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

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I. Report Overview

1. Executive Summary

Kansas State University just celebrated its 150th anniversary and reflected on its many accomplishments. As our nation's first land-grant university, K-State has vastly improved the lives of Kansans. 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. A Feed Technology Innovation Center was completed and operational in the fall of 2013. The Center is a joint effort between the departments of Grain Science and Animal Sciences and Industry. The new facility replaces the feed-production capability provided by the previous feed mill and significantly enhances the research capacity of both departments.

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. To date we have successfully trained five classes to include 50 KSRE employees.

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.

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 the incorporation of the previously separate Sustainable Energy and Climate Change planned programs primaily back into Natural Resources and Environmental Management.

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. And in the next few months we will be using input from external and internal groups to develop a strategic plan for K-State Research and Extension. 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: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	422.0	0.0	266.0	0.0
Actual	422.0	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. Nothing new to report in 2013.

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 insure a 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 2013.

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 2013.

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 2013.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
5034623	0	3967632	0

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	3243198	0	3744169	0
Actual Matching	12358011	0	24194488	0
Actual All Other	22352214	0	3531018	0
Total Actual Expended	37953423	0	31469675	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

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	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: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	105.0	0.0	203.0	0.0
Actual Paid Professional	106.0	0.0	203.0	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**
1572434	0	1963475	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
5627323	0	14944659	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
2461088	0	1851760	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?

Our specialists helped create and review content for the eXtension.org website. One of our specialists is leading an update of the Beef eXtension website.

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	29000	0	1300	0

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

Patent Applications Submitted

Year:	2013
Actual:	5

Patents listed
Granule Swelling and Starch Saccharification; A Transgene Construct to Improve Fusarium Head Blight Resistance in Wheat and Barley; Transgenic Approach to Increase Seed Weight at Above Optimum Temperatures During the Grain Filling Period of Wheat; Resistance to Viruses that Infect Cereal Plants; Wheat - Triticum Aestivum, KS020319-7-3

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	20	60	80

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of individuals participating in programs

Year	Actual
2013	20000

Output #2

Output Measure

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

Year	Actual
2013	2

Output #3

Output Measure

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

Year	Actual
2013	800

Output #4

Output Measure

- Number of producers engaged in one-on-one consultations through Kansas Farm Management Association or Farm Analyst programs
  Not reporting on this Output for this Annual Report

Output #5

Output Measure

- Number of presentations at national and international conferences

Year	Actual
2013	220

Output #6

Output Measure

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

Year	Actual
2013	300

Output #7

Output Measure

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

Year	Actual
2013	30

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
2013	75791

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)

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 Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	589

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Livestock producers are adjusting to a new reality. Feed, fuel, and other input costs are establishing new benchmarks after breaking through previous historical highs. In fall of 2012, 93% of the state was categorized as a severe or exceptional drought area and 70% of the state remained in those categories in early March, 2013. Forage supplies were extremely tight from prior year drought and feed costs were reaching record highs. Producers needed help dealing with poor quality and limited feed supplies, toxicity issues in forages, lack of water and/or poor water quality, and modification of grazing plans. The shortage of grain and protein sources impacted the swine and dairy industries similarly. These challenges continue to lead to consolidation in the livestock sector. As livestock producers continue to become more specialized, they increasingly rely on experts for answers to their questions as their personal knowledge level increases.

What has been done
The KSRE Livestock Program Focus Team held a drought retreat that included key personnel in related disciplines. Key issues were identified and working groups were developed around the topics of forages, economics, water and measures of last resort. Materials were developed and train the trainer meetings held. Numerous producer meetings across the state focused on drought-related issues such as providing safe and economical rations and maintaining range condition. K-state Research and Extension personnel tested forage samples for nitrate and nutrient quality analysis. A five-year research project was established to monitor range recovery.

