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

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I. Report Overview

1. Executive Summary

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. For example, the Kansas Center for Agricultural Resources and the Environment maintains great working partnerships with local producers and landowners in working towards protection of surface water resources. Some partners in that initiative include the Kansas Forest Service, Kansas Department of Health and Environment, and Kansas Water Office. Through such partnerships, all parties seek ways to achieve the common goals of the overall initiative. At the same time, the Kansas Center for Agricultural Resources and the Environment facilitates bringing together collaborative teams to address important research questions and participates in seeking federal grants to achieve outcomes ultimately important to K-State Research and Extension clientele. Our faculty and staff consistently look for more and better ways to reach out to Kansas' increasingly diverse population through youth programs targeted to military families, nutrition education for families on limited budgets, and workforce development in the livestock industry. In addition to traditional one-on-one methods of communication, they 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 theBiosecurity Research Institute, and infrastructure development for the National Bio and Agro-Defense Facility is in progress. A Feed Technology Innovation Center should be completed and operational in time for the fall 2013 semester. The Center is a joint effort between the departments of Grain Science and Animal Sciences and Industry. The new facility will replace the feed-production capability provided by the current feed mill and will significantly enhance the research capacity of both departments.

The land-grant university system has a three-part mission of teaching, research, and extension that we refer to as learning, discovery, and engagement. To accomplish our mission, we must achieve a private and a public good from all our endeavors. 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.

K-State Research and Extension is reaching out in new ways to new audiences, while still serving our traditional clientele. Here are a few examples:

The PRIDE community development program has been in existence since 1970. PRIDE is not an acronym, but the name of the community improvement program that functions in cooperation with the Kansas Department of Commerce with shared staff and financial support. PRIDE provides structure and guidance to organize and connect with all the resources of a community in planning, development, and actions. In 2012, PRIDE communities engaged in 576 collaborative partnerships at the local, regional, and state level. PRIDE communities reported that 93 of these collaborations engaged youths. In 2012, PRIDE communities reported 94,833 hours of volunteerism. This conservatively calculates to a dollar value of more than $2,066,411. Kansas PRIDE communities reported raising $474,271.95 for reinvestments in their communities during 2012.

Kansas State University has rapidly become noted as a military friendly university and K-State Research and Extension plays a key role. During fall 2011 and winter 2012, faculty and staff from K-State Research and Extension and other K-State colleges and offices carried out Extension, Civilian, and Female Engagement Team training for the top leaders of the 1st Infantry Division Headquarters and the 4th Infantry Brigade Combat Team 4th Infantry Division.

The demographics of Kansas have changed and will continue to change. K-State Research and Extension is reaching out to both underserved and traditional audiences through new venues. Educational programming is having an impact on new immigrants by helping them to assimilate into local communities, find the resources of their cultural interest, and understand how cultures differ in the community. Fourteen percent of the participants in the ServSafe Food Handler classes self-reported being Hispanic, Black/African American, or other minority group. An emerging and growing effort within K-State Research and Extension is a summer research program specifically targeting under-represented populations of students to establish networking relationships back to their respective home institutions. 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. This program places these students in a laboratory or field setting with a K-State Research and Extension scientist to work on a very 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.

Another example of the work of our Centers and reaching out to underserved is in the recognition that Kansas is a top crop and livestock producer, yet many in the state have difficulty accessing food. The issue affects urban and rural residents and impacts quality of life, community health, and the local economy. The University's Center for Engagement and Community Development was the primary organizer for a series of grocery conferences, the most recent, "Strengthening Our Stores, Strengthening Our Communities." Conference goals included sharing ideas, identifying resources, and encouraging dialog among communities seeking access to food. Here are a few results:

• After losing its grocery store three years ago, Minneola residents organized a community corporation and sold shares ($50 each) to raise $200,000 to reopen a grocery store. The low share price allowed residents to take pride in ownership, and more than 200 volunteers helped renovate the building before the Home Town Market opened March 7, 2012.

• In Wyandotte County, a virtual store is poised to improve access to food for low-income residents without the transportation they need to the nearest grocery store five miles away. Grant funds allowed K-State to hire a community organizer and advocate whom then partnered with a local grocer and negotiated discounted fees for online purchase and delivery. The goal of the pilot is to prove to prospective store developers that there is a need for nutritious food in the community.

• Residents in Plains have been without a grocery store for a decade. Now they are moving forward to improve access to food, provide nutrition education, and facilitate aging in place. Inspiration for the idea came from K-State's 2010 grocery conference, and a session on establishing a community foundation to reopen a grocery store. Plains' representatives followed up by forming the Community Enhancement Foundation of Plains and identifying their first project as an "Access to Food and Nutrition Education Center." They also applied for Internal Revenue Service status as a 501(c)(3) corporation, which was granted in January 2012.

