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

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Date Accepted: 05/20/2013

I. Report Overview

1. Executive Summary

This report includes many of the projects and programs that have been generated by the Research and Extension efforts of the Kentucky's Land-Grant system at the University of Kentucky and Kentucky State University. Together, county and state level personnel collaborate throughout the state to improve the lives of our clientele.

Some of Kentucky Cooperative Extension's 2012 accomplishments include: Educational programs that relate to Science, Engineering, and Technology Initiatives in 4-H programs; formation of the climate change working group, which aims to address agricultural and environmental issues; Hundreds of Kentuckians took the 40 gallon challenge, pledging to save more thatn 79,000 gallons of water on a daily basis; the Kentucky Saves initiative remained vibrant encouraging local residents to save money and build wealth.

High impact educational programs such as Horse College, Master Grazer, and Master Logger resulted in significant improvements in animal nutrition, farm income, and natural resources utilization. Military families remain a target audience due to the success of initiatives such as Operations Military Kids and weekend/day camps.

In 2012, we completed the issues discovery process, which served as a facilitation tool for county Plan of Work discussions. This included leaders and agents talking about what is needed at the county level. Those issues identified at the county level were then prioritized at the district level. Once the top issues were prioritized by program level at district forums, these issues were submitted to the state Extension Council for further discussions. We were very careful to maintain the ideas generated across the state, building programming in response to what we have heard. The issues discovery process is a dialogue made possible by our presence in all 120 counties. This process enabled Kentucky Cooperative Extension and Research Programs to be viewed as relevant and of value to our stakeholders. The data are currently being used to assess and maintain programs that address pertinent issues. Due to the voices of our clientele, new programs are being considered for implementation in order to make a positive difference for Kentucky's farms, families, and communities.

As a result of interaction with councils and other stakeholders, the 2012 program year emphasis as defined by the number of contacts is as follows:

29% Global Food Security and Hunger
5% Social and Economic Opportunity
22% Life Skill Development
5% Childhood Obesity
13% Leadership and Volunteerism
2% Food Safety
17% Diet, Nutrition and Healthy Lifestyles
1% Sustainable energy
6% Agricultural and Environmental Quality

Agricultural research through Kentucky's land grant system has been providing new opportunities to farmers and residents for more than 130 years. Through the research enterprise, we address problems of agribusiness, consumers, international trade, food processing, production, nutrition, community development, soil and water resources, and the environment with over 300 externally funded projects. The research continuum reaches from basic to applied science, with new fundamental knowledge as well as applied knowledge that has impacts on the lives of Kentuckians and people across the world. Delivery of cutting-edge solutions is carried out through partnerships with extension, producer organizations, industries, and government.

Among the major discoveries made in 2012:

- Evidence of biomagnification of gold nanoparticles in the environment
- Identification of the first occurrence of wheat blast fungus outside of South America
- Determined the healthcare industry's expansion potential in Kentucky resulting from the Affordable Care Act
- Verified development of new soybean lines with increased oil contents but no corresponding reductions in protein
- Evidence, in-vivo, that endophyte infected fescue alters blood flow in horses

Joint activities between the University of Kentucky and Kentucky State University remain an expectation of faculty and staff. Faculty and specialist continue to collaborate on many projects, thus allowing the institutions to operate as a single entity. Agents and program assistants are both located in county offices, sharing not only office space but also budget, supervision and facility management responsibilities. This strong bond has resulted in shared program efforts, many of which are reported in this document. Efforts continue to include programming and research in such areas as:

Grapes and Wine	Environmental Education for Youth	Youth Entrepreneurship
Goats	eXtension	Small Business Development
Cattle Production	Tobacco Sector Farming Adjustments	Business Retention & Expansion
Pawpaws	U.S. Animal Identification Program	Family Financial Management
Sm. Farm Programs	Organic Ag and Vegetable Programs	E-commerce
Aquaculture	AgrAbility	Health & wellness
Sustainable Ag	Limited Resource Families	Home Horticulture
Youth Dev.	Entrepreneurial Coaching Institute	Childhood Obesity

Kentucky State University and the University of Kentucky share adjunct faculty with at least three positions in entomology, three positions in horticulture, three positions in animal sciences, and one position in agricultural economics.

Total Actual Amount of professional FTEs/SYs for this State

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	470.0	40.0	75.0	40.0
Actual	576.7	33.1	76.6	42.4

II. Merit Review Process

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

- Internal University Panel
- External University Panel
- External Non-University Panel
- Combined External and Internal University Panel
- Combined External and Internal University External Non-University Panel
- Expert Peer Review
- Other (State Extension Advisory Committee)

2. Brief Explanation

Kentucky Cooperative Extension continues to define merit review as a process used to judge the degree to which a planned program (1) is relevant to needs expressed by stakeholder groups, (2) draws upon current research and knowledge, (3) is congruent with quality standards and best practice, and (4) is likely to produce anticipated outcomes. Merit review for research is similar in that it uses the criteria of (1) consideration for potential impact, (2) relevance to the needs of stakeholders, and (3) appropriateness within the mission and priorities of the experiment station, USDA, and the land grant mission.

The Plan of Work has been built on program goals that the Cooperative Extension Service identified through Extension advisory committees, developed through logic model program committees and reviewed through program area committees made up of Extension assistant directors, extension agents, department chairs, and specialists. The program area assistant directors select, refine and replace featured programs based on identified needs in the greatest number of counties, current and planned research and educational resources, and the ability to effectively deal with the issues. Forty-four non-university individuals who comprise the State Extension Council representing both the University of Kentucky and Kentucky State University, all geographic regions of Kentucky as well as agriculture, youth, families, business, industry, and public education served as reviewers of the Plan of Work using the criteria identified above.

The University of Kentucky Agricultural Experiment Station focuses on scientific peer review and merit review on individual research projects. Scientific review is the evaluation by other researchers who possess the expertise to conduct the same or similar research. Such review includes technical feasibility, originality and scientific/disciplinary significance of the research. Project proposals go through an initial anonymous peer review. If satisfactory expertise is not available within the department or on campus, external reviews are solicited. After multiple reviews (usually three) a project committee recommends approval, rejection or revision. Only approved projects move forward for review at the college level. The college review committee conducts further scientific peer review by highly qualified individuals as well as a designated statistician and other appropriate faculty. Outside expertise, including researchers around the nation and stakeholder reviews, are also used.

Kentucky State University requires all project-based proposals to be peer-reviewed based on scientific merit and relevance to state, national and regional USDA priorities and the KSU mission. All Evans-Allen supported proposals are first sent for external peer-review by at least two scientists outside KSU to ensure the relevance and quality of the science. University of Kentucky faculty are often included

on the proposal review panels in addition to peer reviews via, regional, national, and professional association colleagues.

III. Stakeholder Input

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

- Use of media to announce public meetings and listening sessions
- Targeted invitation to traditional stakeholder groups
- Targeted invitation to non-traditional stakeholder groups
- Targeted invitation to traditional stakeholder individuals
- Targeted invitation to non-traditional stakeholder individuals
- Targeted invitation to selected individuals from general public
- Survey of traditional stakeholder groups
- Survey of traditional stakeholder individuals
- Survey specifically with non-traditional groups
- Other (Training stakeholders in expectations relative to program needs)

Brief explanation.

The Kentucky Extension Advisory Council System has served as a primary mechanism for gaining input into program direction and development. For programs to meet the needs of the audiences they intend to serve, county level councils are to be diverse enough to represent the various constituencies within the counties including underserved and underrepresented audiences. Their purpose on the council is to express their own needs as well as to gain additional resident perspectives through traditional and non-traditional means in order to provide input into development of local extension programs. These representatives of the various audiences are not only involved in planning but also implementation and evaluation of those programs. In addition to a county extension council, each county also has an agricultural advisory council, homemaker's council, home economics advisory council, and 4-H council. They communicate research and resource needs to the universities. Through an Issues Gathering Process, topics of greatest importance are brought forward through district and state meetings attended by leaders, extension agents, extension program coordinators, and district directors. The issues identified are then presented to state program leaders, extension specialists, and department chairs for response.