We continued to conduct research with alternative feed ingredients for swine, dairy, and beef cattle. Results of these research and extension projects were distributed to producers through livestock magazines, popular press, meetings, you tube videos and through one-on-one

consultation. Extension specialists and local agents also worked with producers to incorporate alternative ingredients and with ammoniation strategies.

Results

For the approximately 600 beef producers surveyed at drought mitigation meetings indicated that early weaning, development of a drought management plan, and changes in stocking rates were tools that they had gained from our efforts that would be applied to their operation. When asked to estimate the economic impact of the information that they gained, 44% of the producers indicated that their bottom line would improve by between $100 and $1,000. Another 29% of producers indicated that their return would improve by $1,000 to $5,000 with 10% of producers in attendance indicating that they would increase profit by over $5,000 due to implementing information gained at the meeting.

Producers made appropriate adjustments to feeding plans based on forage nitrate results (i.e., oat field not grazed, forage sorghum hay blended to safe level, sorghum stalks safe to graze). Toxic levels of nitrates were identified in 8% of forages tested and 6% were expected to cause abortions if not managed. As another example, a kit developed and available for check out in one Extension District enabled producers to improve the digestibility of over 1220 tons of low quality forage through ammoniation with an economic impact of $61,000. Several of these kits were used across the state.

A video produced on the process of ammoniation of low quality forage that was posted on YouTube has allowed more than 1,800 individual viewers to learn about ammoniation. They learned that using anhydrous ammonia to treat low quality roughages increased crude protein content and dry matter digestibility of the forage to greatly increase the feeding value. Of those surveyed, over 70% indicated that they would use ammoniation to help lower feed cost.

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
2013	2332

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
2,332 Kansas Farm Management Association members represent 3,047 families in 101 of the 105 counties in Kansas. Additional producers (non-KFMA members) have also been reached through delivery of radio interviews, news articles, the KFMA Newsletter and other meetings. This membership represents over $1.4 billion in value of farm production including over $197 million in value of livestock production. The total acreage involved in production by these operations is over 5 million acres. The net income represented by these farms after expense is over $352 million.

Results
Each of these KFMA members gained increased awareness of the financial performance of their farm operation and of Kansas agriculture. KFMA data was utilized for in class instruction of over 150 students in Department of Agricultural Economics coursed during 2013. KFMA data was utilized in numerous research and extension projects completed during 2013.

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
2013	6750000

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 and one new canola variety were 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
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Fertilizer is a primary input for crop production.
Optimum yields require an adequate, balanced supply of nutrients; however, excessive nutrient levels increase the risk of groundwater and surface water contamination. Adequate nutrient management is essential for economical and environmentally sound crop production.Applied research and extension programs on soil fertility and nutrient management help achieve optimum crop production while minimizing the potentially negative environmental effects.

What has been done
K-State Research and Extension offered soil fertility schools in multiple counties during 2012 and 2013. The programs focused on the cost effective and environmentally sound use of fertilizers and by-products for crop production. Demonstration plots provided comparisons of traditional practice versus the use of sensors and
slow-release nitrogen sources for improved nitrogen use efficiency. We distributed information through newsletter and magazine articles, publications, and press releases.

Results
Outcomes:
* Improved nutrient use efficiency by increase in yields while minimizing environmental impact.
* Increased number of producers implementing nutrient management plans.
* Increase in the number of producers and acres involved in soil-testing programs.

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)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	480

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Beef producers have been facing continually rising feed costs, an increasing number of byproducts, and access to more nutritional information about their ingredients. The continued drought during 2013 further increased the need for tools to lower feed cost and spread feed resources. The challenge is for producers to consolidate this information into decisions on how to use the feed ingredients and knowledge to implement practical feeding programs that they can use on their farms and ranches. Feed cost represents 50 to 80% of the cost of production for livestock producers. Thus, tools to lower feed cost while meeting nutritional requirements have been needed.