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.

The extreme heat and drought of 2011 and 2012 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 for the next 12 years 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: 2012	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 2012.

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 2012.

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 2012.

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 2012.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
5447211	0	4311907	0

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	3733452	0	3699155	0
Actual Matching	14391288	0	32867619	0
Actual All Other	23401576	0	4889757	0
Total Actual Expended	41526316	0	41456531	0

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous				
Carryover	2040000	0	2862093	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: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	118.0	0.0	194.0	0.0
Actual Paid Professional	98.0	0.0	161.0	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**
1444395	0	2238290	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
5402181	0	19894239	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
2483832	0	2959542	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.

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	28000	0	1250	0

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

Patent Applications Submitted

Year:	2012
Actual:	7

Patents listed
Quantum Method for Trait Selection and Reverse Propagation of Extraordinary Sire Lines in Food Animal Production Systems; Method and Composition for Increasing the Proportion of Dietary Ingredients that are Resistant to Degradation by Ruminal Microorganisms; Canola Line - Griffin; Yogurt Spread; Chemotherapy for Cancer by Angiotensin II Type 2 Receptor Agonist; Vaccine Adjuvant; Neutrophils as Delivery Cells for Imaging and Therapy of Cancer and Infectious Disease

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	15	50	65

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of individuals participating in programs

Year	Actual
2012	18000

Output #2

Output Measure

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

Year	Actual
2012	1

Output #3

Output Measure

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

Year	Actual
2012	634

Output #4

Output Measure

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

Year	Actual
2012	3198

Output #5

Output Measure

- Number of presentations at national and international conferences

Year	Actual
2012	220

Output #6

Output Measure

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

Year	Actual
2012	300

Output #7

Output Measure

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

Year	Actual
2012	28

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	Number of crop acres using soil testing as a basis for nutrient applications
5	Improvement of Kansas ground and surface water with respect to nutrient loads (Measured by percent of producers demonstrating improvement)
6	Number of soil samples evaluated on Kansas crop acreage
7	Hours and activities reported annually by Master Gardener volunteers
8	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)
9	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)
10	Increase food variety and value by developing new and enhanced food products (measured by number of new products developed)
11	Improve access to high quality food, especially for consumers with limited resources (measured by improvement in food budgeting)

Outcome #1

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	520

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. Unfortunately, a major drought compounded problems in 2012. Cow-calf producers faced hay and pasture shortages due to lack of crop growth. Supplementation and hay costs increased due to short supply. Feed yards faced increased cattle purchase cost due to short supplies and losses. In this sector grew because of elevated corn and other supplement costs. Much of the work done by our beef team focused on drought mitigation strategies for various participants in the beef sector. 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
Drought mitigation steps taken by our beef group ranged from applied research on effectiveness of reduced application rates of anhydrous ammonia in the treatment of low quality forages to warnings about blue-green algae and nitrate toxicity to individual client consultations on drought plan development and implementation. Our teams diverse discipline expertise and experiences provided an exceptional resource base for citizens of Kansas as the work through the ongoing consequences of prolonged drought. 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
More than 1,500 producers attended more than 36 beef meetings held by K-State Research and Extension professionals to update beef producers on the latest information to help improve the profitability and sustainability of their operations. Producers indicated they learned timely management and production technique information from these meetings and from other newsletters (Beef Tips,Focus on Feedlots,News from ASI, and Veterinary Quarterly). More than 84% of producers surveyed indicated that they will likely make changes to their operation based on the information that they received at the meetings. When asked to estimate the economic impact of the information that they gained, 32% of the producers indicated that their bottom line would improve by between $100 and $1,000. Another 18% of producers indicated that their return would improve by $1,000 to $5,000 with 7% of producers in attendance indicating that they would increase profit by over $5,000 due to implementing information gained at the meeting.

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
2012	3118

3c. Qualitative Outcome or Impact Statement

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

What has been done

The goal of the KFMA program is to provide each member with farm business and family financial information for improved farm business organization and decision making so that Kansas farms can minimize risk while they increase sustainability and profitability. Making the information available publicly can help to accomplish the same for many involved in agriculture in Kansas and around the country in addition to the KFMA membership. Activities in 2012 included: 7,950 face to face meetings with 3,118 producers; 54 presentations to 1,330 individuals; 2,435 farm business analyses; 3,580 individual crop and livestock enterprise analyses; 10 radio interviews; numerous newsletter and newspaper articles; presentation to over 250 students in classes at KSU; a large number of hits to the KFMA Newsletter on website; and more than 80 cash flow analyses with FinPack.

