toward enhanced professional development for our faculty in becoming more effective Extension professionals. A redesign of our employee resource website was undertaken to make it easier for our faculty and staff to organize and plan for their personal professional development. We targeted hires of Extension faculty who are multi-lingual and able to interact more directly with our Latino families. We organized a new Center for Engagement to bring the broader resources of the campus to the issues and needs of the people of Kansas. We streamlined our hiring process to refill positions in a shorter time frame while at the same time maintaining our high standards of affirmative action process. We brought faculty together to address critical emerging issues in energy, bio-security, immigration, rural development, and our aging populations in rural Kansas. While significant budget reductions have resulted in loss of faculty and staff positions, we continue to use the priorities set forth in that strategic plan to provide guidance on communication, professional development, and structural reorganization to meet those goals, along with budget realities. No changes in 2014.

Brief Explanation of what you learned from your Stakeholders

Industry trends, entrepreneurial interests, gaps in knowledge and understanding, problems and pitfalls in adaptations of knowledge and technology, lack of information within a given commodity production or processing system are all common learning experiences for faculty and administration in our listening relationship with key stakeholders. In times of budgetary strain, stakeholders continue to emphasize the importance of local presence, attention to the long-term issues and problems of Kansas, and finding ways to improve our efficiency without sacrificing the effectiveness. The result has been in deeper discussions and development of multi-county Extension units, greater use of technology to deliver training, updates, and pubic education. We are dramatically increasing the use of computer-based educational delivery, while still finding ways to

maintain the desires of interaction and connectedness to our clientele. An example has been in our listening to the interests and needs of the grape and wine producers in Kansas. While research and extension within Kansas State University does not have an investment of human resource to address the knowledge and technology needs of the grape producers, we have listened to their interests and needs and we are currently working out an agreement among Kansas State University, the University of Missouri, Kansas Department of Agriculture, and Kansas Department of Commerce to bring educational programs and support to that industry through a joint agreement where the University of Missouri has that expertise. We have similar discussions ongoing with the fruit growers and industry interests. No changes in 2014.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
5601778	0	4418314	0

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	2847932	0	5838812	0
Actual Matching	12732664	0	33297138	0
Actual All Other	21607449	0	7472288	0
Total Actual Expended	37188045	0	46608238	0

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

V. Planned Program Table of Content

S. No.	PROGRAM NAME
1	Global Food Security and Hunger
2	Food Safety
3	Natural Resources and Environmental Management
4	Childhood Obesity: Healthy Eating and Physical Activity through the Lifespan
5	Healthy Communities: Youth, Adults and Families

V(A). Planned Program (Summary)

Program # 1

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
201	Plant Genome, Genetics, and Genetic Mechanisms	5%		10%	
205	Plant Management Systems	28%		14%	
216	Integrated Pest Management Systems	5%		10%	
307	Animal Management Systems	36%		19%	
311	Animal Diseases	0%		24%	
501	New and Improved Food Processing Technologies	2%		2%	
502	New and Improved Food Products	0%		1%	
511	New and Improved Non-Food Products and Processes	2%		1%	
601	Economics of Agricultural Production and Farm Management	19%		14%	
603	Market Economics	1%		0%	
606	International Trade and Development Economics	0%		5%	
703	Nutrition Education and Behavior	1%		0%	
704	Nutrition and Hunger in the Population	1%		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	98.0	0.0	131.0	0.0
Actual Paid	89.0	0.0	129.0	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**
1339372	0	2831662	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
6116243	0	16147752	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
5647053	0	3623821	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Sustain Profitable Agricultural Production Systems--
• Develop animal and crop production systems that thrive in the variable conditions of the Great Plains.
• Develop horticulture, forestry, and alternative green enterprises that thrive in the variable conditions of the Great Plains.
• Advance new and improved systems of agricultural production to meet the need of producers and consumers.
• Enhance the value of agricultural products.

Ensure an Abundant Food Supply for All--
• Improve access to high quality foods, especially for consumers with limited resources.
• Increase food variety and value by developing new and enhanced food products.

2. Brief description of the target audience

Farm and ranch managers; agricultural producers and agribusinesses throughout the food industry supply chain with emphasis on producers who want to help themselves; people who influence producers and producer decisions, including educators (veterinarians, media, industry organizations, packers/purchasers); government agencies/ regulators; the lending industry; 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	39000	0	2300	0

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

Patent Applications Submitted

Year:	2014
Actual:	13

Patents listed

Gene Encoding Rhb1 Resistance to Fusarium Head Blight Disease and Uses Thereof; Oakley CL, Wheat; Hemostasis Agent from Self-Assembly Peptides; Detection of Proteases and Lipases from Psychrotropic Bacteria in Milk and Milk Products; Detection of Early (Subclinical) Mastitis in Dairy Cows Through Technology Transfer from Early Cancer Detection; Multifunctional Gold Nanoparticle-Peptide Bilayer Complexes; Swine Influenza Virus Vaccine and Vaccine Platform; The Use of Medium Chain Fatty Acids and Essential Oils as a Way to Mitigate Salmonella and Porcine Epidemic Diarrhea Virus (PEDV) in Animal Feed and Ingredients; Attenuated Vaccines to Protect Bertebrate Animals and People Against Tick-Borne Ehrlichia Species Infections and the Discovery of a Novel Genomic Region Involved in Pathogenesis with Potential to Develop New Class of Drugs; Early Lactation Administration of Non-Steroidal Anti-Inflammatory Drugs to Increase Whole-Lactation Milk Yield and Decrease Culling in Dairy Cattle; E. Coli/Heat Stable Toxoid as the Adjuvant-Delivery System for Vaccine Development; Gelatin Based Gummy Dog Treat

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2014	Extension	Research	Total
Actual	30	70	100

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of individuals participating in programs

Year	Actual
2014	30000

Output #2

Output Measure

- Number of new/improved varieties, inbreds, germplasm developed and released

Year	Actual
2014	1

Output #3

Output Measure

- Number of educational events (e.g., meetings, demonstrations, field days, press releases, and

distributed publications) delivered

Year	Actual
2014	900

Output #4

Output Measure

- Number of producers engaged in one-on-one consultations through Kansas Farm Management Association or Farm Analyst programs

Year	Actual
2014	2979

Output #5

Output Measure

- Number of presentations at national and international conferences

Year	Actual
2014	250

Output #6

Output Measure

- Number of research papers cited above a threshold (10)--indicative of high impact

Year	Actual
2014	300

Output #7

Output Measure

- Number of research grants received in excess of $50,000.