What has been done
In a partnership with Iowa State University, we made BRANDS, a beef ration formulation package, available to all extension agents in Kansas with a livestock interest. Trainings were conducted to increase agent comfort level in using this tool to help beef producers lower their feed cost with prudent, effective supplementation programs and forage management systems. Specialists and agents worked one-on-one with local producers to use this program to lower feed cost. Several veterinarians also adopted BRANDS as a tool in their clinics and provided services to beef producers to lower their feed costs.

Results
BRANDS has been used with beef producers to lower their feed costs and to examine alternative ingredients. Brands was used to demonstrate the value of ammoniation of forages to increase their feeding value. Several producers were able to incorporate ammoniated wheat straw or ammoniated corn stalks into their feeding program to save $1,600 to $23,000 on feed costs. Other producers incorporated wet DDGS. Brands allowed some producers to determine that selling a portion of their cows was required to spread their home-raised forages through the

winter feeding period due to the drought. Some producers learned that their mineral supplement needed to be altered to meet the requirements of their cows for increased reproductive performance. BRANDS has provided a tool for agents, specialists, and veterinarians to make a direct financial impact on the businesses of beef producers.

4. Associated Knowledge Areas

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

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)

Not Reporting on this Outcome Measure

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
2013	75791

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 includingnhorticultural "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
Nine hundred ten Extension Master Gardeners donated almost 76,000 hours in 2013. 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 over-fertilize 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 Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	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 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

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: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	58.0	0.0	19.0	0.0
Actual Paid Professional	57.0	0.0	19.0	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**
65297	0	565828	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
331704	0	4306	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
6228036	0	533596	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

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	700	0	300	0

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

Patent Applications Submitted

Year:	2013
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	1	1

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
2013	1

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
2013	1

Output #3

Output Measure

- Number of ServSafe certification workshops

Year	Actual
2013	23

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)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	52

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 workforce.

What has been done
The curriculum has been provided for educators to use.

Results
Curriculum results have been presented to the educators and researchers at the 2012 annual meeting of the National Center for Food Protection and Defense. Those results are being considered to structure for credit courses.
1. 25 students are enrolled In the Food Safety and Defense Graduate Certificate
2. 27 Interns are completing their internships

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 #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
2013	305

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. In 2013, our efforts resulted in over 300 contact hours of food safety education. In 2013, ServSafe® Food Safety Manager Classes reached more than 355 foodservice workers statewide. Also, 738 participants completed the ServSafe® Food Handler class. Twenty-eight percent of the participants in the ServSafe® Food Handler classes self-reported being Hispanic, Black/African American, or other minority group.

Results
These classes resulted in 305 foodservice employees receiving ServSafe® Food Protection Manager Certification. Participants indicated that they had increased knowledge and skills of best food safety practices. More than 90.5% of the participants in the ServSafe® Food Handlers classes indicated they plan to use what they learned at work and/or at home. Participants reported they intend to wash their hands, check food temperatures and use food thermometers more often, and to be more cautious of cross contamination and food left out at room temperature.

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
2013	127

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
In 2013, the Food Safety Manager Classes reached more than 355 foodservice workers statewide. K-State Extension also provides research based information to citizens via the Food Safety website. In 2013, the website had 9,698 page views. The most popular page was the ServSafe Food Safety page (944) followed by Food Safety for Boomers and Beyond (667) and the Food Safety Education publications page (502).

Results
This educational effort resulted in a reported 127 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
2013	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 shigatoxigenic E. coli (STEC). The control of those types of hazards is the goal.

What has been done
The electrostatic technology is being evaluated for industry use.
Ground beef systems have been "mapped" for E. coli and anthrax dispersion during processing.

Results
The electrostatic chamber at the Kansas State University Biosecurity Research Institute is available for use by industry and other researchers.

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
2013	25

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Understanding of the ecology of threats to food safety from microbial and chemical sources is a prerequisite to improvements in the industry and consumer education.