Each county also has a district board that manages the fiscal affairs of the Extension office. The board is comprised of citizens in the county that represent the various program areas, plus the county judge executive.

As full partners, the Cooperative Extension Service and Kentucky Agricultural Experiment Station set priorities for research activities with information from the county extension councils, district issues and program committees, and the University of Kentucky Council for Agricultural Research, Extension and Teaching (UK-CARET). UK-CARET functions as an advisory and advocacy group for the College of Agriculture. Members have an opportunity to advise in the development of college priorities and assist in generating public support for those priorities at state and national levels. UK-CARET is representative of the full scope of the land-grant mission: Extension, research, instruction, and service. Membership is comprised of active and progressive leaders in agricultural and natural resource enterprises. UK-CARET provides a direct link to the national CARET organization.Two members of UK-CARET are designated as national CARET representatives. KSU's CARET representatives work closely with the University and are engaged in advising and representing the interests of its programs. KSU-CARET representatives also

participate in national and state policy discussions and assist in the formation of partnerships that will generate programs and resources for KSU's expanded mission with its new college.

In addition, the experiment station meets formally with other entities: quarterly with the Kentucky Tobacco Research Board to set priorities for research by the Kentucky Tobacco Research and Development Center to assist in the transition from the tobacco-based economy; quarterly with the Equine Initiative advisory committee; quarterly with the Livestock Disease Diagnostic Center Advisory committee; bi-annually with the board of the Gluck Equine Research Center to discuss priorities for the equine industry; and regularly with the Tracy Farmer Center for the Environment on conservation-based research. Input is also received through the Community Farm Alliance, the Sierra Club, and other environmental groups through the UK Biotechnology Research and Education Initiative.

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

1. Method to identify individuals and groups

- Use Advisory Committees
- Use Internal Focus Groups
- Use External Focus Groups
- Open Listening Sessions
- Use Surveys
- Other (Program participants; Project Collaborators)

Brief explanation.

Even when Extension advisory councils appear to be broadly representative of the local population, it is possible that established program priorities fail to target important issues. Agents count heavily on their council members to identify program needs but recognize it is a mistake to think that the personal experiences of 15-40 individuals serving on the local Extension council can adequately identify the needs of the total population. Agents are trained to broaden that expression by involving members of the council in conducting a 'situation analysis.'

Councils use three major sources of information useful in conducting a situation analysis. (1) The first is data that have been collected by someone else. This is typically called secondary or existing data. (2)The second is resident perspectives about issues, problems, resources and opportunities. (3)The third information source is current research and knowledge which may have implications for county programming. Extension Councils began the program development process by collecting situational data from these three sources. Council members and Extension staff together or independently pulled this information together. Additional meetings of councils are held to review the data and discuss the implications of the findings. The product of this discussion is a list of program opportunities which may merit Extension's involvement. While existing data and current research and knowledge are as close as a computer and the internet, the council delegates themselves must be diligent in capturing local resident perspectives through one or more of several methods. Agents and local leaders were trained in the following methods:

Community Forums - Community forums are public meetings in which individuals are invited to share and discuss their perspectives on issues facing the community.

Focus Group Interviews - A focus group interview is a structured discussion with a small group of eight to twelve individuals on a clearly defined topic.

Key Informant Interviews - In any community, there is a number of individuals who, because of

their unique position within the community, can provide important information about local issues and needs.

Surveys - Surveys are a cost effective way of gathering data from a large number of people. Media Scan - A systematic review of the content of news articles and editorials appearing in local newspapers and on local radio and television stations provides more information about the community

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

1. Methods for collecting Stakeholder Input

- Meeting with traditional Stakeholder groups
- Survey of traditional Stakeholder groups
- Meeting with traditional Stakeholder individuals
- Survey of traditional Stakeholder individuals
- Survey of the general public
- Meeting specifically with non-traditional individuals
- Meeting with invited selected individuals from the general public
- Other (Serving on advisory groups/councils for organizations)

Brief explanation.

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3. A statement of how the input will be considered

- In the Budget Process
- To Identify Emerging Issues
- Redirect Extension Programs
- Redirect Research Programs
- In the Staff Hiring Process
- In the Action Plans
- To Set Priorities

Brief explanation.

Information from stakeholders drives research and extension agendas including our pursuit of resources to conduct research and educational programs. In addition, stakeholder input has been utilized across the board for hiring, budget development, resource acquisition, program implementation, and evaluation. Our stakeholders have also provided a voice in communicating the successes of the organization to campus administrators as well as to outside and nontraditional groups and decision makers.

Brief Explanation of what you learned from your Stakeholders

Some of the issues that were identified and/or were under discussion in FY12 include:

Financial Management- Assisting families during these tough economic times remains a priority. Our stakeholders have indicated that families are in need of Extension's expertise on saving more and spending less. Youth are also in need of being educated on managing financial resources.

Environmental Issues- Clientele have reported a need to continue launching educational resources on environmental stewardship related to the home, farm, woodlands, travel, garden, youth and work.

Weight Management - Obesity continues to be a problem in Kentucky and local residents are very concerned. The epidemic contributes to a host of illnesses, including diabetes. Stakeholders want more current materials that are easily accessible either in the local office or as web-based resources.

Disaster Education Program - After the devastating tornadoes and winter storms that have hit our state in recent years, Extension has to be more proactive in providing expert advise and assistance to communities. Stakeholders see this as a priority and resources are being developed and committees are being formed.

Professional Development training for agents/volunteeers - With the cost of travel sky-rocketing, stakeholders and agents have dialogued about ways to reduce costs. We continue to promote more Distance Learning Technology to enhance communications and educational efforts through network of videoconferencing sites in key Kentucky counties, saving clientele and personnel time and travel expense and expediting issue response time.

Camp Improvement Initiative - Kentucky 4-H heard the voice of stakeholders and have completed a multi-million dollar renovation project at several camps. More improvements will take place in the very near future.

Climate Change Education- Concerns from small grain growers in the western part of the state are being met by a new Climate Change working group conducting research and grower education programs.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
9122941	3155733	6492799	3586600

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	8569711	2757484	5261808	1662100
Actual Matching	9122941	3038726	26376689	589813
Actual All Other	0	0	0	0
Total Actual Expended	17692652	5796210	31638497	2251913

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

V. Planned Program Table of Content

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Life Skill Development

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
801	Individual and Family Resource Management	5%	74%	0%	0%
802	Human Development and Family Well-Being	58%	11%	20%	0%
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	0%	1%	65%	0%
805	Community Institutions, Health, and Social Services	0%	14%	15%	0%
806	Youth Development	37%	0%	0%	0%
	Total	100%	100%	100%	0%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	120.0	16.0	0.5	0.0
Actual Paid Professional	126.0	0.5	0.6	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**
1885336	195654	34091	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
2007048	166135	732727	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

Through exension specialists, agents, project coordinators, and program assistants, CES will continue partnering with schools, businesses, and local agencies to present programs designed to build life skill opportunities and improve quality of life in adults and youth. Examples include:

• In-service training for extension agents on planning and retirement •Agents and specialists conducting estate planning and retirement workshops and meetings for adult citizens of Kentucky •Agents providing extension homemaker lessons on wills and retirement •Small Steps to Health and Wealth and GPS Programming have become life skills featured programs •Estate planning and retirement publications will be made available to the public through the web, meetings and activities and county extension offices •Agents and community collaborators training parents, grandparents and community partners in attachment and literacy building, child development, and preventive and non-violent discipline •4-H project groups with six hours or more of teaching time •One-day 4-H project groups •Camp classes •Senior conference track: Child Care- Beyond Babysitting •Middle school career classes - in school and on Web •Alternative school day calendar programs •School-sponsored day care centers for faculty and students •Family Development and Management program for limited resource families, •Entrepreneurship Camp for High School Students

Through research, faculty in the departments of Community and Leadership Development, Family Studies, and Agricultural Economics explore topics such as family firms and policy and the interactions of individuals, families, and communities in the context of the mental and physical health of diverse rural, low-income families.