Year	Actual
2014	35

Output #8

Output Measure

- Number of soil samples evaluated on Kansas crop acreage
  Not reporting on this Output for this Annual Report

Output #9

Output Measure

- Number of hours reported annually by Master Gardener volunteers

Year	Actual
2014	101000

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Livestock producers demonstrate best management practices (BMPs) in regard to management and production, including genetic selection, reproduction, nutrition, health, animal care and well-being, livestock safety and quality, environmental management, and optimal marketing strategies (Measured by number of producers adopting BMPs)
2	Kansas farmers and ranchers increase awareness of financial performance (based on number members reported by farm management association)
3	Kansas farmers experience higher yields, more stable yields and/or a higher value of their crop as a result of plant breeders development of new varieties or germplasm (Measured by number of acres planted to KAES-developed materials or materials derived from KSU varieties, inbreds, or germplasm)
4	Kansas farmers increase crop acres using soil testing as a basis for nutrient applications (measured by reported crop acres)
5	Cow/calf producers lower cow feed supplement costs through use of BRaNDS software to make informed, cost-effective purchase decisions (measured by number of participating producers)
6	Improved sustainability of Kansas farms and ranches through membership in the Kansas Farm Management Association program and through assistance received through the K-State Farm Analyst program (Measured by number of members and number receiving assistance through KFMA and Farm Analyst program)
7	Public value communicated by Master Gardener volunteers (measured by number of hours and activities reported annually)
8	Increase food variety and value by developing new and enhanced food products (Measured by number of new products developed)
9	Improve access to high quality food, especially for consumers with limited resources (measured by improvement in food budgeting)

Outcome #1

1. Outcome Measures

Livestock producers demonstrate best management practices (BMPs) in regard to management and production, including genetic selection, reproduction, nutrition, health, animal care and well-being, livestock safety and quality, environmental management, and optimal marketing strategies (Measured by number of producers adopting BMPs)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	1340

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Much of Kansas finally found relief from the extended drought that had plagued the state for the last few years. During the drought, questions focused on stretching feed supplies and decreasing livestock numbers. As the eastern half of the state emerged from drought first, rangeland recovery and potential expansion of the cow herd and other livestock numbers became topics of interest. The drought recovery is not full in Western KS, but livestock producers are in better financial condition than past years due to high market prices and some moisture relief. High market prices for all livestock industries provided producers with opportunities to consider changes to their operations while decreasing long-term debt. The specialized nature of beef, dairy, and swine production has increased producer?s reliance on experts to handle their specific and urgent questions. For example, the swine industry was greatly impacted by PEDv in early 2014 with huge losses of baby pigs.

What has been done
Early in the year when it appeared that drought relief was going to be a reality, the K-State Research and Extension Livestock Focus Team met to plan programming for rangeland recovery and growth of the beef herd. Meetings, news releases, and extension materials were developed and disseminated to educate producers on topics, such as proper heifer development, genetic programs, how to monitor rangeland for adequate recover, repairing ponds, and calving management. A myth-busting series was assembled to help educate producers at meetings and through newsletters on high impact areas to implement in their businesses. Swine and diary specialists also developed educational materials to increase profitability of producers in those industries. For PEDv, a series of experiments were conducted to understand the role of feed in transmitting the virus and recommendations were developed for producers and feed

manufacturers to minimize risk of introducing PEDv through feed.

Results

As a result of educational programming, beef producers in the state saved money and feed resources through the use of balanced, least cost ration development, forage testing, use of cover crops for grazing, improved hay feeding methods and use of ionophores. Given the high prices for feedstuffs and in some areas, limited forage availability due to drought recovery, producers used knowledge gained through extension to decrease supplemental feed costs. Rapid adoption of beef cattle body condition scoring guides and management practices allowed producers to more closely monitor and manage cows for optimal production and reduced supplemental feed and increase productivity. Beef producers improved the reproductive and production efficiencies of their cow herds through more effective replacement heifer selection, breeding and management by adopting skills learned from extension programs. Further improvement in production efficiencies were gained as beef producers implement structured cross breeding systems to leverage the value of heterosis and select for genetics that best fit their production and marketing scenarios. Beef producers in Kansas continued to face reproductive loses due to the spread of trichomoniasis (venereal disease caused by protozoa). These losses are reduced by adoption of testing, monitoring and management strategies recommend by extension specialists and agents. ? As an example of the impact of targeted meetings, 87% calving school attendees expected to change when or how they provided assistance at calving. After a calving cycle, 43% reported they had changed when they provided assistance at calving, which increased their calf crop.

In other species, over 40,000 dairy cows were influenced by programs that improved reproductive performance, decreased disease risk, and improved calf management. Producers reported improved employee management as a result of extension programs helped lead these changes. Swine producers eliminated the use of porcine ingredients in their nursery diets to lower the risk of PEDv introduction. Since these changes were made, no new cases of PEDv have been found in Kansas farms that made the changes.

Outcome 5 is being reported with Outcome 3 in this and future years.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems
601	Economics of Agricultural Production and Farm Management

Outcome #2

1. Outcome Measures

Kansas farmers and ranchers increase awareness of financial performance (based on number members reported by farm management association)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	2893

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The state of the economy, along with volatile commodity and input prices, make business planning in agriculture increasingly difficult and raises the stakes of each decision a producer must make. Having good information on which to base decisions is critical for producers to remain profitable and sustainable for the future. Education, training and assistance in keeping good records and in the appropriate methods to analyze and use those records will provide the needed knowledge to make informed decisions.

What has been done
The goal of the KFMA program is to provide each member with farm business and family financial information for improved farm business organization and decision making so that Kansas farms can minimize risk while they increase sustainability and profitability. Making the information available publicly can help to accomplish the same for many involved in agriculture in Kansas and around the country in addition to the KFMA membership. Activities in 2014 included: 8,200 face to face meetings with 2,893 producers; 56 presentations to 2,400 individuals; 2,306 farm business analyses; 2,254 individual crop and livestock enterprise analyses; 10 radio interviews; numerous newsletter and newspaper articles; presentation to over 300 students in classes at KSU; a large number of hits to the KFMA Newsletter on website; and over 86 cash flow analyses with Finpack.

Results
Through one-on-one consultations 2,893 Kansas producers have increased awareness of their current financial position and their financial performance during the past year. Of these producers 2,306 are able to benchmark their performance against other farms in their region; farms of similar type; as well as, the most economically profitable farms. This allows these producers to identify strengths and weakness in their operation and to take action to build on the strengths, and address the weaknesses, vastly increasing the operations sustainability and profitability for the future. Through enterprise analysis these operations have also identified those enterprises that are the most profitable and they clearly understand their cost of production for each enterprise allowing them the opportunity to make informed marketing decisions when selling the products they have produced. Additionally, at least 86 producers in poor financial condition, or with family conflict, gained an improved understanding of how to address their situation in a sustainable manner.