What has been done
Validation of technologies to control microbial hazards for direct use by industry or inclusion into process deviation models is a major focus.

Results
Twenty-five students are enrolled in Food Safety and Defense graduate certification.

4. Associated Knowledge Areas

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

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 the next 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. Eight interns are currently working with fulltime researchers with 22 to be added in the summer and fall 2013. The remaining internships (N=9) and externships will be 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: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	30.0	0.0	23.0	0.0
Actual Paid Professional	43.0	0.0	30.0	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**
883848	0	565828	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
2952796	0	4306134	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
1370230	0	533596	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.

2. Brief description of the target audience

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

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	13000	0	1700	0

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

Patent Applications Submitted

Year:	2013
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	16	18	34

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of educational programs delivered

Year	Actual
2013	399

Output #2

Output Measure

- Number participating in educational programs

Year	Actual
2013	11900

Output #3

Output Measure

- Number of refereed research publications

Year	Actual

2013 18

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

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
2013	103

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Restoring water quality requires a fundamental change in practices and behavior toward the land and water. Behavior change in agriculture with respect to improving water quality involves raising awareness of issues and problems, identifying options for action, securing technical and financial assistance, and implementing change.

What has been done
Four watersheds within the Little Arkansas River watershed were targeted for implementation of BMPs for atrazine herbicide in 2013. The watersheds selected were: Dry Turkey Creek (18,996 acres), Upper West Emma Creek (25,752 acres), Lower Sand Creek (29,652 acres), and the Black Kettle Creek (20,087 acres). Atrazine runoff vulnerable fields outside of the four targeted watersheds were also made eligible for incentive payments.

Results
One hundred-three farmers committed to implementing atrazine BMPs on 19,544 acres of corn and grain sorghum. This equates to 40% of the corn and grain sorghum acres planted in the targeted watersheds.

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
2013	19544

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 in 2013. The watersheds selected were: Dry Turkey Creek (18,996 acres), Upper West Emma Creek (25,752 acres), Lower Sand Creek (29,652 acres), and the Black Kettle Creek (20,087 acres). 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
One hundred three farmers committed to implementing atrazine BMPs on 19,544 acres of corn and grain sorghum. This equates to 40% of the corn and grain sorghum acres planted in the targeted watersheds. The City of Wichita provided $50,000 for incentive payments.

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
2013	81

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 in 2013. The watersheds selected were: Dry Turkey Creek (18,996 acres), Upper West Emma Creek (25,752 acres), Lower Sand Creek (29,652 acres), and the Black Kettle Creek (20,087 acres). 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
Atrazine BMP implementation was predicted to reduce atrazine runoff by 81% on 19,544 acres and a total load reduction of 1181.5 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

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

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Industry interested in our technology and findings through reading our publications.

What has been done
We did services for bioindustry such as biomass composition analysis, sweet sorghum composition analysis, and provided technical support. We did not directly create any new business but the results from our research can be adopted by industry.

Results
Research collaboration with industry.

4. Associated Knowledge Areas

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

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 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: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	56.0	0.0	5.0	0.0
Actual Paid Professional	56.0	0.0	5.0	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
34569	0	299556	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
175608	0	2279718	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
4506222	0	282492	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 educators received notice of eXtension seminars relevant to their education programming.

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	63000	0	21000	0

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

Patent Applications Submitted

Year:	2013
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	2	5	7

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of workshop series conducted

Year	Actual
2013	15

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 (measured by number of participants in Walk Kansas).

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
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done
School-based physical activity and nutrition initiatives can reach a large and diverse number of Kansas children. Kansas Schools participating in the National School Meals Program have implemented Local Wellness Policies focused on nutrition guidelines for food available to students in schools, nutrition education, and physical activity. KSRE was listed in the Kansas

Department of Education Wellness Model Guidelines as an approved provider of nutrition education for schools. Additionally, the national 4-H Healthy Living Mission Mandate seeks to engage youth and Program Focus Team Action Plan: Promote Healthy Eating and Physical Activity through opportunities that achieve physical, social and emotional well-being.