Results

Through one-on-one consultations 3,118 Kansas producers have increased awareness of their current financial position and their financial performance during the past year. Of these producers 2,435 are able to benchmark their performance against other farms in their region, farms of similar type, as well as the most economically profitable farms. This allows these producers to identify strengths and weakness in their operation and to take action to build on the strengths, and address the weaknesses, vastly increasing the operation?s sustainability and profitability for the future. Through enterprise analysis these operations have also identified those enterprises that are the most profitable and they clearly understand their cost of production for each enterprise allowing them the opportunity to make informed marketing decisions when selling the products they have produced. Additionally, more than 80 producers in poor financial condition, or with family conflict, gained an improved understanding of how to address their situation in a sustainable manner.

4. Associated Knowledge Areas

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

Outcome #3

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	6500000

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 was released in the past year called "1863." 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

Number of crop acres using soil testing as a basis for nutrient applications

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	3300000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Fertilizer represents a significant portion of the input dollars spent by Kansas farmers. Too little applied, especially N, P and K, can reduce yields, while too much applied can lead to potential enrichment of surface and ground water with nutrients. Soil testing is a valuable tool for optimizing fertilizer applications.

What has been done
A number of field experiments were conducted to evaluate ways to enhance the response from N fertilizer applied to corn, sorghum and wheat. This included method and time of application and specific additives designed to reduce N loss.

Results
The results from this applied research showed that how and when N fertilizers are applied was critical for good N performance when conditions conducive to loss were present. However, where these practices or products performed was influenced by soil, rainfall quantity and intensity, and cropping system. Publications are under development to help Kansas' farmers better understand where and when these conditions are likely to occur.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems

Outcome #5

1. Outcome Measures

Improvement of Kansas ground and surface water with respect to nutrient loads (Measured by percent of producers demonstrating improvement)

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

Number of soil samples evaluated on Kansas crop acreage

Not Reporting on this Outcome Measure

Outcome #7

1. Outcome Measures

Hours and activities reported annually by Master Gardener volunteers

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	94136

3c. Qualitative Outcome or Impact Statement

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

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

Results
Extension Master Gardeners donated more than 94,000 hours with a value over $1.75 million in 2012. Though most Kansas EMG groups only require 40 hours of volunteer time the year of training and less for every year thereafter, our EMGs averaged more than 80 hours of volunteer time during 2012. This 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

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
2012	450

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 drought during the past year 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 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 for ages to increase their feeding value. Several producers were able to incorporate ammoniated wheat straw or

ammoniated corn stalks into their feeding program to save $1,300 to 15,000 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 #9

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	3198

3c. Qualitative Outcome or Impact Statement

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

What has been done
This improved sustainability was achieved through providing producers reliable and accurate information on which to base decisions, along with the necessary education, tools, training and

assistance in keeping good records and the appropriate methods to analyze and use those records to acquire the needed knowledge to make the best decisions possible in each situation.

Results
Through one-on-one consultations 3,198 Kansas producers have improved sustainability for the future due to their involvement with the KFMA and Farm Analyst programs during the past year. Of these producers 2,435 are able to benchmark their performance against other farms in their region; farms of similar type; as well as, the most economically profitable farms. This allows these producers to identify strengths and weakness in their operation and to take action to build on the strengths, and address the weaknesses, vastly increasing the operation?s sustainability and profitability for the future. Through enterprise analysis these operations have also identified those enterprises that are the most profitable and they clearly understand their cost of production for each enterprise allowing them the opportunity to make informed marketing decisions when selling the products they have produced. This greatly increases the sustainability of each of these operations. Additionally, more than 80 producers in poor financial condition, or with family conflict, gained an improved understanding of how to address their situation in a sustainable manner.

4. Associated Knowledge Areas

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

Outcome #10

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
2012	3

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Celiac disease is a digestive disease triggered by eating gluten, which is found in wheat, barley and rye. Research at Kansas State University could give consumers with celiac disease more food product choices and expand the sorghum market for Kansas farmers. In the United States, Kansas is usually the largest producer of sorghum. In the U.S., sorghum was mostly used for feed, but with the growth in the gluten-free market and the availability of food sorghum, we have

now started seeing a lot more sorghum used in these types of formulations.

What has been done
Researchers started from the bottom up by figuring out which of six varieties grown in Kansas would work the best in a tortilla. They studied the grain hardness, the amount of protein, carbohydrates and fiber, the quality of the dough it made, as well as how well the tortilla stretched and rolled and how good it tasted and looked. From that first piece of research, we realized there is a lot more to be done at the milling stage of this, because it turns out that the particle size during milling will affect the properties of the sorghum flour. They also took it one step further and evaluated the gluten-free products' glycemic index in comparison to other grains like wheat, corn, and rice. We discovered there possibly could be a specific particle size of sorghum flour that will have the best affect on the glycemic index; it could provide a lower glycemic index compared to other grains.

