2011 Kansas State University Combined Research and Extension Annual Report of Accomplishments and Results

Status: Accepted

Date Accepted: 06/19/2012

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. 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 the Biosecurity Research Institute, and infrastructure development for the National Bio and Agro-Defense Facility is in progress.

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. Serving communities through the PRIDE program in 2011 generated $728,000, invested 94,000 volunteer hours to complete 1,266 community improvements.

Kansas State University has rapidly become noted as a military friendly university and K-State Research and Extension plays a key role. Our military partnering includes staffing an Extension office on the Fort Riley post. This office is partnering with government agencies to offer services to military families before, during, and after troop deployments. Areas of emphases include financial literacy, nutrition and diet for young families, strengthening family relations in a stressful military environment, and using gardening and horticultural work as therapy for stressed military families.

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. A specific example is work one Family and Consumer Sciences agent is doing in Southwest Kansas. She is doing programming for Burmese and Somali populations to help them make the transition to Kansas and American life easier. In addition to the language barrier, they face challenges in everyday life (i.e., learning to cook, clean, and do laundry). Landlords are concerned about safety and cleanliness due to tenant's lack of knowledge and experience in caring for apartments and using appliances. Another example is that 10% of the participants in the ServSafe Starter Food Handler classes are self reported Hispanic, Black/African American, or other minority group. Another example, although we do not have a formal working arrangement with Haskell Indian Nations University, we do have an Extension Forester who has worked with Haskell faculty for many years. This pas year, 22 professionals, which included representatives of three of the four Indian tribes in Kansas, K-State faculty, school teachers, and watershed coordinators participated in the 'How to Build a Watershed Tabletop Model' workshop at Haskell. A student worker who worked with the forester on seed germination experiments has applied to graduate school to continue this collaboration.

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. Youth 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, and studying the opportunities in biofuels for those stakeholders who are potential users of renewable fuels to heat their homes and those who produce the crops that are converted to fuel.

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. In support of the critical mass needed to support climate change research and extension work, new resources were identified to add a climatologist to the faculty in Agronomy and upgrade K-State's statewide weather data network.

We are effectively using our statewide network of offices to share research-based information related to the environment, families, communities, and production agriculture.

Total Actual Amount of professional FTEs/SYs for this State

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	400.0	0.0	255.0	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 our National Program Leader Reviewer(s) 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 is invited to a one-day training and dialog event at four locations across Kansas. This day-long 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 2011.

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

We provide all of our Extension agents and local Executive Boards with a web-based training tool on techniques for recruiting new Board and PDC members to ensure a diversity of interests and experiences with new members. Nothing to report on changes in 2011.

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 underserved audiences. We have stakeholder groups who focus on our non-traditional audiences and programming. Specifically, the Kansas Center for Sustainable Agriculture and Alternative Crops (KCSAAC) 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.

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 day-long 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. A series of recommendations was identified by the task force. 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 resulted in targeting $275,000 annually over the next three years towards 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. In 2009, 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.

The Kansas Center for Sustainable Agriculture and Alternative Crops has been able to extend its range through a successful partnership with the North Central Region Sustainable Agriculture Research and Education Program. This relationship allows KCSAAC to coordinate the Kansas SARE Professional Development Program for Extension and other ag professionals and maintain an active role in North Central Region SARE grant funding activities. SARE provides grants and outreach resources for farmers, ranchers, researchers, educators, and youths who want to develop innovations that improve farm profitability, protect water and land, and revitalize communities.

Inspired by her own experience, an agricultural agent started programming specifically for women involved in agriculture. She recalled that as she was growing up on a dairy farm, there were a wealth of resources available for her dad, but very little for her mom. Now known as "Annie's Project," this program serves the educational needs of women in agriculture--from the traditional farm wife to landlords to women who married a farmer and have no other connection to agriculture. The first workshops were held in Harvey County in 2003, then she and two other agents secured grant funding from the North Central Risk Management Education Center to establish Annie's Project in Kansas. They teamed up with three K-State agricultural economists and local organizations such as Farm Bureau, American AgCredit, and Frontier Farm Credit to provide speakers for the regional workshops. The topics differ slightly across the state, with 20 to 30 participants meeting six times for three- to six-hour sessions to enhance their business skills.

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.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
5407392	0	4319029	0

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	3392472	0	4440763	0
Actual Matching	13014254	0	32401853	0
Actual All Other	23820380	0	5343819	0
Total Actual Expended	40227106	0	42186435	0

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous				
Carryover	3319191	0	2336160	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

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	29%		14%	
216	Integrated Pest Management Systems	5%		10%	
307	Animal Management Systems	37%		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%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	108.0	0.0	175.0	0.0
Actual Paid Professional	118.0	0.0	203.0	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
1715728	0	3505507	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
6328596	0	25580773	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
3000690	0	4218779	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?