4. Associated Knowledge Areas

KA Code	Knowledge Area

601 Economics of Agricultural Production and Farm Management

Outcome #3

1. Outcome Measures

Kansas farmers experience higher yields, more stable yields and/or a higher value of their crop as a result of plant breeders development of new varieties or germplasm (Measured by number of acres planted to KAES-developed materials or materials derived from KSU varieties, inbreds, or germplasm)

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	6000000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Kansas Agricultural Experiment Station (KAES) develops new varieties and releases improved germplasm of wheat, soybeans, grain sorghum and canola. New varieties can benefit Kansas farmers directly and new germplasm gives other breeders, and ultimately farmers the advantage of KAES research.

What has been done
One new wheat variety (Hot Rod) was released in the past year. New lines were increased to usable quantities in anticipation of release. Lines are screened for resistance to current and potential abiotic and biotic factors.

Results
KAES varieties and germplasm are used extensively by Kansas farmers either directly from a KAES developed variety or indirectly from enhanced germplasm in varieties or hybrids developed by other entities. A majority of the wheat acres in Kansas is planted with KAES varieties or varieties developed with KAES germplasm.

4. Associated Knowledge Areas

KA Code	Knowledge Area
201	Plant Genome, Genetics, and Genetic Mechanisms

Outcome #4

1. Outcome Measures

Kansas farmers increase crop acres using soil testing as a basis for nutrient applications (measured by reported crop acres)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	200000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Kansas ranks first in the nation in grain sorghum production for grain and second in sorghum silage production. Since 2010, grain sorghum acreage has increased 33%.
The 165.2 million bushels produced represent 42.4 percent of the U.S. total, according to Kansas Farm Facts data. The farm value of that production is nearly $680 million. Its importance to the rural Kansas economy and its role as a foundation for numerous food production enterprises underscores the need for educational activities to ensure that production is protected and profits enhanced.

What has been done
Programs at four in-depth sorghum schools across the state in February 2014 focused on the latest sorghum grain and forage production research and resulted in an eight-page extension publication, Kansas Sorghum Management 2014 (MF3046).

Results
Producers and other attendees learned focused information related to grain sorghum production, including updates on topics such as planting management, planting populations, herbicides and weed control, and soil fertility.
Eighty-two percent indicated the information they received would influence their management decisions.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems

Outcome #5

1. Outcome Measures

Cow/calf producers lower cow feed supplement costs through use of BRaNDS software to make informed, cost-effective purchase decisions (measured by number of participating producers)

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

Improved sustainability of Kansas farms and ranches through membership in the Kansas Farm Management Association program and through assistance received through the K-State Farm Analyst program (Measured by number of members and number receiving assistance through KFMA and Farm Analyst program)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	2979

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The state of the economy, along with volatile commodity and input prices, make business planning in agriculture increasingly difficult and raises the stakes of each decision a producer must make. Having good information on which to base decisions is critical for producers to remain profitable and sustainable for the future. Education, training and assistance in keeping good records and in the appropriate methods to analyze and use those records will provide the needed knowledge to make informed decisions.

What has been done
This improved sustainability was achieved through providing producers reliable and accurate information on which to base decisions, along with the necessary education, tools, training and assistance in keeping good records and the appropriate methods to analyze and use those records to acquire the needed knowledge to make the best decisions possible in each situation.

Results
Through one-on-one consultations 2,979 Kansas producers have improved sustainability for the

future due to their involvement with the KFMA and Farm Analyst programs during the past year. Of these producers 2,306 are able to benchmark their performance against other farms in their region; farms of similar type; as well as, the most economically profitable farms. This allows these producers to identify strengths and weakness in their operation and to take action to build on the strengths, and address the weaknesses, vastly increasing the operations sustainability and profitability for the future. Through enterprise analysis these operations have also identified those enterprises that are the most profitable and they clearly understand their cost of production for each enterprise allowing them the opportunity to make informed marketing decisions when selling the products they have produced. This greatly increases the sustainability of each of these operations. Additionally, at least 86 producers in poor financial condition, or with family conflict, gained an improved understanding of how to address their situation in a sustainable manner.

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management

Outcome #7

1. Outcome Measures

Public value communicated by Master Gardener volunteers (measured by number of hours and activities reported annually)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	101000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Extension Master Gardeners are a vital part of K-State Research and Extension. Donating time in return for horticultural training, Extension Master Gardeners help Extension agents meet the need for horticultural information in their communities. The Master Gardener program is designed to provide trained volunteers to help meet that need at minimal cost.

What has been done
The means of providing this information is diverse including horticultural "hotlines," demonstration gardens, working garden shows, public presentations and providing tours. Extension Master Gardeners require continual education in best management practices, conservation of natural resources, waste management, integrated pest management, and identification and selection of

proper plant materials for healthy people, plants, and the environment.

Results
Extension Master Gardeners donated more than 101,000 hours with a value over $2.1 million in 2014. The level of enthusiasm and commitment not only impacts our volunteer projects but often results in our EMGs influencing family, friends and neighbors to use proven horticultural practices. Homeowners sometimes overfertilize and often misdiagnose problems in their landscape and garden resulting in overuse of unneeded or ineffective products. By providing timely, accurate information, our Master Gardeners influence our clientele to use less and more effective inputs resulting in better results and a savings of time and money. Using less fertilizers and pesticides also helps protect the environment.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems

Outcome #8

1. Outcome Measures

Increase food variety and value by developing new and enhanced food products (Measured by number of new products developed)

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	4

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Existing Kansas food companies and entrepreneurs have to keep an edge on the market by continuously developing new and innovative products.

What has been done
Technical and educational support has been provided in the areas of product development, food labeling, food safety, and regulatory compliance.

Results

Hundreds of Kansas food products have been analyzed for safety and quality, with ingredient legends and Nutrition Facts panels produced. Four new food products were developed from concept to commercialization.

4. Associated Knowledge Areas

KA Code	Knowledge Area
501	New and Improved Food Processing Technologies
502	New and Improved Food Products
603	Market Economics

Outcome #9

1. Outcome Measures

Improve access to high quality food, especially for consumers with limited resources (measured by improvement in food budgeting)

2. Associated Institution Types

- 1862 Extension

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)
From research and our community classes, we've found that consumer budgeting is not a major issue related to food access. The biggest issue, at least in this country, is related to policies, systems and environmental barriers, such as lack of stores, transportation and safe walking routes.

What has been done
We are working with several coalitions to improve access through environmental or system changes, such as increased access to farmers markets, encouraging grocery stores, or increasing access in stores, including neighborhood stores. One area in the county now has a Walmart and Save A Lot as a result of our involvement with the Neighborhood Business Revitalization (NBR) organization and mobilization of citizens with city government incentives.