Results
With help from the grain and science industry department at K-State, as well as a U.S. Department of Agriculture laboratory in Manhattan, the researchers have developed several products, including tortillas, breads, Belgian waffles and waffle cones. This research benefits Kansas farmers by providing more use of their sorghum and also helps gluten-free consumers. We have developed three basic ones based on sorghum and one flavored version of each: Bread loaf, cinnamon/orange bread loaf; Dinner rolls, honey/sunflower seed dinner rolls; soft pretzels, mustard flavored soft pretzels. We also helped some businesses improve their gluten-free products but they had done the development part.

4. Associated Knowledge Areas

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

Outcome #11

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	88

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Since 2008, difficult economic conditions have pushed increasing numbers of Kansas families into the ranks of the food insecure. Family budgets have been squeezed by high unemployment rates and loss of earning power, and many families have been forced to turn to government and private assistance programs for the first time in their lives. Kansas rates of hunger and food insecurity during 2008 and 2009 were the highest levels recorded since data collection began. By one estimate, economic costs related to hunger and food insecurity in Kansas exceeded $1.6 billion in 2010. Food insecurity is about more than just access to enough food ? it is also about the quality of the diets of food-insecure families.

What has been done
More than just the knowledge of what foods comprise a healthful diet, through EFNEP and FNP, participants learn how to manage their food budget, safely prepare and store foods, and fix a variety of healthy meals and snacks for themselves and their families.

Results
EFNEP participants completing the multi-lesson series improved nutrition, food behavior and food safety practices. As a result of participation in EFNEP:
*71% used food labels more often to make food choices
*88% showed improvement in one or more food resource management (i.e., planning meals, comparing prices, using a grocery list)
*91% showed improvement in one or more nutrition practices (i.e., makes healthy food choices, prepares foods without adding salt, reads nutrition labels or has children eat breakfast)
? 50% increased their physical activity through participation in EFNEP

4. Associated Knowledge Areas

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

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

The 2011-2012 program year was marked by expanding drought conditions throughout Kansas. The ongoing drought caused significant disruption across the beef value chain through increased production costs. Cow-calf producers faced hay and pasture shortages due to lack of crop growth. Supplementation and hay costs increased due to short supplies. Feed yards faced increased cattle purchase costs due to short supplies and losses in this sector grew because of elevated corn and other supplement costs. Much of the work done by the livestock production (beef) team focused on drought mitigation strategies for various participants in the beef sector. These efforts ranged from applied research on effectiveness of reduced application rates of anhydrous ammonia in the treatment of low quality forages to warnings about blue-green algae and nitrate toxicity to individual client consultations on drought plan development and implementation. Our teams diverse discipline expertise and experiences provided an exceptional resource base for citizens of Kansas as the work through the ongoing consequences of prolonged drought.

These same issues affect crop producers leaving them wondering whether to plant seed into parched soil, hoping the rain will come, and whether it's cost effective to control weeds, given a sparse crop.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

EVALUATION 1
MANAGING SOIL NUTRIENTS AND FERTILITY

Please rate your reaction in this session. Your honest responses are valued. Your responses will be used to assist the instructor(s) to make improvements in the design of this course.

1. My awareness of soil fertility and nutrient management for yield optimization in Kansas
Before Participation
Low=1.....2.....3.....4.....5=High
Now, After Participation Low=1.....2.....

3.....4.....5=High

2. My understanding of soil fertility**.**
Before Participation
Low=1.....2.....3.....4.....5=High
Now, After Participation
Low=1.....2.....3.....4.....5=High

3. My knowledge of nutrient recommendations and soil testing.
Before Participation
Low=1.....2.....3.....4.....5=High
Now, After Participation
Low=1.....2.....3.....4.....5=High

4. My awareness of data supporting nutrient recommendations.
Before Participation
Low=1.....2.....3.....4.....5=High
Now, After Participation
Low=1.....2.....3.....4.....5=High

5. My skill level of soil test interpretations.
Before Participation
Low=1.....2.....3.....4.....5=High
Now, After Participation
Low=1.....2.....3.....4.....5=High

5. My skill level of soil test interpretations.
Before Participation Low=1.....2.....3.....4.....5=High
Now, After Participation Low=1.....2.....3.....4.....5=High

Key Items of Evaluation

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

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: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	56.0	0.0	12.0	0.0
Actual Paid Professional	60.0	0.0	17.0	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**
128262	0	236521	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
550074	0	2100452	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
6205728	0	312511	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

2012	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: 2012

Actual: 1

Patents listed

A Nanoparticle Catalyst Capable of Forming Aromatic Hydrocarbons from CO2/H2

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	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
2012	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
2012	1

Output #3

Output Measure

- Number of ServSafe certification workshops

Year	Actual
2012	18

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
2012	138

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. One article has been published outlining the results of an expert focus and what should be included in a food safety protection and defense curriculum.

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.