Many of the publications that were written were provided through eXtension and links to our online decision-making tools were provided directly to producers or others who were interested in the material.

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	27000	0	1200	0

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

Patent Applications Submitted

Year: 2011

Actual: 2

Patents listed

Use of corn steep liquor to promote intake of a high tannin forage; Nanoparticle-Based dsRNA Delivery Method for Insect Gene Silencing

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	15	25	40

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of individuals participating in programs

Year	Actual
2011	17500

Output #2

Output Measure

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

Year	Actual
2011	1

Output #3

Output Measure

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

Year	Actual
2011	622

Output #4

Output Measure

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

Year	Actual
2011	3122

Output #5

Output Measure

- Number of presentations at national and international conferences

Year	Actual
2011	180

Output #6

Output Measure

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

Year	Actual
2011	312

Output #7

Output Measure

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

Year	Actual
2011	18

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of participating livestock producers who 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
2	Number of Kansas farms and ranches increasing awareness of financial performance
3	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	Percent of producers demonstrating improvement of Kansas ground and surface water with respect to nutrient loads
6	Number of soil samples evaluated on Kansas crop acreage
7	Changes in average or typical observed cropping systems, rotations, and crops
8	Hours and activities reported annually by Master Gardener volunteers
9	Number of participating cow/calf producers who lower cow feed supplement costs through use of BRaNDS software to make informed, cost-effective purchase decisions.
10	Number of new processes to improve utilization of biological raw materials as bioconversion substrates.

Outcome #1

1. Outcome Measures

Number of participating livestock producers who 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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	495

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. Fortunately, livestock prices are also establishing new records in the pork, beef, goat, and sheep markets. After a few years with major losses, the dairy industry has also rebounded. These new price points in the livestock marketed have increased the importance of reproductive importance and health management for reduced mortality due to the high value of animals at market. High productivity is also required to spread the higher production costs over as many animals as possible. Livestock producers continue to become more specialized and in turn, rely increasingly on experts for answers to their questions as their personal knowledge level increases.

An issue that emerged in 2010 that impacted numerous livestock producers in Kansas and other Midwest states was the poor quality of the 2009 corn crop. Corn had high levels of deoxynivalenol (DON) and aflatoxin which reduced livestock performance, caused increased mortality. Products are sold to mitigate mycotoxin contamination, but research on those products has been limited.

What has been done

Researchers at Kansas State University conducted numerous trials with alternative feed ingredients for swine, dairy, and beef cattle. We also tested numerous products aimed at reducing the impact of mycotoxin (DON) contaminated corn on livestock production and determined that one product (Defusion) was efficacious with no benefit to any of the other products tested. Results of these research projects were distributed to producers through livestock magazines, popular press, meetings, and through one-on-one consultation. Extension specialists and local agents also worked with producers to incorporate alternative ingredients and with testing of feed

ingredients for mycotoxin contamination.

Results

Livestock producers that attended beef and swine meetings were surveyed to determine the value of information received. Of those surveyed, 91% indicated that they would likely make changes to their operation based on Information that they received at the meetings. Producers benefiting from these meetings represent all sizes and types of operations. Of the beef producers surveyed, the majority of attendees owned cow herds with 19% owning more than 200 cows, 23% owning 100 to 200 cows, 27% owning 50 to 100 cows and 30% owning less than 50 cows. The stocker and feedlot owners ranged from smaller operations with less than 500 head to larger owners with over 3,000 head. Over 75% of the producers attending the meetings indicated that the information received would have a major financial impact on their business. Information disseminated by K-State Research and Extension will continue to help livestock producers address the ongoing challenge presented by high feed cost.

Livestock producers learned methods to limit the impact of mycotoxin contamination from the 2009 corn crop by testing to determine levels in grain, using alternative ingredients or alternative grain sources to dilute levels, and mycotoxin-binding products that demonstrated efficacy in the research trials.

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

Number of Kansas farms and ranches increasing awareness of financial performance

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	3232

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 important and raises the stakes of each decision a producer must make. The goals of the KFMA program include: providing each member with farm business and family financial information for improved farm business organization and decision making; using this information to increase farm sustainability, profitability and to minimize risk; and, distributing this information to benefit all involved in Kansas and American agriculture.

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 2011 included: 8,025 face to face meetings with 3,122 producers; 63 presentations to 1,550 individuals; 1,975 farm business analyses; 3,262 individual crop and livestock enterprise analyses; 10 radio interviews; numerous newsletter and newspaper articles; presentation to over 250 students in classes at KSU; over 22,000 hits to KFMA Newsletter on website; and over 110 cash flow analyses with FinPack.