Results
These are collaborations in which Extension assists in the educational arm that aids in the success. We are working (as part of the Nutrition Committee of the Mayor's Healthy Wyandotte

Initiative) to expand this model to other areas that suffer from lack of access.

4. Associated Knowledge Areas

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

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
- Other (Technological change)

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

We used pre-planned surveys that were developed in conjunction with the Office of Educational Innovation and Evaluation. The surveys were given at the end of each educational program to determine the knowledge gained by the participants. We also used case study approach to report results from individual producers.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Food Safety

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
702	Requirements and Function of Nutrients and Other Food Components	15%		15%	
703	Nutrition Education and Behavior	30%		20%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	15%		15%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	30%		30%	
723	Hazards to Human Health and Safety	0%		10%	
724	Healthy Lifestyle	10%		0%	
802	Human Development and Family Well-Being	0%		10%	
	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	60.0	0.0	19.0	0.0
Actual Paid	55.0	0.0	39.0	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**
45315	0	856050	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
344025	0	4881942	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
4951692	0	1095549	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

• Develop new rapid methods for the surveillance, detection, isolation, and quantification of microbes and chemical residues in animals, plants, and food products. • Develop risk monitoring techniques to detect potential hazards in the distribution chain. • Validate the efficacy of techniques in controlling and eliminating microbial and chemical hazards. • Disseminate food safety and bio-security information through extension and research seminars, workshops, and resident and distance education programs, using a variety of media options and communication tools. • Offer safe food production, handling, and sanitation education to groups involved in all levels of food production and service. • Identify best management practices to prevent foodborne illness and to enhance the security of the food supply throughout the food chain. • Develop technology to reduce the hazards and improve the quality of animal food products, which will complement the development of HACCP programs by USDA. • Develop, complement, and maintain an aggressive technology transfer system that effectively communicates work about Food Safety to consumers, students, industry, government, and other scientific investigations.

2. Brief description of the target audience

• Growers and processors of agricultural commodities, commercial and non-commercial food service personnel, market and home gardeners, other food handlers, retail markets, consumers, and educator; • Families and individuals of all ages living in Kansas, including populations with limited resources; low literacy skills; varying ethnicities; disabilities, diseases, or impairments; and documented or identifiable health disparities; • Economic stakeholders, and policy and funding agencies; • Health care, education, and nutrition professionals; • K-State Research & Extension faculty and staff with responsibilities for food and/or nutrition; • Government; and • Consumer groups (i.e., STOP).

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	635	16	247	84

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	3	3

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of rapid methods developed for the surveillance, detection, isolation, and quantification of microbes and chemical residues in animals, plants, and food products

Year	Actual
2014	0

Output #2

Output Measure

- Number of therapeutic, chemical, and physical treatments developed for animals and plants and their products to eliminate or reduce contamination with potential hazards

Year	Actual
2014	3

Output #3

Output Measure

- Number of ServSafe certification workshops

Year	Actual
2014	40

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Increase knowledge level and improve attitude of clientele in safe food production, handling, and sanitation programs; best management practices to prevent foodborne illness; and social, economic, and communications issues related to food safety and agricultural bio-security (Measured by number of participants increasing knowledge)
2	Increase adoption of recommended safe food handling practices at the individual, family, community, production, and supply system levels (Measured by number of participants in food service manager certification class who successfully complete the exam)
3	Reduce incidence of foodborne illness (Measured by number of foodservice facilities with trained employees)
4	Increase number of viable technologies to improve food safety (Measured by number of viable technologies developed or modified for the detection and characterization of food supply contamination from foodborne threats)
5	Increase understanding of the ecology of threats to food safety from microbial and chemical sources (Measured by number of students enrolled in Food Safety and Defense graduate certification)

Outcome #1

1. Outcome Measures

Increase knowledge level and improve attitude of clientele in safe food production, handling, and sanitation programs; best management practices to prevent foodborne illness; and social, economic, and communications issues related to food safety and agricultural bio-security (Measured by number of participants increasing knowledge)

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Increase adoption of recommended safe food handling practices at the individual, family, community, production, and supply system levels (Measured by number of participants in food service manager certification class who successfully complete the exam)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	410

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The U.S. Centers for Disease Control and Prevention estimates that roughly one in six people in the U.S., about 48 million get sick, 128,000 are hospitalized, and 3,000 die of foodborne illness each year.

What has been done
ServSafe Food Safety training was provided to foodservice managers, entry-level food handlers, and community organizations who provide food to the public.

Results
Servsafe Manager level trainings involving more than 410 people (92% passing; average score 86%) reaching an estimated 49 facilities; 15 proctored exams.

4. Associated Knowledge Areas

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

Outcome #3

1. Outcome Measures

Reduce incidence of foodborne illness (Measured by number of foodservice facilities with trained employees)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	101

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The U.S. Centers for Disease Control and Prevention estimates that roughly one in six people in the U.S., about 48 million get sick, 128,000 are hospitalized, and 3,000 die of foodborne illness each year.

What has been done
More than 40 ServSafe Food Handlers trainings involving approximately 600 people and 52 establishments/facilities. Servsafe Manager level trainings reaching an estimated 49 facilities.

Results
This educational effort resulted in a reported 101 Kansas Food establishments, volunteer/community groups and organizations, schools, nursing homes or day care facilities having staff who are food safety trained.

4. Associated Knowledge Areas

KA Code	Knowledge Area
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
723	Hazards to Human Health and Safety

Outcome #4

1. Outcome Measures

Increase number of viable technologies to improve food safety (Measured by number of viable technologies developed or modified for the detection and characterization of food supply contamination from foodborne threats)

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
For example, the livestock and meat industry and consumers are significantly impacted by E. coli (STEC). The control of those types of hazards is the goal.

What has been done
Decontamination of veal beef carcasses has been a primary focus. Decontamination strategies for beef subprimals before vacuum packaging have been researched along with how time past slaughter contamination times impart bacterial attachment and effectiveness and decontamination.

Results
The beef industry has been provided with additional strategies to control E. coli.

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 #5

1. Outcome Measures

Increase understanding of the ecology of threats to food safety from microbial and chemical sources (Measured by number of students enrolled in Food Safety and Defense graduate certification)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	27

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The food industry requires a pool of individuals trained in food safety, protection, and defense to enter the work force.

What has been done
Interns were trained in food safety, protection, and defense.

Results
Reporting on interns this year--59 have completed internships in the past three years.

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

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

TYPE of study;

Kansas State University has been designated as the education theme leader for the National Center for Food Protection and Defense, a Center of Excellence for the Department of Homeland Security and the USDA, AFRI CAP Grant focused on controlling shigatoxigenic E. Coli. Additionally, the validation of technologies to control microbial hazards for direct use by industry or inclusion into process deviation models is a major focus.