2. Brief description of the target audience

• Agents, community collaborators, and adults interested in financial management and retirement •Adults with low financial literacy •Parents with children and grandparents •4-H youth from 9 - 19 for project work •4-H youth 11 and up for Babysitting and Beyond Youth entrepreneurs

3. How was eXtension used?

Agents and specialists used materials to enhance their programming efforts. Agents and specialists participated in online training modules and utilized resources that were available. Specialists collaborated with colleagues in other states to facilitate trainings.

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	578559	140946	1144991	273602

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

Patent Applications Submitted

Year: 2012

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	6	2	8

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Published research journal articles

Year	Actual
2012	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of individuals demonstrating informed and effective decision making.
2	Number of youth participating in Extension 4-H Youth Development Programs
3	Dependent care providers (adult or child) report changes in knowledge, skills, opinions or aspirations as a result of programs conducted by Extension.
4	Number of youth or adults who demonstrate increased practical living skills.
5	Number of individuals reporting changes in knowledge, skills, opinions or asprirations related to parenting, personal relationships, or career choices.

Outcome #1

1. Outcome Measures

Number of individuals demonstrating informed and effective decision making.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	162683

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
In Kentucky, it is a priority to invest in youth with leadership and personal development opportunities. In order for young people to serve as competent leaders in the future, they must gain chances to develop the necessary skills today. Youth provide a significant source of human capital through the countless volunteer hours they contribute across the state. Now is the time to educate them on being effective decision makers.

What has been done
Various leadership programs have served as tools to promote leadership development among youth. State 4-H officers completed their Officer Boot Camp and Officer Training programs have been offered to improve presentation abilities. Issues conferences have also been organized to challenge the participants to create and implement a real world action plan for community involvement.

Results
Of the 70,266 youth indicating an increase in leadership skills, knowledge or confidence, 61,375 actually utilized these skills in communication and problem solving to address community issues. Over 8,000 youth took the lead (or were significant contributors) in addressing local issues.

KSU conducted leadership development activities to students through Minorities in Agriculture, Natural Resources, and Related Sciences (MANRRS) and other skill and career building opportunities. These students conducted community development projects, and interviewed and collected information from program participants for needs assessments and evaluation activities organized by KSU.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management
802	Human Development and Family Well-Being
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
805	Community Institutions, Health, and Social Services
806	Youth Development

Outcome #2

1. Outcome Measures

Number of youth participating in Extension 4-H Youth Development Programs

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	230726

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Kentucky 4-H strives to empower youth with the skill sets needed to be successful in life. Youth who participate in 4-H in every Kentucky county have the opportunity to engage in the fundamental 4-H ideals that incorporate the experiential learning model. Research has shown that participation in 4-H contributes to higher educational achievement and motivation for future education, increased civic engagement, and lower risk of negative behaviors.

What has been done
Kentucky 4-H continues to reach over 200,000 youth across the state. This equates to more than a quarter of all students in grades K-12. Over 143,894 are members through various 4-H clubs, while nearly 77,000 are involved in special interest and short-term programming. Camp and school enrichment opportunities remain as the most common means of exposing youth to what 4-H has to offer.

Results
Of the total number of youth involved in Kentucky 4-H, over 70,000 reported an increase in leadership skills and gained self-confidence. Over 80,000 acquired one or more life skills through

4-H programming.

KSU coordinated Health Rocks! for all of KY Cooperative Extension and helped more than 2,000 students learn how to make healthy lifestyle choices and understand the consequences of tobacco, alcohol, and drug use; and to become positive health advocates for their peers.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management
802	Human Development and Family Well-Being
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
805	Community Institutions, Health, and Social Services
806	Youth Development

Outcome #3

1. Outcome Measures

Dependent care providers (adult or child) report changes in knowledge, skills, opinions or aspirations as a result of programs conducted by Extension.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	3494

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
According to the U.S. Census Bureau Survey of Income and Program Participation shows that nearly 90% of children under age 5 whose mothers are employed are in some type of regular child care arrangement. About 30 percent are cared for in organized facilities such as day care centers. There is a need to educate clientele on laws and proper care for young children.

What has been done
There is an increasing number of Family & Consumer Sciences agents in Kentucky that are certified dependent care providers. This has afforded Extension the opportunity to serve a large segment of the population with young dependents. In addition, Kentucky State University's SKY

(Strengthening Kentucky's) Families Program worked with parents to help them reunify safely with their children.

Results
During this year, over 3,400 individuals indicated an increase in knowledge, skills and opinions of topics related to dependent care as a result of Extension efforts. KSU's Fayette County Cooperative Extension Program utilized a community-level, culturally strategic approach and collaborated with several partners to deliver parenting education programs to 50 families. Ninety-three percent of parent participants reported that they agree or strongly agree that they are better parents since attending the parenting program. The program resulted in a potential savings of $72,500 per month for taxpayers (based on estimation that it costs taxpayers $725.00 per month per child for foster care x 100 children).

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management
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 youth or adults who demonstrate increased practical living skills.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	180155

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Each Kentucky Extension program should aim to reach out to a broad audience. With the growing number of Hispanic families in the state, there is a need to increase programming that target these groups. According to the Kentucky State Data Center and the US Census, the Hispanic

population in Fayette County continues to be the fastest growing minority group. With these changes, there is a need to equip county agents with the resources and cultural competence to serve these audiences.

What has been done

Kentucky State University's Hispanic Initiative is a useful resource in providing tips on ways to connect with Hispanic audiences and working with LEP clientele. Agents have access to a specialist and a growing list of publications that can aid in program efforts. The Hispanic Initiative developed trainings for Extension faculty/staff to increase awareness and basic knowledge of what federal agencies and federally assisted programs should know about providing services to LEP clients.

Results

The KSU Hispanic Initiative provided ongoing technical advice, consultation, and training, which led to increased understanding of the Hispanic culture and working with Limited English Proficiency (LEP) clientele. Training has been offered to approximately 115 Extension faculty, staff and administrators from KSU and UK. It is expected that with an increased knowledge of federal mandates and methods for reaching LEP clients, Extension will improve access to services and ensure that program methods, content, and delivery is reflective of the value of diversity and inclusion in the NIFA language. KSU also integrated this information into a culturally appropriate plan to address needs of Hispanic LEP families identified by Child Protective Services. The cost for a child in out-of-home care is approximately $725 per month, per child, plus attorney fees, thus creating a large financial burden to taxpayers. The parents reported that their families are in the process of being reunified.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management
802	Human Development and Family Well-Being
806	Youth Development

Outcome #5

1. Outcome Measures

Number of individuals reporting changes in knowledge, skills, opinions or asprirations related to parenting, personal relationships, or career choices.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	16647

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
According to the Kentucky Council on Post-secondary Education, jobs in science, engineering, and technology are essential for the economic prosperity of the state's citizens and communities. These disciplines fuel innovation, per capita income, and the creation of 21st century jobs. Despite these benefits, Kentucky continues to perform poorly when compared with other states, ranking near the bottom in the number of science and engineering occupations. A key to producing more scientists is to introduce youth to opportunities in Science, Engineering and Technology. Students need to learn how to incorporate entrepreneurship into career options, too.

What has been done
Science, Engineering has been a major focus throughout the state, and the increase in student participation proves that youth are very interested. These programs have also been marketed to other youth development professionals who wish to tap into the expertise that 4-H can provide.

KSU provides training to youth on entrepreneurship as a career option and as an approach to problem-solving.