Results

Through one-on-one consultations 3,232 Kansas producers have increased awareness of their current financial position and their financial performance during the past year. Of these producers 1,975 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, over 100 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

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
2011	7200000

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 variety was released this past year, a hard white winter wheat named Clara CL. 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
2011	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
During the 2008-2011 crop years 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

Percent of producers demonstrating improvement of Kansas ground and surface water with respect to nutrient loads

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**

   Changes in average or typical observed cropping systems, rotations, and crops

   Not Reporting on this Outcome Measure

Outcome #8

1. **Outcome Measures**

   Hours and activities reported annually by Master Gardener volunteers

2. **Associated Institution Types**

   - 1862 Extension

3a. **Outcome Type:**

   Change in Action Outcome Measure

3b. **Quantitative Outcome**

Year	Actual
2011	88671

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 88,000 hours with a value over $1.6 million in 2011. 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 73 hours of volunteer time during 2011. 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 overfertilize and often misdiagnose problems in their landscape and garden resulting in overuse of unneeded or ineffective products. By providing timely, accurate information, our Master Gardeners influence our clientele to use less and more effective inputs resulting in better results and a savings of time and money. Using less fertilizers and pesticides also helps protect the environment.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems

Outcome #9

1. Outcome Measures

Number of participating cow/calf producers who lower cow feed supplement costs through use of BRaNDS software to make informed, cost-effective purchase decisions.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	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 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. As examples, several producers were able to incorporate wet DDGS into their operation to save $1,200 and 10,000 on their feed cost. Some producers learned that their existing feeding program and home-raised for age was adequate to meet the needs of their cows and purchased ingredients were not needed. 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 #10

1. Outcome Measures

Number of new processes to improve utilization of biological raw materials as bioconversion substrates.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

This outcome is reported in the Sustainable Energy planned program.

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

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

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

One specific example is that one of the most successful series of workshops conducted by the Department of Agricultural Economics at Kansas State University involved leasing workshops across the state. A grant proposal was submitted to the North Central Risk Management Education Center to conduct six leasing workshops targetting 25 participants per workshop (goal of reaching 150 people). These workshops were a combination of traditional lecture, enhanced through the use of audience response technology (i.e., "clickers"), and handson computer use (reason for targeting 25 participants per workshop). The goal of these workshops was to provide a deeper level of education than can be attained through the more traditional 12 hour presentation. The clickers were used to generate discussion and also to collect data that could be presented at future meetings (numerous participants commented that they really like this approach). A total of 10 workshops were scheduled with 276 total attendees indicating the tremendous demand for this type of information.

Key Items of Evaluation

Leasing programs are having a significant influence throughout Kansas, due to the highly relevant and timely nature of the topic. Large generational transfers of land are occurring and many new landlords are no longer present on the farm and need new skills,

which this education provides. In addition, due to highly volatile grain prices, tenants often need to learn about new leasing arrangements in order to continue to control enough land to be profitable.

Evaluation instruments have been developed for use by the Program Focus Teams (PFTs) doing programs in Crop Residue Management, Reducing the Impact of Wheat Diseases, Managing Soil Nutrients and Fertility, and Weed Management in Field Crops for use in 2012. PFTs continue to receive support for evaluation through the contract with staff from the Office of Educational Innovation and Evaluation.

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Food Safety

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: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	56.0	0.0	12.0	0.0
Actual Paid Professional	58.0	0.0	19.0	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
121624	0	317319	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
503038	0	2314295	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
6098792	0	381710	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 Safe Food and Human Nutrition 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

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	700	0	350	0

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

Patent Applications Submitted

Year: 2011

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	2	20	22

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
2011	2

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
2011	2

Output #3

Output Measure

- Number of ServSafe certification workshops

Year	Actual
2011	19

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of participants demonstrating increase in knowledge level and 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
2	Number of participants in food service manager certification class who successfully complete the exam.
3	Number of food service employees who complete employee level food safety course.
4	Number of foodservice facilities with trained employees

Outcome #1

1. Outcome Measures

Number of participants demonstrating increase in knowledge level and 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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	331

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Because of the emphasis on food safety, protection, and defense by consumers, the food industry, and government, there is a growing demand for a workforce knowledgeable of those areas.

What has been done
Education programs that incorporate food safety, protection, and defense aspects, including current research, are offered for undergraduate majors in Food Science on-campus and by distance. Additionally, graduate students on-campus and distance MS students are in Food Science and Food Safety and Defense degree and certificate programs. All Food Science curricula cover the outcome areas listed above.

Education programs that incorporate current research are being expanded, and are frequently used by industry and government employees.

Results
Participants indicated that they had increased knowledge and skills of best food safety practices. Over 90% 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. Ten percent of the participants in the ServSafe Starter Food Handler classes are self reported Hispanic, Black/African American, or other minority group.

Students are graded and must demonstrate competency in all the areas (listed in outcome) before entering the workforce.