Over two years 40 interns will be trained in food safety, protection, and defense. Additionally, short term externships will also be conducted. Those individuals will learn about intervention technologies that are being validated. The food industry requires a pool of individuals trained in food safety, protection, and defense to enter the work force.

The industry also needs the technologies to control hazards. Initially, eight interns worked with fulltime researchers with 22 added in the summer and fall 2013. The remaining internships (N=9) and externships were completed in 2014.

Forty interns will have completed their internships by the end of the program year.

TIME of study;

2013 - 2017 (Depending on continued DHS and USDA funding)

Type of MEASURES.

1. Number of internships and externships
2. Number of technologies validated
3. Number of process deviation models developed

Key Items of Evaluation

As research results are available, detection and validation models will be develop. That research is in progress.

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Natural Resources and Environmental Management

☑ 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	12%		12%	
104	Protect Soil from Harmful Effects of Natural Elements	13%		8%	
111	Conservation and Efficient Use of Water	19%		15%	
112	Watershed Protection and Management	10%		7%	
121	Management of Range Resources	5%		7%	
132	Weather and Climate	2%		7%	
141	Air Resource Protection and Management	3%		5%	
205	Plant Management Systems	8%		8%	
511	New and Improved Non-Food Products and Processes	15%		12%	
601	Economics of Agricultural Production and Farm Management	3%		3%	
603	Market Economics	7%		3%	
605	Natural Resource and Environmental Economics	3%		13%	
	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	55.0	0.0	23.0	0.0
Actual Paid	50.0	0.0	65.0	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**
967789	0	1426750	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
3295238	0	8136570	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
1375170	0	1825915	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

• Understand the sources, fate, and transport of important water contaminants (i.e., fecal coliform bacteria, nutrients, sediment, and pesticides [especially atrazine herbicide]), and develop and determine the environmental and economic effectiveness of best management practices for these potential contaminants.

• Quantify the environmental and economic effectiveness of best management practices for improving water quality at the watershed level.

• Disseminate science-based information through environmental education programs for both youth and adults, and deliver extension programs aimed at stakeholders that focuses on adoption of best management practices in targeted areas for water quality improvement.

• Develop and test new crop, livestock, bioenergy, and riparian forest systems that will reduce water use while optimizing productivity, environmental quality, and profitability, including water saving technologies for concentrated animal feeding operations (CAFOs) and industries that process agricultural commodities.

• Develop an information and education program for policy makers, producers, water professionals, and youth audiences with respect to the Ogallala Aquifer, including assessment of the potential impacts of climate change on this important water resource.

• Develop an understanding of air quality impacts of rangeland burning, including extent and timing of burn events, influence of fuel load on emissions, modeling the downwind transport of particulate matter, and developing a climatology of extreme events.

• Disseminate science-based information and transfer technologies to stakeholders, and implement youth education programs focused on air quality.

• Disseminate science-based information regarding the sustainability of biofuel production and processing.

• Develop new processes to modify agricultural-based materials into higher value products.

• Develop resources and pathways to increase climate literacy.

• Provide decision tools for adaptive best management practices that address the effects of climate change.

2. Brief description of the target audience

• Agricultural producers, youths, policymakers/regulators, crop and livestock consultants.

• Growing industry based on bioprocessing and bioconversion, including the existing ethanol and biofuels industry.

• International grain processors.

• Industrial products manufacturers: adhesives, composites, bio-based chemicals, solvents and

lubricants.

• Entrepreneurs and investors seeking to enter this industry.

• Audiences whose production systems will be influenced by climate change, as well as those who consult or influence the decision-makers of these producers. Secondary audiences will be decision-makers and leaders responsible for preparing communities for change (e.g., state and local elected officials, environmental groups).

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	13650	0	1785	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	16	12	28

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

● Number of educational programs delivered

Year	Actual
2014	420

Output #2

Output Measure

- Number participating in educational programs

Year	Actual
2014	12500

Output #3

Output Measure

- Number of refereed research publications

Year	Actual
2014	20

Output #4

Output Measure

- Number of presentations at national and international conferences

Year	Actual
2014	16

Output #5

Output Measure

- Number of workshops, web-based curricula, and field days/tours related to climate change
  Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Producers adopt BMPs that protect environmental quality (measured by number adopting BMPs)
2	Producers adopt BMPs for atrazine and soil erosion (measured by number of acres)
3	Measurable improvement in water quality (percent reduction atrazine) in Little Arkansas River Watershed
4	Improve utilization of biological raw materials as bioconversion substrates (measured by number of new processes developed).
5	An enhanced or improved economy as a result of bioenergy development (measured by number of new bio-based businesses created)
6	Improved environmental conditions through sustainable biofuel production and utilization (measured by: gallons biofuel; gallons of cellulosic ethanol; gallons of biodiesel . . . produced in KS)
7	Improved environmental conditions through sustainable biofuel production and utilization (measured by: PPM OF CO2 in atmosphere; water quality; average temperature during year)
8	Agricultural/natural resource producers, and/or business representatives modify existing practices or technologies and/or adopt new practices to protect/enhance natural resources and/or enhance biodiversity (Measured by # documented)
9	Development of new knowledge and technologies (Measured by percentage of participants who increase knowledge of management practices under climate variability and change)
10	Improve climate mitigation strategies and their adoption (Measured by number of farms and landowners reducing carbon and energy footprints)

Outcome #1

1. Outcome Measures

Producers adopt BMPs that protect environmental quality (measured by number adopting BMPs)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	78

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Kansas ranks first in the nation in grain sorghum production for grain and second in sorghum silage production. Since 2010, grain sorghum acreage has increased 33 percent.

What has been done
Programs at four in-depth sorghum schools across the state in February 2014 focused on the latest sorghum grain and forage production research and resulted in an eight-page extension publication, Kansas Sorghum Management 2014 (MF3046).

Results
Conservative estimates indicate that program attendees represented management of greater than 200,000 acres. Eighty-two percent indicated the information they received would influence their management decisions. The sorghum schools provided education for a diverse group. One irrigator said he gained valuable information about water application timing.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
121	Management of Range Resources
141	Air Resource Protection and Management

Outcome #2

1. Outcome Measures

Producers adopt BMPs for atrazine and soil erosion (measured by number of acres)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	17984

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The project goal is to assist farmers to voluntarily implement atrazine herbicide best management practices (BMPs) to meet surface water quality standards of 3 µg/L, with no seasonal spikes. A decision was made to target specific sub-watersheds within the Little Arkansas River watershed in order to document water quality improvements.