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
2012	394

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The U.S. Centers for Disease Control and Prevention 2011 estimates that in the U.S. roughly one in six Americans (or 48 million people) get sick, 128,000 are hospitalized and 3,000 die of foodborne illness each year.

What has been done
In 2012, ServSafe Food Safety Manager Classes reached over 433 foodservice workers statewide with 394 receiving certification. Another 708 participants completed the ServSafe Starter Food Handler class. Our efforts resulted in more than 290 contact hours of food safety education. Fourteen percent of the participants in the ServSafe Food Handler classes self-reported being Hispanic, Black/African American, or other minority group.

Results
Participants indicated that they had increased knowledge and skills of best food safety practices. More than 91.5% of the participants 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
2012	202

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The U.S. Centers for Disease Control and Prevention 2011 estimates that in the U.S. roughly one in six Americans (or 48 million people) get sick, 128,000 are hospitalized, and 3,000 die of foodborne illness each year.

What has been done
In 2012, ServSafe Food Safety Manager Classes reached over 433 foodservice workers statewide. K-State Extension also provides research-based information to citizens via the Food Safety website. In 2012, the website had 3,572 visitors. The most popular page was the Food Safety ServSafe site.
www.ksre.ksu.edu/FoodSafety/p.aspx?tabid=16 The second most popular page was Food Safety for Boomers and Beyond.
www.ksre.ksu.edu/FoodSafety/p.aspx?tabid=52

Results
This educational effort also resulted in 202 Kansas food operations, volunteer/community organizations, schools, nursing homes, assisted living facilities or day care centers having staff that 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
2012	1

3c. Qualitative Outcome or Impact Statement

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

What has been done
The technique of electrostatic application of antimicrobial solutions to carcasses has been refined and is being evaluated for industry use.

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)

Not Reporting on this Outcome Measure

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.

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

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	14%		8%	
111	Conservation and Efficient Use of Water	18%		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: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	30.0	0.0	23.0	0.0
Actual Paid Professional	55.0	0.0	74.0	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**
1347705	0	1029562	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
4751325	0	9143144	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
1355340	0	1360342	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

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

• Quantify the environmental and economic effectiveness of best management practices for improving water quality at the watershed level.
• Disseminate science-based information through environmental education programs for both youth and adults, and deliver extension programs aimed at stakeholders that focuses on adoption of best management practices in targeted areas for water quality improvement.
• Develop and test new crop, livestock, bioenergy, and riparian forest systems that will reduce water use while optimizing productivity, environmental quality, and profitability, including water saving technologies for concentrated animal feeding operations (CAFOs) and industries that process agricultural commodities.
• Develop an information and education program for policy makers, producers, water professionals, and youth audiences with respect to the Ogallala Aquifer, including assessment of the potential impacts of climate change on this important water resource.
• Develop an understanding of air quality impacts of rangeland burning, including extent and timing of burn events, influence of fuel load on emissions, modeling the downwind transport of particulate matter, and developing a climatology of extreme events.
• Disseminate science-based information and transfer technologies to stakeholders, and implement youth education programs focused on air quality.
• Disseminate science-based information regarding the sustainability of biofuel production and processing.

• Develop new processes to modify agricultural-based materials into higher value products.
• Develop resources and pathways to increase climate literacy.
• Provide decision tools for adaptive best management practices that address the effects of climate change.

2. Brief description of the target audience

Agricultural producers, youths, policymakers/regulators, crop and livestock consultants. Growing industry based on bioprocessing and bioconversion, including the existing ethanol and biofuels industry. International grain processors; industrial products manufacturers: adhesives, composites, bio-based chemicals, solvents, and lubricants. Entrepreneurs and investors seeking to enter this industry.

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?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	12182	0	1600	0

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

Patent Applications Submitted

Year:	2012
Actual:	5

Patents listed

Peptide-Albumin Hydrogel; Starch Spherulites with Controlled Enzyme Digestibility; Processes for Production of Low-fat and Low-ash Sorghum Flour; Soy Protein Based Elastomers; Yogurt Spread

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	16	29	45

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of educational programs delivered

Year	Actual
2012	423

Output #2

Output Measure

- Number participating in educational programs

Year	Actual
2012	12182

Output #3

Output Measure

- Number of refereed research publications

Year	Actual
2012	16

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)
5	Improve utilization of biological raw materials as bioconversion substrates (measured by number of new processes developed).
6	Improved environmental conditions through sustainable biofuel production and utilization (measured by: PPM of CO2 in atmosphere, water quality, average temperature during year; gallons biofuel, gallons of celluslosic ethanol, gallons of biodiesel. . . produced in KS).
7	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 number documented)
8	Development of new knowledge and technologies (measured by percentage of participants who increase knowledge of management practices under climate variability and change).
9	Improve climate mitigation strategies and their adoption (measured by number of farms and landowners reducing carbon and energy footprints)

Outcome #1

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	63

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
Best Management Practices (BMPs) were delivered through 423 events (i.e., workshops, demonstrations, and tours; field days; and public meetings to face-to-face contacts). In addition, onfarm environmental assessments and plans were developed.