Results
Since becoming part of the Kentucky 4-H Core Curriculum, over 500 county agents, educators and volunteers have received in-service training and education on 4-H Science, Engineering and Technology curriculum. There has been an increase in minority youth becoming more engaged in science-based 4-H projects and more citizens are becoming more aware of the diverse programs Extension has to offer. The University of Kentucky's engineering school has experienced an increase in their enrollment by 15 percent. This may be due in part to the partnership that has been formed between that college and Kentucky 4-H. KSU 4-H programs, AgDiscovery, Pathways to Agricultural Careers of Tomorrow (PACT), Summer Transportation Institute (STI), and Research & Extension Apprenticeship Program (REAP), helped students connect science training to careers in agriculture, the environment, and food sciences.

KSU's Youth Entrepreneurship Program Y.E.P) provided high school students a foundation upon which to plan sustainable businesses that are environmentally responsible. This will increase the number of students graduating high school with the intention of forming their own business.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management
802	Human Development and Family Well-Being
806	Youth Development

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

See Outcomes 1-5 for results of program evaluations. Methods used include pre and post surveys, qualitative assessments by program staff and secondary data analysis.

Key Items of Evaluation

Methods used include pre and post surveys, qualitative assessments by program staff and secondary data analysis.

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Leadership and Volunteerism

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	100%	40%	0%	0%
903	Communication, Education, and Information Delivery	0%	60%	0%	0%
	Total	100%	100%	0%	0%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	77.0	1.5	0.0	0.0
Actual Paid Professional	77.0	0.1	0.0	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
1114062	23352	0	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
1185982	19710	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

• Community leadership development programs will be conducted for the general public as well as training for those serving in leadership roles in extension councils and district boards, extension homemaker organizations and 4-H programs. •Extension will continue to utilize SEAL (Strengthening Extension Advisory Leadership) materials with extension leaders and in training facilitators to conduct local community programs. •Counties will identify volunteers and send them to certification workshops, thereby reaching more 4-H members across Kentucky. •Kentucky 4-H members will receive consistent, uniform education through school enrichment programs, after-school programs, day and /or summer camps and through communications events in the 4-H "Step Up to Leadership" and 4-H Communications - Speeches and Demonstrations projects and programs.

2. Brief description of the target audience

• General public as well as those serving in leadership roles in extension councils and district boards, extension homemaker organizations and 4-H programs •Volunteers from Kentucky counties with appropriate background and experience in subject matter that we can build on for 4-H subject matter and leadership training •"Step up to Leadership" curriculum and activities are designed for youth in grades K-12 Community-based non-profit organizations

3. How was eXtension used?

eXtension materials were used as a resource for developing program ideas

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	484800	691876	286017	406340

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

Patent Applications Submitted

Year:	2012
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	2	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Published research journal articles

Year	Actual
2012	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of citizens indicating increased leadership knowledge, skills, or confidence through participation in leadership programs.
2	Number of adults and youth utilizing improved skills in communication, problem solving, or group process in addressing community issues and needs.
3	Number of people who are involved in addressing significant community issues.

Outcome #1

1. Outcome Measures

Number of citizens indicating increased leadership knowledge, skills, or confidence through participation in leadership programs.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	70266

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Building the capacity of leaders within counties is critical for community sustainability and viability. Developing leadership is a primary way to build capacity, while also having a positive effect on community infrastructure, groups and families. Building civic capacity and personal leadership awareness are also imperative ways to develop a viable, action-based community. Challenges abound for today's communities, not the least of which include social, economic, and environmental concerns. It has been determined by many local leaders that if community change is to occur, then the skills must be identified and nurtured within.

What has been done
Several Kentucky counties have participating in community visioning activities and initiated partnership programs with the Chamber of Commerce to develop monthly community leadership programs.

Results
The true impact of the leadership programs have been revealed through those graduates moving into leadership positions in the community. County agents have reported that at least 90% of the program graduates who still live in the community have assumed two or more leadership positions since completing the program. One individual was elected to the position of judge for the newly formed family court and one is now the County Attorney. One has helped establish a community garden program and a community feeding program that initially provided meals at Thanksgiving and Christmas but is now serving such a meal weekly.

4. Associated Knowledge Areas

KA Code	Knowledge Area

803	Sociological and Technological Change Affecting Individuals, Families, and Communities
903	Communication, Education, and Information Delivery

Outcome #2

1. Outcome Measures

Number of adults and youth utilizing improved skills in communication, problem solving, or group process in addressing community issues and needs.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	61375

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
In order to improve skills that aid in community problem solving, there must be some relationships formed within counties to help move the agenda that can result in successful outcomes. Many counties lack this because there have been few opportunities to foster such relationships. It is evident that local and state elected officials can aid in the process of addressing community-based issues.

What has been done
Each year the Extension Agents of the ten counties in the Barren River Area Development District (BRADD) host a Leadership Appreciation Breakfast for state legislators, local county judge executives, county extension district board and extension council chairpersons. The objectives for this program are to: report to the leadership group the Extension programs that addressed identified needs; increase awareness of the benefits of Extension programming; provide our clientele the opportunity to use their voice to share their Extension "story", and; visually reinforce Extension's relevance and usefulness within the communities that we serve.

Results
During the past few years of economic hardships, the University of Kentucky Cooperative Extension Service has fought to keep tax funding dollars. The Leadership Appreciation Breakfast serves as a useful tool to reiterate to Kentucky lawmakers and local officials the relevance of the Extension program. The Legislative Appreciation Breakfast program won numerous awards at state association events. The videos were posted on the counties', legislators' and national Epsilon Sigma Phi website and social media websites and is used to promote the Extension

brand.

4. Associated Knowledge Areas

KA Code	Knowledge Area
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
903	Communication, Education, and Information Delivery

Outcome #3

1. Outcome Measures

Number of people who are involved in addressing significant community issues.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	35893

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Although Extension develops a plan of work each year to lay out programs that are needed to address local issues, there are times with a quick response approach is required. When the tornadoes hit eastern Kentucky, what was needed was not in a plan of work for any of the counties. However, it was a time to assist those whose lives had been changed forever.

What has been done
Several counties came to the aid of the citizens in West Liberty, Kentucky. Many of the county agents helped to identify volunteers to be of service. Other Extension offices provided service to clientele in neighboring counties and to those coming in to the area to help with disaster relief efforts.

Results
The week after tornadoes devastated several neighboring counties in March, agents were contacted for help in providing meals for volunteer relief workers who were coming from out of state and were to be housed at Morehead State for a week. During one week's time, 32 Bath County Extension Homemaker members volunteered 192 hours preparing and delivering meals

to the workers. Food and cash donations topped $600. Using the Independent Sector's estimated value of volunteer time (2011) at $21.79 per hour, volunteer time during this week totaled a value of $4,200. Extension Homemakers also sold cookbooks to raise money for the affected counties. So far, $400 has been raised.