What has been done
Four watersheds within the Little Arkansas River watershed were targeted for implementation of BMPs for atrazine herbicide. Atrazine runoff vulnerable fields outside of the four targeted watersheds were also made eligible for incentive payments. Corn and grain sorghum fields were targeted.

Results
Farmers committed to implementing atrazine BMPs on 17,984 acres of corn and grain sorghum.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
121	Management of Range Resources
141	Air Resource Protection and Management

Outcome #3

1. Outcome Measures

Measurable improvement in water quality (percent reduction atrazine) in Little Arkansas River Watershed

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	71

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The project goal is to assist farmers to voluntarily implement atrazine herbicide best management practices (BMPs) to meet surface water quality standards of 3 µg/L, with no seasonal spikes. A decision was made to target specific sub-watersheds within the Little Arkansas River watershed in order to document water quality improvements.

What has been done
Four watersheds within the Little Arkansas River watershed were targeted for implementation of BMPs for atrazine herbicide. Atrazine runoff vulnerable fields outside of the four targeted watersheds were also made eligible for incentive payments.

Results
Atrazine BMP implementation was predicted to reduce atrazine runoff by 71% on 17,984 acres and a total load reduction of 1015 lbs a.i. in targeted acres.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management

Outcome #4

1. Outcome Measures

Improve utilization of biological raw materials as bioconversion substrates (measured by number of new processes developed).

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	3

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The U.S. consumes more than 140 billion gallons of transportation fuels annually. Due to finite reserves, non-uniform distribution, and volatile prices of fossil fuels, renewable fuels from biomass could make a significant contribution toward a more sustainable future. Recent legislation has called for this nation to annually produce 36 billion gallons of renewable fuel by 2022 to help offset impending concerns over climate change and energy security. Such targets have implications of national security, economic development, and sustainable practices for the future.

What has been done
Both fundamental and applied research has been conducted in the area of biofuel production. Key projects include 1) grain sorghum, sorghum biomass and sweet sorghum as a viable renewable resource for biofuels; 2) Impact of water availability on grain quality; 3) potential of big bluestem for biofuel production; 4) pelleting biomass to increase cellulosic ethanol production; 5) syntheses of acid functionalized nanoparticles for hydrolysis and pretreatment of lignocellulosic biomass; and 6) pyrolysis of biomass for bio-oil and bio-char production.

Results
Our mean results include: 1) further confirmed that waxy sorghum is an excellent feedstock for bioethanol production with low energy input; 2) developed a new method to increased biofuel yield from photoperiod sensitive sorghum through utilizing both soluble sugars and cellulose; 3) identified the effects of biomass pelleting on composition change and biofuel yield; 4) improved the performance of acid-functionalized nanoparticles for biomass pretreatment and hydrolysis; and 5 evaluated the potential of big bluestem for biofuel production. As research results, we published 17 peer reviewed papers and presented 9 meeting papers.

4. Associated Knowledge Areas

KA Code	Knowledge Area
511	New and Improved Non-Food Products and Processes

Outcome #5

1. **Outcome Measures**

An enhanced or improved economy as a result of bioenergy development (measured by number of new bio-based businesses created)

Not Reporting on this Outcome Measure

Outcome #6

1. **Outcome Measures**

Improved environmental conditions through sustainable biofuel production and utilization (measured by: gallons biofuel; gallons of cellulosic ethanol; gallons of biodiesel . . . produced in KS)

Not Reporting on this Outcome Measure

Outcome #7

1. **Outcome Measures**

Improved environmental conditions through sustainable biofuel production and utilization (measured by: PPM OF CO2 in atmosphere; water quality; average temperature during year)

Not Reporting on this Outcome Measure

Outcome #8

1. **Outcome Measures**

Agricultural/natural resource producers, and/or business representatives modify existing practices or technologies and/or adopt new practices to protect/enhance natural resources and/or enhance biodiversity (Measured by # documented)

Not Reporting on this Outcome Measure

Outcome #9

1. **Outcome Measures**

Development of new knowledge and technologies (Measured by percentage of participants who increase knowledge of management practices under climate variability and change)

Not Reporting on this Outcome Measure

Outcome #10

1. **Outcome Measures**

Improve climate mitigation strategies and their adoption (Measured by number of farms and landowners reducing carbon and energy footprints)

Not Reporting on this Outcome Measure

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
- Other (Educational funding)

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Faculty engaged in Outcomes 5-8 on sabbatical at this time.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Childhood Obesity: Healthy Eating and Physical Activity through the Lifespan

☑ 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
702	Requirements and Function of Nutrients and Other Food Components	5%		35%	
703	Nutrition Education and Behavior	70%		55%	
724	Healthy Lifestyle	20%		0%	
802	Human Development and Family Well-Being	5%		10%	
	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	49.0	0.0	5.0	0.0
Actual Paid	45.0	0.0	18.0	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**
27189	0	395100	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
206415	0	2253204	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
3988641	0	505638	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Educational programs about making healthy food choices and increasing physical activity

2. Brief description of the target audience

* Families and individuals of all ages living in Kansas, including populations with limited resources; low literacy skills; varying ethnicities; disabilities, diseases, or impairments; and documented or identifiable health disparities; * Economic stakeholders, and policy and funding agencies; * Health care, education, and nutrition professionals; KSRE faculty and staff with responsibilities for food and/or nutrition; * Consumer groups (i.e., STOP)

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	68000	0	20000	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	3	6	9

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of workshop series conducted

Year	Actual
2014	20

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Children and youth increase their physical activity and/or reduce sedentary time. (Measured by percentage of number reached)
2	Youths increase fruit and vegetable consumption (Measured by number reporting increase)
3	Adolescents reporting healthier lifestyle habits (e.g., eating meals from a variety of food groups; increased frequency and/or time spent participating in physical activity per day) (Measured by increased percentage of those reached)
4	School-aged youth become more physically active (i.e., 60 minutes of moderate activity each day) and decrease screen time (e.g., tv, computer, video games) to less than 2 hours each day
5	Children and youth increase consumption of foods as recommended by the U.S. Dietary Guidelines for Americans, such as increasing vegetables, fruits (Measured by percentage of those reached)
6	Families/caregivers adopt healthy eating patterns, such as eating breakfast, eating as a family, healthier snack choices (Measured by percentage of those reached)
7	Children and youth increase consumption of foods as recommended by the U.S. Dietary Guidelines for Americans, such as increasing whole grains (Measured by percentage of those reached)
8	Kansans of all ages engage in increased physical activity.