Results
By supporting health-related programs for adolescents, 4-H Healthy Living encourages all youth to adopt healthy eating and physical fitness habits.

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
2013	51

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The Family Nutrition Program (Kansas' name for the Supplemental

Nutrition Assistance Program Education) helps families and individuals improve the likelihood that those eligible for the Kansas Food Assistance Program (formerly known as Food Stamps) will make healthy
food choices within a limited budget, and choose physically active lifestyles consistent with the current Dietary Guidelines for Americans and MyPlate/MyPyramid.

What has been done
After completing a series of FNP lessons, Youth FNP participants were asked to select ways for eating more fruits and vegetables. Of the almost 3000 participants, 63.7% were able to correctly select all of the above (including eating an apple for dessert, making a banana smoothie, and using carrots and celery sticks for dipping) in the post-survey, a 7.2% increase in correct responses over the pre-survey.

Results
Participants also compared how often they eat meals that include a variety of foods before FNP lessons, to their intentions after the program. More than 50% participants reported intentions to increase the frequency with which they eat a variety of foods at each meal.

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
2013	97

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Poor dietary habits ? low intake of fruits and vegetables, increased portion sizes, or increased consumption of sweetened beverages ? have been linked to conditions such as obesity, diabetes, hypertension, stroke, heart disease, certain cancers, respiratory disorders, joint problems, and osteoporosis. Nutrition education is important for
the overall health of Kansans of all ages.

What has been done
Agents from K-State Research and Extension, along with Master Food Volunteers, provided educational programs and workshops using a variety of curricula. Programs included series such as Emotional Eating, Cook Once ? Eat for a Month, and Dining with Diabetes, as well as adult/ youth cooking activities. The programs focus on nutrition and cooking, providing participants with knowledge and skills to improve their health, reduce or manage chronic disease, and manage resources.

Results
Of the 516 participants who responded to survey questions at the end of a nutrition education program, 97% indicated they had gained knowledge for improving their health, eating healthfully, managing chronic diseases, and
managing food-related resources.

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 (measured by number of participants in Walk Kansas).

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	15709

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Healthy lifestyle choices such as being physically active, eating more healthfully, maintaining a healthy weight, and managing stress more effectively, can delay onset of chronic disease and even prevent it. Lifestyle habits also play a key role in managing symptoms of these diseases.

What has been done
K-State Research and Extension (KSRE) Family and Consumer Sciences professionals provided leadership in working with local partners (e.g., community task forces, agencies, service groups,schools, faith based groups, employers) to offer Walk Kansas in 2012. This program is an evidence-based model that is adapted each year to reflect current nutrition and physical activity 3guidelines and research findings.

Results
87% were more physically active as a result of the program, and 81% met activity goals; 69% were confident or completely confident they would continue this amount of activity during the next 6 months.
85% are more aware of healthy eating recommendations, and 76% increased fruit and vegetable consumption during the period.
71% were confident/completely confident they would continue this habit during the next 6 months.
61% drank more water every day, replacing beverages high in sugar.

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

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

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: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	160.0	0.0	9.0	0.0
Actual Paid Professional	160.0	0.0	9.0	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**
687050	0	349482	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
3270580	0	2659671	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
7786638	0	329574	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?

{No Data Entered}

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	22000	0	28000	0

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

Patent Applications Submitted

Year:	2013
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	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
2013	900

Output #2

Output Measure

- Number of program participants

Year	Actual
2013	68000

Output #3

Output Measure

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

Year	Actual
2013	1200

Output #4

Output Measure

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

Year	Actual
2013	66

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	(Measured by number of volunteers, faculty, and staff who 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])
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
2013	902

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 has 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 2013, PRIDE communities engaged in 902 collaborative partnerships at the local, regional, and state level. PRIDE communities reported that 311 of these collaborations 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
2013	56723

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
The implications of this community agency and capacity building are far reaching. PRIDE builds social networks, strengthens public voice, aids community collective decision-making, and provides a broader network of citizen access to community resources and power. Communication networks and levels of community trust and involvement are strengthened.