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

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
2011	269

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The National Restaurant Association has estimated that the average cost of a foodborne illness outbreak to an establishment is about $75,000. The economic value of foodservice educational programs can be calculated by multiplying the number of establishments reached through the programs by the estimated economic burden of an outbreak ($75,000).

What has been done
In 2011, ServSafe Manager Classes (19) reached over 296 foodservice workers statewide.

Results
These classes resulted in 269 foodservice employees receiving Food Safety Certification.

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

Number of food service employees who complete employee level food safety course.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	766

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Food safety education is necessary to help maintain health care cost, and to help ensure public health and maintain quality of life for all Kansans.

What has been done
In 2011, ServSafe Manager Classes (19) reached more than 296 foodservice workers statewide. These classes resulted in 269 foodservice employees receiving Food Safety Certification.

Results
In 2011, 764 participants completed the ServSafe Starter Food Handler class. One hundred forty-six food operations, volunteer/community organizations, schools, nursing homes, assisted living facilities or day care centers have trained staff as a result of the ServSafe training.

4. Associated Knowledge Areas

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

Outcome #4

1. Outcome Measures

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
2011	146

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The National Restaurant Association has estimated that the average cost of a foodborne illness outbreak to an establishment is about $75,000. The economic value of foodservice educational programs can be calculated by multiplying the number of establishments reached through the programs by the estimated economic burden of an outbreak ($75,000).

What has been done
In 2011, K-State Research and Extension/Kansas Restaurant and Hospitality Association (KSRE/KRHA) trained employees from 157 Kansas foodservice operations.

Results
One hundred forty-six food operations, volunteer/community organizations, schools, nursing homes, assisted living facilities or day care centers have trained staff as a result of the ServSafe training.

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

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

Participants indicated that they had increased knowledge and skills of best food safety practices. Over 90% 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. Students are graded and must demonstrate competency in all the areas (listed in outcome) before entering the workforce.

Key Items of Evaluation

Evaluation instruments are being developed for use by the Program Focus Teams (PFTs) which continue to receive support for evaluation through the contract with staff from the Office of Educational Innovation and Evaluation.

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Natural Resources and Environmental Management

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	15%		15%	
111	Conservation and Efficient Use of Water	30%		30%	
112	Watershed Protection and Management	30%		20%	
121	Management of Range Resources	15%		20%	
141	Air Resource Protection and Management	10%		15%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	30.0	0.0	44.0	0.0
Actual Paid Professional	30.0	0.0	23.0	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
339880	0	384123	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
1234610	0	2801515	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
1781900	0	462070	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. • Provide technical assistance and support to watershed groups who are developing and implementing Watershed Restoration and Protection Strategies (WRAPS) in Kansas.

• 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 strategies for improved management of water, both irrigation and precipitation, within existing cropping systems, and test designs, performance, and management of equipment and systems used for irrigation. • 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 science-based emission factors for dust and ammonia at beef cattle feedlots, that include understanding the conditions under which high emissions occur and the animal health effects associated with high emissions.

• 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. • Determine the community level impacts of biofuel production and processing. • Determine the impacts of cellulosic ethanol production on land use, soil conservation and quality, and water conservation and quality. • Determine the economic impacts and trade-offs associated with biofuel production and processing based on both grain and cellulosic ethanol.

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

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

2. Brief description of the target audience

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.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	10500	0	1500	0

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

Patent Applications Submitted

Year: 2011

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	16	12	28

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of educational programs delivered

Year	Actual
2011	25

Output #2

Output Measure

- Number participating in educational programs

Year	Actual
2011	2000

Output #3

Output Measure

- Number of refereed research publications
  Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of producers adopting BMPs that protect environmental quality
2	Number of acres of BMP adoption for atrazine and soil erosion
3	Measurable improvement in water quality (percent reduction atrazine) in Little Arkansas River Watershed

Outcome #1

1. Outcome Measures

Number of producers adopting BMPs that protect environmental quality

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	90

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 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 100 individual producers involving about 25,000 animal units. BMPs were implemented involving more than 15,000 acres of cropland on 90 farms.

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

Number of acres of BMP adoption for atrazine and soil erosion

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	27810

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The Little Arkansas River watershed is located in central Kansas. Total Maximum Daily Loads (TMDLs) are required for 52% of stream segments and 50% of lakes. The most common pollutants are fecal coliform bacteria, excess nutrients, atrazine herbicide, and sediment and total suspended solids.