4. Associated Knowledge Areas

KA Code	Knowledge Area
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
903	Communication, Education, and Information Delivery

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

See outcomes 1 through 3 for evaluation results

Key Items of Evaluation

Individual surveys, follow-up interviews

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Diet, Nutrition and Healthy Lifestyles

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
502	New and Improved Food Products	0%	0%	9%	0%
503	Quality Maintenance in Storing and Marketing Food Products	0%	0%	9%	0%
702	Requirements and Function of Nutrients and Other Food Components	0%	0%	18%	67%
703	Nutrition Education and Behavior	97%	26%	0%	0%
721	Insects and Other Pests Affecting Humans	0%	0%	38%	0%
722	Zoonotic Diseases and Parasites Affecting Humans	0%	0%	8%	0%
723	Hazards to Human Health and Safety	0%	0%	18%	0%
724	Healthy Lifestyle	3%	74%	0%	33%
	Total	100%	100%	100%	100%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	95.0	2.0	3.0	11.0
Actual Paid Professional	100.0	0.1	3.8	6.1
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**
1456851	31557	232850	225318
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
1550900	2665	1184608	117215
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

• Contacts with clientele related to diet and health will include volunteer training, health fairs, Extension Homemaker leader lessons, safe night programs, healthy homes programs, and more.
• Multidisciplinary programs aimed at strengthening local food systems. Examples of programs to be offered will include: 4-H school enrichment, after-school programs and dayand/or summer camp programs on 4-H Jump into Foods and Fitness. Weight--the Reality Series - Body Image and Get Moving Kentucky physical activity and weight management programs, LEAP-Literacy, Eating and Activity for Preschool Program and Exploring MyPyramid with Professor Popcorn for elementary school age children. •EFNEP - Expanded Food and Nutrition Educational Program for low income families with children. •Multi-agency activities related to diet and health. •Continued research in the areas of nutrient effects on high-fat diets, antioxidant effects on cancer prevention, environmental effects on nutrient requirements and more.
Major research efforts in this program area include: • Preserving antioxidative peptides in foods during processign and storage • The ability of nutrients to modulate disease risk factors associated with exposure to environmental pollutants • Improving safety of agricultural workers in confined space structures. • Management of insects that impact public health

2. Brief description of the target audience

• Extension agents •Community agencies •Volunteer leaders •Parents •Grandparents •General public •Public housing residents •Scientific community •Jump into Food and Fitness participants: curriculum designed for youth ages 8-11 • Farm workers •Food processors

3. How was eXtension used?

Specialists and agents utilize eXtension to enhance programming

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	641107	263027	300100	123778

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

Patent Applications Submitted

Year:	2012
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	3	10	10

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Published research journal articles

Year	Actual
2012	9

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of individuals who experience a change in knowledge, opinion, skills, or aspirations regarding lifestyle changes (diet, exercise, etc.) that improve personal health.
2	Number of citizens reporting making lifestyle changes for the purpose of improving their health.
3	Number of individuals implementing personal health protection practices appropriate for their life stage (preventive health practices, participation in screening and detection opportunities, immunizations, etc.).
4	Number of individuals adopting at least one new safety practice (bicycle helmet, smoke detector, radon detector, fire extinguisher, farm safety devices, ATV safety, etc.).

Outcome #1

1. Outcome Measures

Number of individuals who experience a change in knowledge, opinion, skills, or aspirations regarding lifestyle changes (diet, exercise, etc.) that improve personal health.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	175993

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Children need adequate, nutritious food to become healthy adults. Several Kentucky counties have seen the number of children receiving SNAP benefits double in the past ten years (2010 Kentucky KIDS COUNT Data Book). Nutrition Education Programs can help families: gain access to food and stretch food dollars; decrease hunger within their communities, and; educate recipients in local food assistance programs on healthy and safe food preparation methods.

What has been done
Nutrition workshops have been conducted to address cancer, diabetes, and heart disease within families. Youth have been exposed to proper nutrition through school and community based initiatives. A partnership with County School Food Service Directors have helped to increase awareness of the need for healthy food choices and trying new foods among youth.

Results
Kentucky State University's EFNEP program demonstrated that students increased knowledge in areas of nutrition. Currently, 653 students have completed programs at a cost of $184.97 per student. These numbers account for 5 different organizations including schools, churches, and summer groups. Overall, there were approximately 21 different groups of children who went through 6-10 hours of nutrition education workshops. There has been a steady increase in knowledge of nutritional concepts and learning more of the behavior aspects that surround obesity.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

723 Hazards to Human Health and Safety

724 Healthy Lifestyle

Outcome #2

1. Outcome Measures

Number of citizens reporting making lifestyle changes for the purpose of improving their health.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	50162

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Unfortunately over 30% of Kentuckians are considered obese according to the Center for Disease Control in 2010. This epidemic is largely blamed on the convenience of foods lacking nutrition and instead contain high amounts of fat, salt, sugar, and calories which lead to increased body mass. Living a healthy lifestyle requires knowledge of nutritious foods, ideas for tasteful preparation, and ample physical activity; Backyard gardening provides each of those key elements. In a time where food safety and security is a rising concern, growing one's own vegetables can also bring peace of mind. Extension can fill a void by offering programs that teach citizens how to grow and prepare their own nutritious foods.

What has been done
Plate It Up is a new program that partners with the Kentucky Department of Agriculture to educate clientele on the importance of growing and consuming fresh foods. Demonstration kitchens at several Extension offices are resources that enable Extension to provide quality programming to a wide range of audiences.

Results
After tasting samples provided at Extension-sponsored events, nearly 23,000 Kentucky residents indicated that they were more likely to buy more fruits and vegetables. A total of 18,645 indicated their intent to try the healthier recipes at home. After following up with participants 3 to 6 months later, several counties noted that nearly 3,000 reported an increase in their consumption of fruits and vegetables after participating in the Plate It Up program.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
723	Hazards to Human Health and Safety
724	Healthy Lifestyle

Outcome #3

1. Outcome Measures

Number of individuals implementing personal health protection practices appropriate for their life stage (preventive health practices, participation in screening and detection opportunities, immunizations, etc.).

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	18520

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Statistics show that health-related illnesses are on the rise in Kentucky. This is due in part to more residents not being aware of ways to proactively combat diseases that are preventable.

What has been done
A number of festivals have been organized, programs implemented and curricula used by Extension to promote healthy practices. Individuals and families alike have been targeted. In addition, KSU leads the statewide HealthRocks! Program for youth, ages 10-15.

Results
Of the 212,060 people reached through Extension's programs related to health and safety, nearly 10% implemented personal health protection practices. Several programs are reporting that 90-95% of their participants are getting more exercise and are now making healthier food choices. Through the efforts of KSU, more than 2,000 youth learned how to practice positive health behaviors.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
721	Insects and Other Pests Affecting Humans
722	Zoonotic Diseases and Parasites Affecting Humans
723	Hazards to Human Health and Safety
724	Healthy Lifestyle

Outcome #4

1. Outcome Measures

Number of individuals adopting at least one new safety practice (bicycle helmet, smoke detector, radon detector, fire extinguisher, farm safety devices, ATV safety, etc.).

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	14440

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Safety and healthy practices continue to be a concern for all Kentucky families. Although farmers account for only 2% of the workforce population, the National Safety Council continues to rank agriculture as one of the three most hazardous occupations in the United States. Teaching youth the life skills to take care of themselves is very important in their development. Fall-related hospitalizations for seniors is another issue that must be addressed in the state, as it equates to thousands of dollars in medical expenses each year.

What has been done
The Kentucky Cooperative Extension Service partnered with the Progressive Agriculture Foundation to host annual Safety Day events. Extension also partnered with the County FAN (Fitness and Nutrition) Coalitions, Family Resource Centers, and Parks and Recreation to host Family Fitness and Safety Day, held at local parks. Healthy living while Home Alone safety and Stand Up to Falling programs were also conducted.

Results

Of the 14,440 participating individuals who reported practice changes related to safety (or similar programs), county agents reported that clientele felt more confident in adopting safety practices after having obtained some basic skills through Extension programs. Several participants created an emergency telephone chart and emergency home alone folder. Many could identify bad food safety principles and techniques when presented a case scenario. Youth could identify if a situation was an emergency or not after participating in Extension programs. In other instances, 1324 reported a better understanding of ways to prevent the risk of falling.