Results
In 2013, PRIDE communities reported 56,723 hours of volunteerism. This conservatively calculates to a dollar value of more than $1,146,500. Kansas PRIDE communities reported raising $901,000 for reinvestments in their communities during 2013.

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

(Measured by number of volunteers, faculty, and staff who 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])

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Society cares that young people are prepared for life's demands and sustained membership in the workforce. When the strengths of youth are aligned across adolescence with family, school, and community resources, positive youth development will occur. These resources include those provided by community-based, out-of-school time youth development programs, such as 4-H, Boys & Girls Clubs, Big Brothers/Big Sisters, YMCA, and scouting. Positive youth development is operationalized by the Five Cs of competence, confidence, character, connection, and caring, leading to youth contributions, the ?sixth C? of PYD (Bowers et al., 2010; Jelicic et al., 2007; Lerner et al., 2005; Phelps et al., 2009). 4-H volunteers, faculty, and staff require mastery of the 5Cs in order to optimize the youth whom they mentor during the 4-H experience.

What has been done
All new faculty and staff, beginning in 1999, have participated as part of their New Employee Program to Kansas State University Research and Extension in, "Induction Orientation to 4-H" and "Basic 4-H Operations." Both of these trainings include instruction on the background and practice of "Positive Youth Development."

All 1490 new volunteers were required to receive a basic 2 hour Orientation to Kansas 4-H Youth Development as part of their registration, screening and acceptance as a 4-H volunteer. The Orientation may be held face-to-face but is also available on-line.

The Recruitment, Screening, Selection Orientation and Placement components of 4-H volunteer development were intentionally reviewed in 2013. In particular, 4-H background Screening and Selection policy and procedures were brought up to the ?Elements of Effective Practice? as established by MENTOR: National Mentoring Partnership.

Various Kansas 4-H Action Teams held specific trainings for project leaders including shooting sports, family and consumer sciences, photography, geology, plant science, SpaceTech, robotics, food science, horticulture and gardening and foods and nutrition.

Results

The consistently greater levels of contribution by 4-H youth and, as well, the consistency in regard to indicators of healthy living (e.g., healthier habits), educational outcomes (e.g., school engagement), and STEM (e.g., participation and interest in science, engineering and technology) constitute compelling evidence for arguing that 4-H youth are thriving across substantial portions of their adolescence. These indicators of positive and healthy development provide assets for 4-H youth as they enter their adult years. Caring adult mentors are the extraordinary role models, outside of the family who help establish a trajectory toward success in the home, community and world.

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
2013	77486

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The Emergence of the Positive Youth Development (PYD) Perspective

This frame of reference shifted in the early 1990s as growing numbers of researchers viewed adolescence through the lens of systems theories that look at development throughout the life span as a product of relations between individuals and their world (Lerner, 2005). One key aspect

of this new focus was plasticity: the potential that individuals have for systematic change across life. This potential is critically important, for it tells us that adolescents? trajectories of development are not fixed, and can be significantly influenced by factors in their homes, schools, and communities (Lerner, 2006). Despite the seemingly manifold problems seen during adolescence?drug and alcohol use and abuse, unsafe sex and pregnancy, school failure and dropping-out, crime and delinquency, depression, and self-destructive behaviors?most young people do not have a stormy adolescence (Lerner, 2005). Similarly, while teenagers spend much more time with their peers than with their parents and may sometimes for the first time, openly challenge their parents? actions and beliefs, they value their relationships with their parents tremendously. They also tend to incorporate their
parents? core values in such areas as social justice, spirituality, and the importance of education into their own values. Indeed, most adolescents select friends in part because they share these core values and similar perceptions of the world. Integrating the theoretical ideas about the plasticity of adolescent development and the practical findings about the multiple pathways children take through adolescence led to the framework now known as PYD, which views young people as resources to be developed rather than as problems to be managed (Damon, 2004; Larson, 2000; Lerner, 2005).