What has been done
A nine-element watershed plan was developed by local watershed stakeholders, who determined the top priorities for implementation were to reduce atrazine herbicide and sediment delivery in surface waters. Three watersheds were targeted for rapid implementation of best management practices (BMPs) for atrazine herbicide. An education and demonstration program, surface water monitoring plan, and incentive program for atrazine BMP implementation were developed and delivered to the targeted watersheds. This three-year program is in its second year of implementation. Educational meetings were continued to train farmers and pesticide dealers. A KSU extension agronomist made 100 on-farm visits to get farmers'commitment to implement atrazine BMPs. Watershed GIS maps and modeling were used to select a subwatershed for targeted BMPs adoption efforts to reduce sediment delivery. Using funding from a NRCS CIG grant ($450,000), a BMP implementation training and incentive program was developed.

Results
Atrazine BMP Implementation: 95 farmers implemented atrazine BMPs on a total of 23,000 corn and grain sorghum acres. An automated surface water monitoring system was installed in the streams at the base of the watersheds targeted for BMP implementation and also at the base of two adjoining watersheds. Water quality monitoring of treated and untreated watersheds found 51% lower atrazine concentrations, in streams in targeted watersheds in which BMPs had been implemented.

Sedimentation BMP Implementation: Outcomes included 25 farmers committing to implementing BMPs on 138 crop fields (4,810 acres) resulting in a reduction in annual sediment delivery to streams in the watershed from 9,219 tons to 2,926 tons.

4. Associated Knowledge Areas

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

Outcome #3

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	26

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The most common pollutants in the Little Arkansas River watershed are fecal coliform bacteria, excess nutrients, atrazine herbicide, and sediment and total suspended solids.

What has been done
An education and demonstration program, surface water monitoring plan, and incentive program for atrazine BMP implementation were developed and delivered to the targeted watersheds. One hundred twenty-two one-on-one farm visits were made to farmers by extension agronomists to secure BMP commitments from farmers in targeted watersheds.

Results
Water quality monitoring of treated and untreated watersheds found 26% lower atrazine

concentrations, in streams in targeted watersheds in which BMPs had been implemented. Farmers implemented atrazine BMPs on 27,031 acres of corn and grain sorghum. This was 42% of the grain sorghum acres and 55% of the corn acres planted in targeted watersheds. Implementation of atrazine BMPs resulted in 25% less atrazine being applied in the targeted watersheds. Using KSU BMP effectiveness data, BMP implementation was predicted to reduce atrazine runoff by 42% in 2011.

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

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Project Highlights

A Watershed Restoration and Protection Strategy was developed by local citizens in the Little Arkansas River Watershed. A major goal was to reduce atrazine herbicide runoff from crop fields.

Six smaller watersheds within the Little Arkansas River watershed were targeted for rapid implementation of best management practices (BMPs) for atrazine herbicide. In 2011, vulnerable fields outside of the six watersheds were also targeted.

Two integrated agricultural management sites were established to demonstrate and evaluate BMPs for pesticides, sediments, and nutrients.

An automated surface water monitoring system was installed to evaluate the effectiveness of BMPs implementation.

Farmers implemented atrazine BMPs on 27,031 acres of corn and grain sorghum.

Implementation of atrazine BMPs resulted in 25% less atrazine being applied in the

targeted watersheds. Using KSU BMP effectiveness data, BMP implementation was predicted to reduce atrazine runoff by 42%.
Actual water quality monitoring of treated and untreated watersheds found 26% (2011) lower atrazine concentrations in streams in targeted watersheds in which BMPs had been implemented.

Key Items of Evaluation

Watershed evaluation includes real monitoring, one with an educational component, and one without to provide guidance for future planning.

Note: Even though we do not have a formal working arrangement with Haskell, one Extension Forester has worked with Haskell faculty for many years. The Heartland Watershed Management Education team includes members from Iowa, Kansas, Missouri, and Nebraska. This regional team co-sponsored a workshop, How to Build a Watershed Tabletop Model, with Haskell Indian Nations University on their site.The results showed that 75% of participants will use a tabletop model in their work and 100% will or probably will share information learned with colleagues. All of the participants stated that they would (81%) or probably would (19%) incorporate new or additional information into their present water quality education work. All participants also stated they could (73%) or probably could (27%) identify watershed boundaries from topographic maps at the conclusion of the workshop.

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Childhood Obesity, Healthy Eating and Physical Activity through the Lifespan

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: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	56.0	0.0	5.0	0.0
Actual Paid Professional	56.0	0.0	5.0	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
113960	0	83505	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
466450	0	609025	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
6013058	0	100450	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?

Agents and specialists were made aware of eXtension seminars relevant to their educational programs.

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	58697	0	19456	0

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

Patent Applications Submitted

Year: 2011

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	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
2011	14

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of people who develop a plan to increase physical activity
2	Number of youths who increase fruit and vegetable consumption
3	Increased percentage of 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)
4	Number of school-aged youth who 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

Outcome #1

1. Outcome Measures

Number of people who develop a plan to increase physical activity

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	19785

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Walking and other easily accessible physical activities are known to improve cardio-respiratory health, mental health/alertness and social connectedness in communities. Physical activity at recommended levels promotes overall health and well-being.