4. Associated Knowledge Areas

KA Code	Knowledge Area
723	Hazards to Human Health and Safety

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

See outcomes for results of evaluation

Key Items of Evaluation

Pre Post surveys, observation protocols, focus group discussions

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Social and Economic Opportunity

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
131	Alternative Uses of Land	0%	0%	7%	0%
601	Economics of Agricultural Production and Farm Management	0%	91%	13%	0%
602	Business Management, Finance, and Taxation	9%	1%	13%	0%
603	Market Economics	0%	0%	15%	0%
604	Marketing and Distribution Practices	25%	0%	9%	100%
605	Natural Resource and Environmental Economics	0%	0%	9%	0%
606	International Trade and Development	0%	0%	10%	0%
607	Consumer Economics	0%	8%	6%	0%
608	Community Resource Planning and Development	65%	0%	16%	0%
610	Domestic Policy Analysis	1%	0%	2%	0%
	Total	100%	100%	100%	100%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	25.0	2.5	3.5	4.0
Actual Paid Professional	28.0	0.7	9.0	1.6
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**
428486	277702	571901	137943
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
456147	234680	1693485	25035
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

• Delivery of educational programming and workshops on topics such as understanding community dynamics, asset analysis, business planning, marketing and hospitality management •Efforts to educate producers about marketing and adding value to Kentucky Agricultural products including MarketMaker, Agritourism, Farmers Markets, Kentucky Proud Campaign, specialty livestock markets and marketing programs, Kentucky Entrepreneurial Institute, etc. •Formation of nontraditonal advisory councils in the areas of community and economic development, tourism, agritourism, and arts where appropriate need and resources are identified •Research projects including estimating how changing agricultural trade policies and macroeconomic conditions influence U.S. agricultural exports, an assessment of the economic impact of the equine industry in Kentucky, and urban vs. rural food access and cost, and the creation of consumer demand and market valuation models for the produce sector •The Family Economics and Management Program will focus on Earned Income Credit and Tax Credit opportunities for Kentucky Families.Youth entrepreneurship educationEntrepreneurial development and outreach to educate local officials and leaders on the importance of planning for economic development

KSU has research projects focusing on aquaculture and livestock integrated into a farm analysis for limited resource farmers and documenting oral histories of black farmers in Kentucky.

2. Brief description of the target audience

• county extension agents •Kentucky crop, livestock, produce producers •entrepreneurs •agritourism providers •active and potential community leaders •4-H members • scientific community High school students, teachers, and counselors

Locally elected and appointed officials

3. How was eXtension used?

Materials available via eXtension were used to enhance programming; clientele are made aware of eXtension as a resource

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	335759	100160	96560	355113

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

Patent Applications Submitted

Year: 2012

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	9	9

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Published research journal articles

Year	Actual
2012	9

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of people involved in addressing significant community issues.
2	Number of ongoing coalitions with which extension is actively involved.
3	Number of people who are ready to enter the workforce.
4	Number of individuals reporting changes in knowledge, opinions, skills or aspirations related to economic or enterprise development.

Outcome #1

1. Outcome Measures

Number of people involved in addressing significant community issues.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	35893

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Communities need a consistent, ongoing source of leadership development for local volunteers who are in need of acquiring the skills to be effective change agents. At any given time, a community is in need of someone willing to take a stand on issues, but many don't have enough individuals who have the wherewithal to serve in that capacity. In many counties, Extension has filled this void by providing training to our county staff, who in turn, meet the needs of volunteer leaders.

What has been done
A total of 130 County FCS Extension Agents demonstrated enhanced leadership development skills through professional development in-service education utilizing the new Kentucky Extension Leadership Development (KELD) curriculum's Personal Development curriculum content. The new curriculum, development by a multidisciplinary team of specialists and agents, provides agent competencies for county and area leadership development learning activities.

Results
Agents put into practice what they learned by conducting leadership seminars for volunteers. Four sessions were conducted as part of the Kentucky Extension Homemaker's State Meeting to introduce the content and its applicability to county leadership development workshops. The curriculum's first section features ten personal leadership development content topics and an accompanying facilitator guide for each program area (FCS, ANR & 4-H) with accompanying visuals. Over 60 Extension volunteers throughout one particular district demonstrated learning skills, group communications and the psychology of motivation through leadership workshop sessions. These skills are now being utilized as the volunteers serve Extension and a host of additional agencies and organizations.

4. Associated Knowledge Areas

KA Code	Knowledge Area
131	Alternative Uses of Land
604	Marketing and Distribution Practices
608	Community Resource Planning and Development

Outcome #2

1. Outcome Measures

Number of ongoing coalitions with which extension is actively involved.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	2674

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Forest Industry programming and requests for assistance have dropped dramatically during the past several years due to the impact of the recession on the hardwood lumber markets and the supplying mills. By some estimates, approximately 35-50% of the hardwood sawmills in the state have temporarily or permanently ceased production. Small entrepreneurs and sawmills that have connections to the railroad tie industry have managed to survive and even to grow in some cases, but in general the primary wood industry is having a difficult time. More businesses and producers are looking to Extension to form partnerships .

What has been done
The UK Forestry department continues to work with the Railway Tie Association. A forestry specialists served as one of two principal instructors for the Railway Tie Grading Short Course. This is an important course; according to US Census statistics, railroad ties have been the third largest user of wood in the U.S. during this recessionary period (tied with cabinets in terms of the volume of hardwood consumed). The course is held at a different location each year to attract attendees from all over North America. Most of the attendees are from the U.S., but it is not uncommon for people to attend from Canada or Mexico.

Results

In addition to being nationally recognized for service in the forestry industry, the department's work is also a highly visible way to recruit students. This year marked the founding of the Central Kentucky Wood Producers Association, which was organized to facilitate training, networking, and friendly interaction among small-scale wood products producers similar to what is common among some of the large-scale hardwood lumber and moulding producers. The organization contains a diverse group of members including those with several small hardwood sawmills (with and without dry kilns), a cedar sawmill, building restoration specialist, artists, custom cabinet makers and loggers.

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation
604	Marketing and Distribution Practices
605	Natural Resource and Environmental Economics
606	International Trade and Development
607	Consumer Economics
608	Community Resource Planning and Development

Outcome #3

1. Outcome Measures

Number of people who are ready to enter the workforce.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	8425

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

There is a need to educate all citizens about the importance of preparing for a rewarding career. Youth need this exposure at an early age. However, there is not only the need to teach them how to acquire skills for certain jobs, but to also have a solid understanding of how to start a business.

What has been done

E-Discovery Challenge is a UK Extension initiative funded by the Appalachian Regional Commission to help encourage entrepreneurship in 32 economically distressed Kentucky communities. The focus was to train middle school teachers to integrate entrepreneurship into their classroom and to help students launch new businesses. KSU also offered Starting Your Online Business to address what to sell, pricing, marketing strategies, inventory, what you cannot sell over their internet, PayPal, fees of doing business, and steps to starting a business, and how to make your business stand out.

Results

About 100 teachers took part in the E-Discovery Challenge program. In turn, they worked with 2,074 students to launch 507 new businesses that sold products and services. Seed money was furnished to students and over 95% was returned to the schools to help students launch more businesses during the school year- a sign that the program is sustainable and will continue after the grant expires. E-Discovery Challenge is part of the Kentucky Entrepreneurial Coaches Institute, a unique leadership program which strengthens the entrepreneurial culture in rural areas.

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development

Outcome #4

1. Outcome Measures

Number of individuals reporting changes in knowledge, opinions, skills or aspirations related to economic or enterprise development.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	34033

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

During the period of economic recession and in the continued slow recovery, Kentucky consistently lagged behind other areas of the United States in household economic indicators, including personal income, population living below the poverty line, and unemployment rates. Many individuals, families, and households were unprepared to manage the rapidly changing economic conditions. Many household financial strategies employed prior to the recession most likely made them more vulnerable during the period of economic crisis. This was an opportunity to empower citizens through entrepreneurship.

What has been done

The Kentucky Entrepreneurial Coaches Institute has trained over 80 grass-roots leaders this past year in entrepreneurial coaching and provided a context for coaching and efforts to build an entrepreneurial culture.

Results

Based on written feedback, 60 full-time jobs and 26 part-time jobs have been created as a result of the coaching process. In addition, there have been several dozen business start-ups that have not led to hiring at this point. Some businesses have increased sales without additional hires. while there is indication that sales have increased. Also, KSU Small Farm Program and 2501 Project help increase net farm income and product diversification of small farms.