Outcome #1

1. Outcome Measures

Children and youth increase their physical activity and/or reduce sedentary time. (Measured by percentage of number reached)

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Youths increase fruit and vegetable consumption (Measured by number reporting increase)

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

Adolescents reporting healthier lifestyle habits (e.g., eating meals from a variety of food groups; increased frequency and/or time spent participating in physical activity per day) (Measured by increased percentage of those reached)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	5

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
School and community gardens are increasing across Shawnee County (Topeka), however, an old ordinance was still in effect that allowed only grass to be grown on vacant lots.

What has been done
A group of community volunteers, including EFNEP staff, worked with the city to update the ordinance so that gardens could be planted on the vacant lots, and temporary food sales could be

held to increase access to fresh produce, especially in food deserts.

Results
The new community garden ordinance passed, and the volunteer group is now working on forming a community network to support and educate the public on school and community gardens.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
724	Healthy Lifestyle
802	Human Development and Family Well-Being

Outcome #4

1. Outcome Measures

School-aged youth become more physically active (i.e., 60 minutes of moderate activity each day) and decrease screen time (e.g., tv, computer, video games) to less than 2 hours each day

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Children and youth increase consumption of foods as recommended by the U.S. Dietary Guidelines for Americans, such as increasing vegetables, fruits (Measured by percentage of those reached)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	5

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Families struggling to prepare regular meals may resort to fast food or prepared meals most nights of the week. It is an expensive solution that may contribute to obesity and chronic health

conditions. Preparing and sharing meals at home can be faster and easier, and children whose families have meals together are shown to have improved grades, higher vocabulary, and reduced at-risk behaviors.

What has been done
KSRE Family and Consumer Sciences agents and nutrition educators taught meal planning, food safety, and kitchen skills through hands-on classes. Kitchen Skills for Kids reached more than 100 students with practical cooking lessons.

Results
Students in Kitchen Skills for Kids learned meal preparation and utensil use skills, food safety practices, and nutrition knowledge. Three months after her children completed the classes, one mother of two in the Kitchen Skills for Kids program stated that they continue to help her prepare healthful food every night.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
724	Healthy Lifestyle

Outcome #6

1. Outcome Measures

Families/caregivers adopt healthy eating patterns, such as eating breakfast, eating as a family, healthier snack choices (Measured by percentage of those reached)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	5

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Effective and positive parental and professional caregiving greatly enhance a childs health throughout life. A caregivers skill level determines whether children in care are safe and have the early learning experiences they need to succeed in school. Yet most child care providers and many parents lack the training and understanding needed to provide quality nurturing environments. Well-prepared parents and trained child care workers are needed statewide.

What has been done
To increase the quality of child care in Kansas, K-State Research and Extension educators formed partnerships with early childhood networks. The partnerships offer professional development to center-based and in-home child care providers and education to parents of young children in locations across the state.

Results
Agents partnered with Child Care Aware staff, and two agents were approved as trainers for Kansas Child Care Training Opportunities, a state child care training center. Fifty-nine child care providers were trained, using evidence-based programs to maintain their child care licenses. Forty-four parents (many following court orders) participated in parent education for childhood development, early learning, and emergent literacy.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
724	Healthy Lifestyle
802	Human Development and Family Well-Being

Outcome #7

1. Outcome Measures

Children and youth increase consumption of foods as recommended by the U.S. Dietary Guidelines for Americans, such as increasing whole grains (Measured by percentage of those reached)

Not Reporting on this Outcome Measure

Outcome #8

1. Outcome Measures

Kansans of all ages engage in increased physical activity.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual

2014 16200

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Thirty percent of Kansas adults are obese, and 19% of Kansas children live in poverty. Targeting the diversity of Kansans, our programs address quality of life, healthy development, and health behaviors across life stages for all socioeconomic groups.

What has been done
KSRE Family and Consumer Sciences professionals work to improve the health and vitality of individuals and communities. Along with local partners, extension educators offered programs such as Strong People and Walk Kansas. These programs are evidence-based and reflect current physical activity and healthful eating guidelines to improve the health and fitness of all Kansans.

Results
(Measured by # Walk Kansas participants), in 2014, Walk Kansas reached 16,200 participants. Evaluation surveys revealed the following outcomes as a result of the eight-week program. 85% were more physically active; 81% met activity goals.
79% were confident they would continue the activity and 91% their improved dietary habits during the next six months.
81% were more aware of healthy eating recommendations.
84% increased fruit and vegetable consumption.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
724	Healthy Lifestyle
802	Human Development and Family Well-Being

V(H). Planned Program (External Factors)

External factors which affected outcomes
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Programmatic Challenges

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Evaluation Questions:
- Three to six months after a program:
- What changes do participants report regarding more healthful eating, meal planning, food preparation, budgeting for food and physical activity habits?
- What changes do participants report regarding use of food assistance programs, gardening, home food preservation, low cost meal preparation and other strategies that increase their access to high quality, abundant and safe food?
- Do participants who are new mothers report initiating breastfeeding, exclusively breastfeeding for a long time, and still breastfeeding at 6 months?
- What changes have staff and volunteers taken to support healthier food choices and physical activity in schools and public venues?
- What changes have staff and volunteers taken to support increased access to high-quality, abundant and safe food (e.g., promoting private and community gardens, increasing local food production for food insecure persons, donations to food pantries, CSAs, electronic benefit transfer devices at Farmer Markets, SNAP outreach)?

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Healthy Communities: Youth, Adults and Families

☑ 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
724	Healthy Lifestyle	20%		10%	
801	Individual and Family Resource Management	10%		15%	
802	Human Development and Family Well-Being	15%		20%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	15%		15%	
806	Youth Development	40%		10%	
903	Communication, Education, and Information Delivery	0%		30%	
	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	160.0	0.0	9.0	0.0
Actual Paid	146.0	0.0	15.0	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**
468267	0	329250	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
2770743	0	1877670	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
5644893	0	421365	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

• Develop/identify theory- and evidence-based educational programs to promote healthy communities: youth, adults, and families. • Disseminate, implement, and evaluate effectiveness of programs to promote healthy communities: youth, adults, and families.• Strengthen collaborative capacity within K-State Research and Extension and among communities/ organizations to promote healthy communities: youth, adults, and families. • Provide technical assistance and educational programs to citizens seeking to make their communities healthy and sustainable places for meeting human needs. • Establish links between community development researchers and practitioners for cooperative efforts that result in healthy, sustainable communities. •Provide experiential learning opportunities for children and youth to address key and emerging issues that affect their growth and development. • Deliver and evaluate evidence-based community-development strategies for positive youth development in structured out-of-school settings (e.g., after-school programs, youth-serving organizations, clubs). • Strengthen the support for a volunteer development system through training and education on the experiential learning model, 4-H essential elements, ISOTURE model, age appropriate learning experiences and emerging aspects of youth development. • Provide imaginative, motivational, and experiential learning experiences to help youth build competencies and master life skills.