What has been done

Results
Research Shows 4-H Helps Young People Excel Beyond Their Peers
Youth involved in 4-H programs excel in several areas. 4-H'ers are about:
*Four times more likely to make contributions to their communities (Grades 7-12);
*Two times more likely to be involved in civic activities (Grades 8-12);
*Two times more likely to make healthier choices (Grade 7);
*Two times more likely to participate in Science, Engineering and Computer Technology programs during out-of-school time (Grades 10 ? 12); and *4-H girls are two times more likely (Grade 10) and nearly three times more likely (Grade 12) to take part in science programs compared to girls in other out-of-school time activities.

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

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Sustainable Energy

☐ Reporting on this Program

Reason for not reporting

Because we are no longer required to maintain Sustainable Energy as a separate planned program, we are reporting these efforts/outcomes in the Natural Resources and Environment planned program.

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	7.0	0.0	4.0	0.0
Actual Paid Professional	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
Actual Volunteer	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 Matching	1890 Matching	1862 Matching	1890 Matching
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 All Other	1890 All Other	1862 All Other	1890 All Other
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

V(D). Planned Program (Activity)

1. Brief description of the Activity

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

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

2. Brief description of the target audience

• 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.

3. How was eXtension used?

{No Data Entered}

V(E). Planned Program (Outputs)

1. Standard output measures

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

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

Patent Applications Submitted

Year: 2013
Actual: {No Data Entered}

Patents listed
{No Data Entered}

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	8	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of presentations at national and international conferences.

Year	Actual
2013	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Improve utilization of biological raw materials as bioconversion substrates (measured by number of new processes developed).
2	An enhanced or improved economy as a result of bioenergy development (measured by number of new bio-based businesses created)
3	Improved environmental conditions through sustainable biofuel production and utilization (measured by: gallons biofuel; gallons of cellulosic ethanol; gallons of biodiesel . . . produced in KS)
4	Improved environmental conditions through sustainable biofuel production and utilization (measured by: PPM OF CO2 in atmosphere; water quality; average temperature during year)

Outcome #1

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
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #2

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #3

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)

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual

2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #4

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)

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

V(H). Planned Program (External Factors)

External factors which affected outcomes

- 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

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 7

1. Name of the Planned Program

Climate Change

☐ Reporting on this Program

Reason for not reporting

Because we are no longer required to maintain Climate Change as a separate planned program, we are reporting these efforts/outcomes in the Natural Resources and Environment planned program.

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	6.0	0.0	3.0	0.0
Actual Paid Professional	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
Actual Volunteer	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 Matching	1890 Matching	1862 Matching	1890 Matching
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 All Other	1890 All Other	1862 All Other	1890 All Other
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

V(D). Planned Program (Activity)

1. Brief description of the Activity

- 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

Primarily, we will choose audiences whose production systems will be influenced by climate change, as well as those who consult or influence the decision-makers of these 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?

{No Data Entered}

V(E). Planned Program (Outputs)

1. Standard output measures

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

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

Patent Applications Submitted

Year: 2013

Actual: {No Data Entered}

Patents listed

{No Data Entered}

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	6	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

● Number of workshops, web-based curricula, and field days/tours related to climate change.

Year	Actual
2013	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	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)
2	Development of new knowledge and technologies (Measured by percentage of participants who increase knowledge of management practices under climate variability and change)
3	Improve climate mitigation strategies and their adoption (Measured by number of farms and landowners reducing carbon and energy footprints)

Outcome #1

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)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #2

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #3

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

{No Data Entered}

Key Items of Evaluation

{No Data Entered}