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation
603	Market Economics
604	Marketing and Distribution Practices
605	Natural Resource and Environmental Economics
608	Community Resource Planning and Development
610	Domestic Policy Analysis

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

V(I). Planned Program (Evaluation Studies)

Evaluation Results

See outcomes 1-4

Key Items of Evaluation

Follow-up interviews, survey

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Global Food Security and Hunger

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	0%	40%	0%	0%
201	Plant Genome, Genetics, and Genetic Mechanisms	0%	0%	7%	0%
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	0%	0%	8%	0%
204	Plant Product Quality and Utility (Preharvest)	0%	0%	0%	16%
205	Plant Management Systems	56%	20%	10%	0%
206	Basic Plant Biology	0%	0%	10%	0%
211	Insects, Mites, and Other Arthropods Affecting Plants	0%	0%	14%	10%
212	Pathogens and Nematodes Affecting Plants	0%	0%	12%	0%
215	Biological Control of Pests Affecting Plants	0%	0%	7%	0%
301	Reproductive Performance of Animals	0%	5%	8%	13%
302	Nutrient Utilization in Animals	0%	0%	9%	11%
303	Genetic Improvement of Animals	0%	0%	2%	0%
304	Animal Genome	0%	0%	3%	0%
307	Animal Management Systems	39%	20%	1%	0%
308	Improved Animal Products (Before Harvest)	0%	5%	0%	18%
311	Animal Diseases	0%	0%	8%	0%
401	Structures, Facilities, and General Purpose Farm Supplies	0%	0%	0%	32%
402	Engineering Systems and Equipment	0%	0%	1%	0%
601	Economics of Agricultural Production and Farm Management	0%	10%	0%	0%
604	Marketing and Distribution Practices	5%	0%	0%	0%
	Total	100%	100%	100%	100%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	180.0	16.0	55.0	13.5
Actual Paid Professional	168.0	7.0	41.0	20.9
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
2485216	2173680	3240806	652079
1862 Matching	1890 Matching	1862 Matching	1890 Matching
2645653	2571901	15155094	334932
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

The development and transfer of technical resources is a critical dimension of a strategy to advance agriculture and the competitiveness of the state's agricultural economy.

•Field days, demonstration programs, plotwork and hands-on training by agents and specialists will continue to be important mechanisms for disseminating technical information on production agriculture and horticulture •Printed material, mass media, Web sites, audio, and electronic communications will be employed to disseminate the latest research findings on decision-making •Featured programs for this plan of work cycle will include: Grain Crops Academy, Master Grazer Program, Horse College and the Innovative Tobacco Producer Program •Goat Production and Management Programs •Small Farm Program at KSU will focus on needs of small and limited resource farmers, •The Kentucky Fruit and Vegetable Conference plays a major role in commercial horticultural producer education •Third Thursday programs will be conducted at KSU and their research and demonstration farms will attract small and limited resource farmers and will also serve as training for County Extension Agents •Aquaculture and Fish Disease/Management Programs •Master Cattlemen and advanced Master Cattlemen programs will be conducted •Educational programs qualifying producers to receive Tobacco Settlement funds in the areas of goats, forages, bull selection and hay storage will inprove producer skills in these areas •New Research findings from KSU's Aquaculture Research center, pawpaw, goats, and honeybees will be the subject of field days and meetings to bolster the expanding alternative in Kentucky and the Southern Region Demonstration and training for appropriate production and processing of pastured poultry and honey. •Home-based processing training •On-site food demonstrations

Ongoing research at UK supporting competitive agriculture includes: •improvements in plant pest and disease resistance •optimization of cropping system inputs for maximum cost/benefit • improvements in animal reproductive efficiency •vaccine and other intervention development to improve animal health •engineering solutions for sustainable plant and animal production •optimization of animal nutrition •interventions to improve access to healthy food in Appalachia • biological pest control

KSU has active research areas in areas of: • Aquaculture projects are concerned with the commercialization of paddlefish, nutrition and diet formulation for freshwater crustaceans, and developing technologies for raising largemouth bass. • Doe and kid production evaluation for meat goats is a relatively new research and extension thrust for KSU. • Pawpaw and primocane blackberries are under development as niche crops in Kentucky. • The control of Nosema diseases is being researched as a potential cause of colony collapse disorder (CCD) of honey bees.

2. Brief description of the target audience

• Kentucky farmer operations with agents recruiting and selecting producers for participation in Grain Academy, Master Cattlemen, Innovative Tobacco Grower Program, Horse College, and Master Grazer Programs •Farm owners, operators, absentee land owners with a variety of backgrounds and experiences •Farmers' market members and potential members •Community and farm leaders •Consumers •Extension agents

3. How was eXtension used?

Reference materials, curriculum were used

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	1932562	87466	170727	7606

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

Patent Applications Submitted

Year:	2012
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	40	129	169

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Graduate research assistants engaged in research
  Not reporting on this Output for this Annual Report

Output #2

Output Measure

- Published research journal articles

Year	Actual
2012	127

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of producers adopting one or more practices resulting in increased profits.
2	Economic impact of the adoption of farming practices resulting in increased profits.
3	Number of producers adopting resource management technologies (IRM, IPM, soil testing, soil fertility management, etc.).
4	Number of producers completing Grain Academy and Master Grazer Programs receiving their certification.
5	Number of individuals reporting changes in knowledge, opinions, skills and aspirations related to impact of public policies on agriculture and the environment.
6	Availability of new tools to improve profitability in reproducing swine
7	Availability of improved biological control strategies for increased crop yields
8	Availability of improved tools to manage losses from fexcue toxicosis in forage animal systems
9	Availability of methods to increase reproductive efficiency in cattle

Outcome #1

1. Outcome Measures

Number of producers adopting one or more practices resulting in increased profits.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	13611

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
With the state of the economy, many of Extension's clientele are looking for ways to increase income. Kentucky Extension has implemented programs aimed to encourage producers to adopt positive practices that will hopefully increase financial stability.

What has been done
The "Got Cedar" Workshops Series was targeted at Kentucky's private landowners in central Kentucky with eastern red cedar on their property. It was designed to educate landowners about the eastern red cedar resource and provide information that will help them manage and market it. The workshop series was a partnership of the UK Forestry Extension, local county extension agents and their offices, the Kentucky Division of Forestry, Kentucky Association of Consulting Foresters, and companies in the red cedar industry.

Results
Seventy people attended the workshop impacting 3,340 acres. Exit evaluations showed that participants had a 53.83% improvement in knowledge gained and 93.2% indicated that the workshops will help them better manage their woodlands. The long-term impacts from this program will result in participants' enhanced ability to address a variety of woodland related issues, resulting in: increased revenue, increased woodland productivity, and improved woodland health.

4. Associated Knowledge Areas

KA Code	Knowledge Area

102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
215	Biological Control of Pests Affecting Plants
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
303	Genetic Improvement of Animals
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)
311	Animal Diseases
402	Engineering Systems and Equipment
604	Marketing and Distribution Practices

Outcome #2

1. Outcome Measures

Economic impact of the adoption of farming practices resulting in increased profits.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1716214

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
With the state of the economy, many of Extension's clientele are looking for ways to increase income. Kentucky Extension has implemented programs aimed to encourage producers to adopt positive practices that will hopefully increase financial stability.

What has been done
KSU conducted workshops to help small farmers increase their profitability. KSU and UK collaboratively conducted trainings using web technology to address direct marketing, budgets

and economics of livestock enterprises, animal health issues, crossbreeding and selection, and nutrition.

Results
KSU's Small Farm Program assisted small farmers in increasing net farm income and product diversification. Farmers averaged an estimated $4,500 increase in income, with African-American farmers averaging an estimated $5,000 increase in farm income. Also, evaluations indicated that producers are willing to utilize web capabilities to conduct producer meetings as an alternative to costly and time-consuming travel.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)
604	Marketing and Distribution Practices

Outcome #3

1. Outcome Measures

Number of producers adopting resource management technologies (IRM, IPM, soil testing, soil fertility management, etc.).