What has been done
Walk Kansas, one of KSRE's largest, sustained programs, contributes to the health and well-being of adults and children in nearly every county in Kansas. The 8-week physical activity campaign and team-challenge encourages adults to establish a physical activity "habit" that can be sustained throughout a lifetime. Various studies show that Walk Kansas is effective beyond the 8-week duration of the program. Participants identified through random selection who were assessed six months after the program did not demonstrate a significant decrease in moderate or vigorous activity between the program completion and the six-month followup. (The Society of Behavioral Medicine, 2008; Estabrooks, Bradshaw, Dzewaltowski, Smith-Ray.)

Results
The 10th anniversary year of Walk Kansas was one of our largest to date, with 19,785 participants. (This number does not include Walk Kansas for Kids participants.) Ninety percent of the participants met the goal of 150 minutes of physical activity per week. Though only about 19% of Kansans consume the recommended amount of fruits and vegetables each day, 89% of Walk Kansas participants reported increasing fruit and vegetable consumption. Participants also reported they had increased energy (54%), better attitude (54%), improved sleep (43%), and decreased weight (39%).

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

Number of youths who increase fruit and vegetable consumption

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	22

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The 2003 National Survey of Children's Health found that 16% of Kansas children were overweight and 14% of Kansas children were obese.

What has been done
Educators provided health-related tips to better feed themselves and their families by focusing on healthful choices--especially fruits and vegetables, whole grains, and fat free or low fat milk.

Results
Stated as a percent rather than a number, 22% increased the number of fruits and vegetables eaten daily; 23% will eat a wider variety of foods.

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**

Increased percentage of 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)

Not Reporting on this Outcome Measure

Outcome #4

1. **Outcome Measures**

Number of school-aged youth who 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

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

Public policy changes and government regulations have significant influence on the direction of this planned program. To best meet the needs of clientele with available resources, stakeholder input is sought regarding program needs and preferred delivery. Continual focusing of program outcomes by Program Focus Teams is critical to K-State Research and Extension being valued and relevant for Kansans.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Students eating school lunch should get ready for pizza with whole-grain crust and bigger portions of fruits and vegetables. The changes, many of which go into effect in July, are part of the government's new nutrition standards for school meals. On today's Sound Living: efforts to improve the health of nearly 32 million children who eat lunch at school every day. According to K-State Research and Extension nutrition specialist Sandy Procter, these changes, the first in more than 15 years, are a big deal.

In addition, adult Kansans participating in Family Nutrition Program (FNP) made these healthy changes:

32% more will plan meals ahead of time

29% more will use a plan for spending money
23% will eat a wider variety of foods
22% increased the number of fruits and vegetables eaten daily

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Healthy Communities: Youth, Adults and Families

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: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	150.0	0.0	19.0	0.0
Actual Paid Professional	160.0	0.0	9.0	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
1101280	0	150309	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
4481560	0	1096245	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
6925940	0	180810	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?

Following are some of the ways that one specialist has used eXtension:
*Served on the steering committee for the Family Caregiving CoP (FC/CoP) since 2006, including election as national chair in 2008-2009 (this means that grant money has come to K-State as a result--just a note).
*Partnered with colleagues that I met through eXtension on programs, presentations, journal article/book chapter (including the development of The LiveAbility House in Second Life--a virtual world).
*Created content for the FC/CoP that includes articles and learning lessons, as well as answering
*Used eXtension as a resource when referring agents/individuals with questions on relevant topics.

*Use eXtension quite frequently as a source for professional development opportunities. I share relevant PD topics with agents.

*Supported a PhD student here at KSU to present a webinar via eXtension on older adults and driving.

*Presented on eXtension to agents and always include eXtension in my remarks to new agents.

*I know that agents use the Ask an Expert platform because I usually get those questions!

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	23592	0	30140	0

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

Patent Applications Submitted

Year: 2011

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	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
2011	1100

Output #2

Output Measure

- Number of program participants

Year	Actual
2011	63892

Output #3

Output Measure

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

Year	Actual
2011	1350

Output #4

Output Measure

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

Year	Actual
2011	68

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
2011	1266

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Rural communities are struggling with lagging economies, loss of population, and declining engagement of citizens. The Kansas PRIDE program is an effort of Extension to engage citizens in community engagement through organized volunteer improvement efforts. These efforts recognize and support efforts that strengthen community agency and capacity building.

What has been done
The Kansas PRIDE (not an acronym) program supports and recognizes community volunteer groups organized for community betterment. The program is supported by the Kansas Department of Commerce, K-State Research and Extension, and Kansas PRIDE Inc. Bringing organizations together in communities is a key element of the success of PRIDE volunteer efforts. In 2011, PRIDE committees engaged in 637 collaborative partnerships for community betterment. Partnerships with civic groups, local government, church groups, and professional organizations improve results, and strengthen the sustainability of projects.