2. Brief description of the target audience

• Families and individuals of all ages living in Kansas, including populations with limited resources; low literacy skills; varying ethnicities; disabilities, diseases, or impairments; and documented or identifiable health disparities
• Economic stakeholders, and policy and funding agencies
• Health care and education professionals
• K-State Research & Extension faculty and staff with responsibilities for healthy communities: youth, adults, and families

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	158000	0	20000	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	2	0	2

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of educational programs delivered to increase knowledge of healthy communities: youth, adults, and families

Year	Actual
2014	21000

Output #2

Output Measure

- Number of program participants

Year	Actual
2014	80000

Output #3

Output Measure

- Number of educational programs to increase knowledge of volunteer development, experiential learning, and youth development competencies

Year	Actual
2014	1300

Output #4

Output Measure

- Number of communities that participate in community capacity building trainings and activities led through Extension.

Year	Actual
2014	65

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Community projects engage participants in process to address community goals (Measured by number of substantial community projects that reflect shared participation in addressing community goals)
2	Community members are engaged in community improvement programs (measured by number of volunteer hours)
3	Volunteers, faculty, and staff understand and demonstrate effective youth development principles in service to youth (e.g., 5 Cs of positive youth outcomes, essential elements to positive learning environments)(Measured by number demonstrating competency)
4	Youths improve competence, confidence, connection, and character and caring (measured by number of youths who improve: (a) Competence - believe they are capable and successful; that they have mastery. (b) Confidence - know they influence the world around them (i.e., people and events); that they have independence. (c) Connection - know they are cared about; that they belong. (d) Character and Caring - Youths practice helping others; they are generous.)
5	Clientele demonstrate established financial goals to guide financial decisions toward financial security (Measured by increased number of participants who have established financial goals to guide financial decisions toward financial security)

Outcome #1

1. Outcome Measures

Community projects engage participants in process to address community goals (Measured by number of substantial community projects that reflect shared participation in addressing community goals)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	656

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Kansas PRIDE (not an acronym) support community development efforts by providing a structure to mobilize local organizations and governments as they address quality of life issues. Communities are encouraged to assess their needs, set goals, implement plans, evaluate the impact, and celebrate.

What has been done
The PRIDE program adopted the community capitals model as a framework for the current program. This framework reveals the interactions between different parts of a community.

Results
In 2014, 65 Kansas PRIDE communities engaged in 503 ongoing and 153 completed projects at the local level. Kansas PRIDE communities reported that 259 of these projects engaged youths.

4. Associated Knowledge Areas

KA Code	Knowledge Area
803	Sociological and Technological Change Affecting Individuals, Families, and Communities

Outcome #2

1. Outcome Measures

Community members are engaged in community improvement programs (measured by number of volunteer hours)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	63054

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The philosophy of community development that Kansas PRIDE encourages is based on the fundamental valuing of volunteer citizen participation.

What has been done
In 2014, 65 Kansas PRIDE communities engaged in 503 ongoing and 153 completed projects at the local level. Kansas PRIDE communities reported that 259 of these projects engaged youths.

Results
In 2014, Kansas PRIDE communities reported 63,054 hours of volunteerism. This conservatively calculates to a dollar value of more than $1,316,567. Kansas PRIDE communities reported raising $338,555 for reinvestment in their communities during 2014.

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
806	Youth Development

Outcome #3

1. Outcome Measures

Volunteers, faculty, and staff understand and demonstrate effective youth development principles in service to youth (e.g., 5 Cs of positive youth outcomes, essential elements to positive learning environments)(Measured by number demonstrating competency)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	3158

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Looking for a way to unite 4-H across the state at the local level, 48 Hours of 4-H was born.

What has been done
Kansas 4-H Youth Leadership Council executive officers chose to have a two-day event as a finale for National 4-H Week. Pulling together a new statewide community service project in eight months required careful planning and determination. This 48-hour service project was a collaboration among the Kansas 4-H Youth Leadership Council, Kansas 4-H Foundation, and 4-H Youth Development.

Results
One hundred thirty projects in 58 counties took place October 11-12. Total participants: 3,138 of which 468 were 4-H alumni. The projects ranged from painting at Rock Springs 4-H Center to helping at animal shelters or working at food banks to making care packages for military serving overseas. Results: $9,375 raised for charities; 9,214 items collected (primarily nonperishable food); 109 new youth joined 4-H; and $41,037 in volunteer time.
The next 48 Hours of 4-H is scheduled for October 10-11, 2015--a weekend of service--a lifetime of impact.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #4

1. Outcome Measures

Youths improve competence, confidence, connection, and character and caring (measured by number of youths who improve: (a) Competence - believe they are capable and successful; that they have mastery. (b) Confidence - know they influence the world around them (i.e., people and events); that they have independence. (c) Connection - know they are cared about; that they belong. (d) Character and Caring - Youths practice helping others; they are generous.)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	39

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
America faces a future of intense global competition with a startling shortage of scientists. Only 5% of current U.S. college graduates earn science, engineering, or technology degrees, and student science test scores have been declining. These statistics, coupled with the record number of retirements in science and engineering fields, leave the nation unable to keep up with the increasing demand for trained professionals.

What has been done
Shawnee County 4-H worked with employees from Bartlett and West Engineers to present the Maps and Apps science experiment to two fourth-grade classrooms in Topeka. The engineers explained how maps are made, and students gained a new appreciation of the importance of learning geometry and other math and science concepts.

Results
4-H members are nearly twice as likely as nonmembers to participate in science programs outside of school.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #5

1. **Outcome Measures**

Clientele demonstrate established financial goals to guide financial decisions toward financial security (Measured by increased number of participants who have established financial goals to guide financial decisions toward financial security)

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Evaluation Questions:
Do groups report creating or revising strategic plans?
Do groups report less legal and ethical issues?
Do groups report that members practice improved communication skills?
Do groups report improved ability to identify community needs?
Do group members report that they seek out additional leadership roles within the community?

Long-Term:
Groups/Boards:
• Membership on boards and committees is sustained.
• Representation on board and committees is expanded.
• Members serve longer on boards and committees.
• Civic groups/community boards report an increase in effectiveness of leadership and progress toward group goals.
Communities:
• Increased diversity among volunteer base.
• Community improvements that represent the needs of current and future residents.
• Community vitality that attracts young people and families to the community.
• Sustainable community improvement process.

Evaluation Questions:
All Participants or Groups/Boards:
How many community groups have been sustained?

How many groups are involved in participatory community planning?
How many boards or committees have partnered with others?
How many participants in leadership development programs report broader community involvement?

Key Items of Evaluation

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 whit climate adaptive traits.
Global Food Security and Hunger (Outcome 1, Indicator 4.a)	
0	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.