Results
BMPs such as adding grass buffers, reducing livestock numbers, adding waste storage facilities, controlling extraneous drainage, and alternative water sites for water quality issues were implemented by more than 63 individual producers involving about 9,488 animal units.

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)

Not Reporting on this Outcome Measure

Outcome #3

1. **Outcome Measures**

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

Not Reporting on this Outcome Measure

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
2012	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

Outcome #5

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
2012	3

3c. Qualitative Outcome or Impact Statement

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

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

Results

Our mean results include: (1) further confirmation that waxy sorghum is an excellent feedstock for bioethanol production with low energy input; (2) developed a new method to increased biofuel yield from photoperiod sensitive sorghum through utilizing both soluble sugars and cellulose; (3) identified the effects of biomass pelleting on composition change and biofuel yield; (4) improved the performance of acid-functionalized nanoparticles for biomass pretreatment and hydrolysis; and 5 evaluated the potential of big bluestem for biofuel production. As research results, we published 16 peer reviewed papers and presented 13 meeting papers.

4. Associated Knowledge Areas

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

Outcome #6

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; gallons biofuel, gallons of celluslosic ethanol, gallons of biodiesel. . . produced in KS).

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Effect of deficit irrigation on grain quality, yield and biofuel yield. Farmers care about their water uses and how reduced water resource affects agricultural yield.

What has been done
We find the effect on water availability on grain yield, quality, and end product yield.

Results
Shared results with radio talk about availability on grain yield, quality, and end product yield through K-State extension radio.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
205	Plant Management Systems
603	Market Economics
605	Natural Resource and Environmental Economics

Outcome #7

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 number documented)

Not Reporting on this Outcome Measure

Outcome #8

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
2012	6

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
There is need to adequately clarify and explain significant relationships between agricultural producer knowledge of climate variability; producer perceptions of short-term vulnerability and long-term resilience to risks associated with climate change; and factors considered when deciding to adopt or refrain from adoption of best management practices.

What has been done

This survey has been taken by a small purposive sample of the population, six agricultural producers. This group will serve as a small pilot test for the instrument in order to improve the survey so that a larger group can take it in the next year of this project. Additionally, initial meetings took place to determine what current communication efforts were being used by K-State Research and Extension related to climate change risk and personal responsibility.

Results
This survey will provide baseline data about what agricultural producers perceive as risks related to climate change.

4. Associated Knowledge Areas

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

Outcome #9

1. Outcome Measures

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

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

This area continues to be quite volatile with policy changes and incentive programs affecting economics of target processes. This proves to be challenging to stay focused on the fundamental scientific issues that are the basis for solving problems independent of policy changes.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

One example of an evaluation tool:
EVALUATION 2
MANAGING SOIL NUTRIENTS AND FERTILITY

Please rate your learning in this session. Your honest responses are valued. Your responses will be used to assist the instructor(s) to make improvements in the design of this course. Please circle the number to indicate your response.

1. Overall, how much did you learn from this program?

   Nothing=1.....2.....3.....4.....5=Alot

2. My ability to develop environmentally responsible nutrient management plans.

   Before Participation
   Low=1.....2.....3.....4.....5=High
   Now, After Participation
   Low=1.....2.....3.....4.....5=High

3. List one action you intend to take as a result of this program.

4. List one behavior you intend to change as a result of information learned in this session:

5. What was the most important thing you learned in this session?

6. Please list more in-depth topics you would like more information about.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Childhood Obesity, Healthy Eating and Physical Activity through the Lifespan

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
702	Requirements and Function of Nutrients and Other Food Components	5%		35%	
703	Nutrition Education and Behavior	70%		55%	
724	Healthy Lifestyle	20%		0%	
802	Human Development and Family Well-Being	5%		10%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	56.0	0.0	5.0	0.0
Actual Paid Professional	49.0	0.0	4.0	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
34182	0	55652	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
169452	0	494224	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
5813544	0	73532	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Concern about childhood obesity, making healthy food choices and increasing physical activity, and ensuring an abundant food supply continues to guide K-State Research and Extension (KSRE) to develop educational programs that: Improve access to high quality foods (including local foods), especially for consumers with limited resources; and promote healthy eating in children, youth, and adults, with a focus on childhood obesity.

2. Brief description of the target audience

* Obese children; * 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 were made aware of eXtension seminars relevant to their educational programs.