Results
Through the involvement and support of Extension, community groups are organized and focused on community improvement efforts. In 2010, 68 communities participated in PRIDE program

efforts. Each community developed projects that included focus areas of environmental improvements, health, human needs, and cultural events.

4. Associated Knowledge Areas

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

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
2011	94263

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. PRIDE is a community development program, not an acronym.

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
In 2011, PRIDE communities reported 94,263 hours of volunteerism. Utilizing the most recent value of volunteer time for Kansas from the Independent Sector, this calculates to an investment valued at more than $1,677,800 in volunteer time.

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
2011	3800

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Nationally, employers report that more and more high school graduates lack the skills needed for work. Ninety-one percent of people surveyed by K-State in 2007 reported that it was very or somewhat important to
help youth ages 10-19 years old "master positive life skills," which include communication, decision-making, goal-setting, and leadership.
Anecdotally, 4-Hers are known for the excellence of their communication skills. However, there is little concrete data available about 4-Hers' skills in Kansas. Without evaluations that have been tested for reliability, it is very difficult or impossible to measure skills increases or to gather information to help improve communications programming.

What has been done
The Youth Development PFT members chose to focus on identifying training resources and evaluations instruments for interpersonal communications and providing them to each of the PFT members. They
also decided to share information about the resources with others who are not members of the YD-PFT, but who are involved in youth development work. The training resources include 4-H Communication

Fact Sheet Series, National 4-H ?Communications Express Yourself? curriculum and Michigan State University?s ?Communications Toolkit?. Short and medium term evaluation instruments from the University of Kentucky Extension and Youth Life Skills Evaluation Project were modified for Kansas 4-H use. The short term evaluation, which is adaptable for local needs, is designed to be scored and compiled
by local staff. The medium term evaluation will be given at the local level, but scored and analyzed by Kansas 4-H state staff members.

Results
One hundred and forty Extension staff received information about how to find and use interpersonal communication training resources and evaluations at the three Kansas 4-H Updates in December, 2011. The short and medium-term evaluation instruments are now ready to be used across Kansas in 2012. Local staff members are currently making plans to evaluate 4-H members at appropriate 4-H events on their interpersonal communication skill levels.There were no evaluations that were administered in 2011, so no additional outcomes are available.

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
2011	710

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Giving back to community is a 4-H staple. A recent "Study of Positive Youth Development" by Tufts University found 4-Hers are 2.5 times more likely to contribute to their communities. Embedding science and technology in 4-H Youth Development integrates math, science, and technology into everyday life.

What has been done
Tomorrow's leaders are learning science, engineering, and technology through a variety of 4-H Youth Development activities. For example, applying lessons learned in 4-H allows Kansas youth to assist local emergency and homeland security officials charged with integrating global positioning and geographic information (GPS and GIS) technologies into the state's 4-H educational experiences.

Results
When Leavenworth County officials attended a 4-H demonstration on geospatial literacy, the director of emergency management saw the potential for collaboration and invited the 4-H tech team to map herds of 100 or more cattle, sheep, and other cloven-hoofed animals. The teens' project, titled a "Foreign Animal Disease Biosecurity Map," supplements county resources and is intended to aid emergency management and homeland security.

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	685

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Many individuals and families are experiencing financial crisis because of inadequate savings, health care costs, too much debt, and poor planning for potential major life events. Saving--the ability to set aside some money routinely from a stream of income--is at the heart of household asset development. Extension targets programs for financially vulnerable populations. The overall goal is for people to acquire the knowledge, skills, and motivation to make behavior changes that will build financial security, which is the cornerstone of prosperous communities, nurturing neighborhoods, and strong families.

What has been done

Kansas places outreach focus on three primary financial programs: Kansas Saves; Medicare insurance decisions for prescription drug coverage; and financial decisions at Income tax sites for moderate to low-income clientele. The KSRE Financial Management program partners with the Kansas Department on Aging. More than 40 agents have received various levels of SHICK-Senior Health Insurance Counselors for Kansas training. Several KSRE local extension offices partner with a variety of IRS sponsored income tax sites in rural and urban areas, such as VITA-Volunteer Income Tax Assistance, and AARP. These sites target moderate to low-income Seniors, individuals and families. Approximately 5000 people were assisted directly at free income tax assistance sites and more than 10,000 were reached indirectly via KSRE media articles encouraging people to seek out free tax assistance sites in their locale. Contacts were made through 2,798 face-to-face appointments and 2,442 phone calls.

Results

KSRE agents saved Kansas Medicare beneficiaries $1.9 million or an average of $513 per person who switched to another Part D plan.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

In one educational program, participants in the Kansans Optimizing Health program have become more confident and aggressive in taking steps to improve their health, reduce their medical expenses, and improve their quality of life. This program from Stanford University is supported by KDHE to encourage adults with chronic disease to take more personal responsibility in managing their condition.