V(E). Planned Program (Outputs)

1. Standard output measures

2012	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:	2012
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	1	5	6

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of extension agents involved in school wellness committees
  Not reporting on this Output for this Annual Report

Output #2

Output Measure

- Number of workshop series conducted

Year	Actual
2012	16

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

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

Outcome #1

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	50

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The 2003 National Survey of Childrens Health found that 16% of Kansas children were overweight and 14% of Kansas children were obese. Kansas data have shown an increase in the percentage of children who are overweight or obese. In the past three decades, childhood obesity rates have increased from 5.0 percent to 13.9 percent for children ages 2 to 5; 6.5 percent to 18.8 percent for children 6 to 11; and 5.0 percent to 17.4 percent for youth ages 12 to 19 (Centers for Disease Control and Prevention). Kansas children living in poverty (15.2%) are more likely to be overweight or obese.

What has been done
In EFNEP, 923 Kansas families with 1,496 children enrolled in and nearly 4,300 youth participated in lessons focused on nutrition education and physical activity.

Results
As a result of EFNEP lessons, 91% of FY2012 participants showed improvement in one or more nutrition practices. Half of participants increased their physical activity after taking part in EFNEP. Following FNP lessons, 45% of participants intended to increase their physical activity.

4. Associated Knowledge Areas

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

Outcome #2

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	22

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Obesity affects more than 17% of all children and adolescents in the United States - triple the rate from just one generation ago. Those weight problems often carry over into adulthood.
Barriers might include socio-economic level, the lack of neighborhood recreational facilities or school or after-school programs that encourage physical activity, closing of a local grocery store, limited choices in fresh produce, and lack of knowledge about nutrition and health.

What has been done
The goal of the study is to: (1) to identify barriers that stand between youth and healthy choices; (2) to develop strategies to overcome the barriers, and (3) to increase youths consumption of health-promoting fruits, vegetables and whole grains, and physical activity.

Results
If we can address some of those factors, we can possibly decrease the number of youth that will have to experience diabetes, heart disease, hypertension at an early age in life and those are some diseases that we consider preventable so if we can help prevent them as well as decrease healthcare costs, then we think it is a win/win.

4. Associated Knowledge Areas

KA Code	Knowledge Area
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
724	Healthy Lifestyle
802	Human Development and Family Well-Being

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
2012	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 in Kansans 2012-2013 families 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
2012	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 2875 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. Nearly 51% of 3899 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
2012	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
703	Nutrition Education and Behavior
724	Healthy Lifestyle
802	Human Development and Family Well-Being

Outcome #7

1. Outcome Measures

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

Not Reporting on this Outcome Measure

Outcome #8

1. Outcome Measures

Kansans of all ages engage in increased physical activity.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	18653

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 guidelines and research findings.

Results
*78% reported being more physically active as a result of the program and 84% met goals for physical activity during the 8 week program. 58% were confident or completely confident they would continue this amount of activity during the next 6 months.
*76% increased fruit and vegetable consumption during the 8 weeks. 62% were

confident/completely confident they would continue this habit over the next 6 months.

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

Adult Kansans participating in FNP reported plans to make these healthy changes:
&diams to eat more fruits and vegetables (55%)
&diams to eat a greater variety of fruits and vegetables (60%)
&diams to use a plan to spend money for food (64%)
&diams to plan their meals ahead of time (61%)
&diams to shop for food from a list (48%)
&diams to increase their level of physical activity (45%)

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Healthy Communities: Youth, Adults and Families

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
724	Healthy Lifestyle	20%		10%	
801	Individual and Family Resource Management	10%		15%	
802	Human Development and Family Well-Being	15%		20%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	15%		15%	
806	Youth Development	40%		10%	
903	Communication, Education, and Information Delivery	0%		30%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	160.0	0.0	25.0	0.0
Actual Paid Professional	160.0	0.0	10.0	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**
778908	0	139130	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
3518256	0	1235560	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
7543132	0	183830	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?

Program Focus Team members participated in eXtension Webinars appropriate to their program priorities.

V(E). Planned Program (Outputs)

1. Standard output measures

2012	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:	2012
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	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
2012	1000

Output #2

Output Measure

- Number of program participants

Year	Actual
2012	62400

Output #3

Output Measure

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

Year	Actual
2012	1200

Output #4

Output Measure

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

Year	Actual
2012	66

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Increase 5% of adult and youth participants who meet the USHHS goals for physical activity
2	Number of substantial community projects that reflect shared participation in addressing community goals
3	Number of volunteer hours of community members engaged in community improvement programs
4	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)
5	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.
6	Increased number of participants who have established financial goals to guide financial decisions toward financial security

Outcome #1

1. Outcome Measures

Increase 5% of adult and youth participants who meet the USHHS goals for physical activity

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

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
2012	1178

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Kansas PRIDE (not an acronym) supports 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. This is an ongoing process throughout the years. The program is supported by the Kansas Department of Commerce, K-State Research and Extension, and Kansas PRIDE Inc.