Specific Success Stories:

****** The attitude and health of the KOHP participants sure changed from the first session to the sixth session. It was evident that they learned how to manage and pace themselves in order to deal with their chronic disease. Some participants became more outgoing and realized the importance of interacting to improve relationships and that their

thoughts and ideas were important. They also overcame fears of being with new people. During the most recent series of classes, participants at the first session listed experiencing 15 problems associated with chronic diseases and at the final/sixth class, participants listed only four problems. That is progress!

** Another benefit of the program is the group support it provides to individuals. Living with a chronic condition is not only physically taxing, it is also emotionally isolating. Participants were extremely willing to help other classmates search for solutions and offer new ideas, which is exactly how the class is designed to work. Class instructors help guide participants, but as a self-management course, it is ultimately up to the individuals and their classmates to find solutions to their problems. Class participants experienced great success in this area, which was very pleasing to observe from the instructor standpoint.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Sustainable Energy

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: 2011	Extension		Research	
	1862	1890	1862	1890
Actual Paid Professional	7.0	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
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

Dissemination of science-based information regarding the sustainanbility of biofuel production and processing.

Development of new processes to modify agricultural-based materials into higher value products.

2. Brief description of the target audience

Growing industry based on bioprocessing and bioconversion
International grain processors
Industrial products manufacturers
Entrepreneurs and investors.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	400	0	100	0

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

Patent Applications Submitted

Year: 2011
Actual: 2

Patents listed

Biobased semi-solid lubricant (grease) formulation and preparation; Thermally Stable Transparent Pressure Sensitive Adhesives from Plant Oils

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	0	29	29

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of presentations at national and international conferences
  Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Improve utilization of biological raw materials as bioconversion substrates (measured by number of new processes developed)

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
2011	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) pelleting forages to increase cellulosic ethanol production; 3) syntheses of acid functionalized nanoparticles for hydrolysis and pretreatment of lignocellulosic biomass; 4) pyrolysis of biomass for bio-oil and bio-char production. These research projects were supported by NSF, USDA, DOE/USDA, DOT Sun Grant Initiative, United Sorghum Checkoff Program, and State of Kansas.

Results
Our mean results include: 1) further confirmed that waxy sorghum is an excellent feedstock for bioethanol production with low energy input; 2) developed a new method to increase biofuel yield from photoperiod sensitive sorghum through utilizing both soluble sugars and cellulose; 3) identified the effects of biomass pelleting on biofuel yield; and 4) evaluated the performance of acid-functionalized nanoparticles for biomass pretreatment and hydrolysis. As research results, we published 11 peer reviewed papers and presented 18 meeting papers.

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

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

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Data collection will mostly be on-site as new plants are built, rural economies expand, and new licenses are applied. Case studies will be instructive as communication tools.

Key Items of Evaluation

This planned program was not included in our 2011 Plan of Work. We continue to develop the plan-- implemenation, and evaluation and are working with our new business officer to show allocation of resources.

V(A). Planned Program (Summary)

Program # 7

1. Name of the Planned Program

Climate Change

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: 2011	Extension		Research	
	1862	1890	1862	1890
Actual Paid Professional	6.0	0.0	3.0	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
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

Development of resources to increase climate literacy.
Provided decision tools for adaptive best management practices to address the effects of climate change.

2. Brief description of the target audience

Producers who will be affected by climate change.
Decision-makers.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	200	0	200	0

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

Patent Applications Submitted

Year: 2011
Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of educational workshops that focus on perceptions about climate change risk and personal responsibility.

Year	Actual
2011	6

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Development of new knowledge and technologies (Measured by percentage of participants who increase knowledge of management practices under climate variability and change)

Outcome #1

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
2011	10

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

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

From past experience any, or all of these factors can significantly impact outcomes of this planned program. Strategies, viable approaches, and intended outcomes are affected by the degree to which climate change and politics affect conditions.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Clientele surveys show practices adopted or changed and dollars saved from such. Program Focus Teams with help of staff from the Office of Educational Innovation and Evaluation continue to develop evaluation tools for use with each Action Plan/Logic Model.

The major output for year one of this project regarding stakeholder perception is related to one of the three designated target audiences, agricultural producers. This is the first part of the proposed mixed-methods study. A paper survey was developed for this audience addressing the major questions related to the project goals. This survey will provide baseline data about what agricultural producers perceive as risks related to climate change. Additionally, the survey addresses perceived personal responsibility related to climate change.

Key Items of Evaluation

This planned program was not included in our 2011 Plan of Work. We continue to develop the plan-- implemenation, and evaluation and are working with our new business officer to show allocation of resources.