What has been done
The PRIDE program has adopted the community capitals model as a framework for the current program. The community capitals framework reveals the interactions between different parts of a community. Communities are systems that have inflows and outflows, ups and downs, and progression and regression. Communities looking to the future can use community capitals to measure current resources and identify the potential for improvements.

Results
Social Capital: Groups, organizations, and networks in the community, the sense of belonging,

and bonds between people. In 2012, PRIDE communities engaged in 576 collaborative partnerships at the local, regional, and state level. PRIDE communities reported that 93 of these collaborations engaged youth. PRIDE communities reported completing 1,178 community improvement projects, all supporting the quality of life in Kansas communities.

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

Number of volunteer hours of community members engaged in community improvement programs

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	94833

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. It is immediately evident that 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. Through this work, we observe that communication networks and levels of community trust and involvement are strengthened. These aspects of community dynamics prove themselves valuable for expediency of community action or reaction, expanded provision of community services, and a higher level of community readiness and resiliency to address community issues or crises events.

Results
Human Capital: All the skills and abilities of people, leadership, knowledge, and the ability to access resources. In 2012, PRIDE communities reported 94,833 hours of volunteerism. This conservatively calculates to a dollar value of more than $2,066,411.

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 #4

1. Outcome Measures

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
2012	112

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Many shooting sports volunteers are new to 4-H and not familiar with the basic principles of positive youth development. Thus the national curriculum has always required the teaching of Positive Youth Development to new shooting sports instructor volunteers. All state 4-H Shooting Sports Trainers have been to national training and are required to help train at the state level for at least three years.

What has been done
Volunteer shooting sports instructors received four hours of youth development training consisting of the eight critical elements of Youth Development and how they meet the four basic needs of youth which leads to the 5 Cs of youth development outcomes, plus the sixth C, Contribution, back to their community. Explained to volunteers how their implementation of the critical elements helps 4-H to continue to develop youths who contribute back to community three times greater

than any other youth organization (Learner). Also stressed that all shooting sports youth should be involved in at least one community service project each year.

Results
Pre- and post-test survey indicated more than 70% of the new trainees agreed or strongly agreed that they understood the (above) principles of Positive Youth Development.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #5

1. Outcome Measures

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
2012	6347

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, connect. 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 350 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.

Kansas hosted the North Central Extension Region 4-H Volunteer Forum where workshops were held on all three outcomes. Two hundred forty four volunteers participated in this training opportunity.

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, and foods and nutrition.

Results

The consistently greater levels of contribution by 4-H youth and 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 roll models, outside of the family, that help establish a trajectory toward success in the home, community and world.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #6

1. Outcome Measures

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

The Youth Development PFT members chose to focus on identifying training resources and evaluation instruments for interpersonal communications and providing them to each of the PFT members.Short- and medium-term evaluation instruments were used across Kansas in 2012 by local staff members to evaluate 4-H members at appropriate 4-H events on their interpersonal communication skill levels.Outcome data is currently be analyzed.

Key Items of Evaluation

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 on these efforts/outcomes in the Global Food Security & Hunger and the Natural Resources and Environment planned programs, as Kansas chooses to define priorities.

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
205	Plant Management Systems	25%		25%	
511	New and Improved Non-Food Products and Processes	45%		35%	
601	Economics of Agricultural Production and Farm Management	10%		10%	
603	Market Economics	20%		10%	
605	Natural Resource and Environmental Economics	0%		20%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	7.0	0.0	4.0	0.0
Actual Paid Professional	0.0	0.0	0.0	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

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

V(D). Planned Program (Activity)

1. Brief description of the Activity

2. Brief description of the target audience

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

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

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

Patent Applications Submitted

Year: 2012

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of presentations at national and international conferences.

Year	Actual
2012	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)

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
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
605	Natural Resource and Environmental Economics

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
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

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

X

Key Items of Evaluation

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 on these efforts/outcomes in the Natural Resources and Environment planned program, as Kansas chooses to define priorities.

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	20%		20%	
104	Protect Soil from Harmful Effects of Natural Elements	40%		25%	
111	Conservation and Efficient Use of Water	25%		15%	
132	Weather and Climate	5%		20%	
605	Natural Resource and Environmental Economics	10%		20%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	6.0	0.0	3.0	0.0
Actual Paid Professional	0.0	0.0	0.0	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

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

V(D). Planned Program (Activity)

1. Brief description of the Activity

2. Brief description of the target audience

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

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

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

Patent Applications Submitted

Year: 2012

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

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

Year	Actual
2012	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

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
605	Natural Resource and Environmental Economics

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

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
605	Natural Resource and Environmental Economics

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 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
605	Natural Resource and Environmental Economics

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Other (Educational funding)

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

X

Key Items of Evaluation