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	25978

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The key to encouraging producers to engage in new practices is to provide exposure to what can assist them in running a more effective operation. Several programs were implemented to educate producers on proper management technologies.

What has been done

The Woodland Owners Short Course (WOSC) is targeted toward Kentucky's private woodland owners and is designed to assist them in the management of their woodlands. The WOSC is the largest woodland owner educational program offered in Kentucky and is supported by more than 10 forestry and natural resource agencies and organizations. Also, KSU sought out resources to implement resource management techniques.

Results

(1) KSU was awarded a grant from the Kentucky Agricultural Development program to purchase extraction equipment, which was distributed from Graves to Pike Counties. It was documented this year, that over $1 million of honey was extracted with the equipment. KY beekeepers were allowed to use the equipment at no cost, so that their profitability was maximized. The equipment remains available for beekeepers. (2) Experienced and inexperienced woodland owners attending the advanced WOSC track reported strong indications to use the information in managing their woodlands and 100% indicated that attending the program better prepared them to manage their woodlands. The long-term impacts from this program will result in increased revenue earned from timber sales for those using a professional forester, improved wildlife habitat, increased woodland productivity, and improved woodland health.

4. Associated Knowledge Areas

KA Code	Knowledge Area
201	Plant Genome, Genetics, and Genetic Mechanisms
205	Plant Management Systems
304	Animal Genome
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)
311	Animal Diseases

Outcome #4

1. Outcome Measures

Number of producers completing Grain Academy and Master Grazer Programs receiving their certification.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	284

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Forage production has always been common throughout the state. A grazing networks of farmers are needed to increase their knowledge and understanding of managing forages and livestock under pasture based production systems.

What has been done
Components of the Master Grazer Educational program were conducted across the state of Kentucky. These educational programs included Kentucky Grazing Schools, an Advanced Grazing School and regional grazing networks to help producers implement and more effectively manage grazing systems.

Results
After attending the Grazing schools, over 80% of the participants plan to make the following changes: Renovate pastures with legumes, increase use or start using stockpiled fescue, design a watering system to provide ready access to any grazing paddock, use temporary electric fence to create more grazing paddocks, and to use additional high tensile electric fencing. When surveyed, the majority of attendees increased their knowledge of the presented topics.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
307	Animal Management Systems

Outcome #5

1. Outcome Measures

Number of individuals reporting changes in knowledge, opinions, skills and aspirations related to impact of public policies on agriculture and the environment.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	23931

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The USDA and the Kentucky Agricultural Development Board have made cost share funds available for energy efficiency improvements in the past few years. Both programs require an energy assessment or audit as part of the application. The UK Biosystems and Agricultural Engineering Department was asked to help support the programs by providing technical assistance for potential program applicants.

What has been done
Subsequently, energy assessments were provided for 18 grain farms that applied for cost share funds from one or both programs. Projects evaluated in the assessments included both in-bin and stand-alone dryers. Upgraded systems included improved electronic controls and technology that manipulates grain flow through the dryer or employs heat recovery technology to improve fuel efficiency.

Results
Energy assessments provided the following estimate of benefits for the 18 projects: Avg. annual savings per grower: $4,800 per farm; Annual energy savings (%): 26% (total BTU basis)

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices

Outcome #6

1. Outcome Measures

Availability of new tools to improve profitability in reproducing swine

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

A primary factor affecting profitability of swine production is sow productivity, and optimum nutrition of the sow is essential to maximizing sow productivity. An ideal nutrition program should provide adequate nutrients to maximize sow productivity while minimizing excreted nutrients and feed costs. An increase in the number of pigs marketed per sow per year, through improved sow nutrition, would result in increased profitability by allocating the fixed sow costs over more pigs. Although progress has been made in sow nutrition in the last 30 years, there is still a dearth of information relative to specific nutrient requirements of sows during gestation and lactation, especially the high milk-producing sows used today. Further research is greatly needed to completely define the levels of various nutrients necessary for optimizing reproduction and lactation, and for minimizing nutrient excretion.

What has been done

A study was completed with a new commercial form of phytase fed to sows. It's supplementation to the growing animal has a large market adoption; however, its relative value in the reproducing animal has been debated because of differences in feeding management compared to the growing animal. The product resulted in no change in reproductive performance of the sow, as would be expected, but increased digestibility of phosphorus, calcium, and total ash. Further, the increased digestibility of phosphorus resulted in less phosphorus excretion in the waste.

Results

Phytase is undoubtedly the supplemental enzyme that has brought the most value to the livestock producers and to reducing the environmental footprint of the livestock industry. Our demonstration of efficacy in sows should increase market adoption for use in reproducing animals. Assuming a dietary cost savings of $1.00/ton of feed by using phytase rather than supplemental phosphorus and an increase in market adoption by 20% of the U.S. sow herd results in a $1,200,000 savings for U.S. producers along with an expected reduction in phosphorus excretion of 15% from those sows while the phytase is being fed.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals

Outcome #7

1. Outcome Measures

Availability of improved biological control strategies for increased crop yields

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Characterizing the function of generalist predator food webs is important for promoting biological control solutions because understanding what predators consume in relation to food availability reveals subtle, but often important, shifts in dietary preference that can affect pest density and crop yield. Integrating natural enemy solutions into agriculture forms an opportunity to facilitate yield enhancement and economically important increases in agricultural revenue.

What has been done
Field experiments were conducted to examine the effect of habitat manipulation on the abundance and efficacy of key predators in agroecosystems. In Kentucky, a study was conducted to determine the role of weed strips on biological control in winter wheat agroecosystems.

Results
The primary yield losses in winter wheat are caused by the aphid-vectored Barley Yellow Dwarf Virus and this virus causes 17% yield loss worldwide and $31 million in annual yield losses in Kentucky alone. This research project revealed that the utilization of weed strips in Kentucky wheat not only increased the number of natural enemies, but resulted in a 10% increase in overall yield in the experimental fields. Such an increase in yield has the potential to produce significant economic benefits to winter wheat producers if results are replicated over multiple years and field sites.

4. Associated Knowledge Areas

KA Code	Knowledge Area
211	Insects, Mites, and Other Arthropods Affecting Plants
215	Biological Control of Pests Affecting Plants

Outcome #8

1. Outcome Measures

Availability of improved tools to manage losses from fexcue toxicosis in forage animal systems

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Pregnant mares grazing endophyte infected (E+) tall fescue frequently incur problems in late pregnancy such as extended gestation, thickened placenta, difficult births, lack of milk production, and potentially death of the foal and/or mare at parturition. Responses of individual mares grazing the same pastures are variable, and currently there are no convenient premonitory physiological measurements to determine which mares may experience problems of fescue toxicosis. This project investigated whether changes in vasoconstriction and blood flow parameters, as measured with Doppler ultrasonography, are satisfactory response variables to indicate which animals are consuming potentially detrimental levels of E+ fescue.

What has been done

An initial set of experiments performed in nonpregnant mares or geldings determined optimal blood vessels for study, determined the ability to detect changes in vessel and blood flow characteristics using a pharmacological agent known to cause vasoconstriction in horses, and compared manual vs. automated trace measurements. The second set of experiments determined which vessel and blood flow parameters are most affected when horses consume E+ fescue seed, the duration of feeding E+ seed necessary to induce vascular effects, and the duration after cessation of feeding for the effects to return to pre-treatment levels. The amount of seed being fed was determined by animal body weight, ergot alkaloid concentrations in the seed, and the amount the animals were willing to consume. The third set of experiments determined if uterine/placental vessels behave in the same manner as peripheral vessels when animals consume E+ fescue seed, if placental thickening can be induced in mid-gestation mares by feeding them E+ fescue seed, and, if so, correlated changes in uterine/placental blood flow with the pathology of placental thickening.

Results

There are approximately 9.2 million horses in the United States and the horse industry sustains approximately 1.4 million full-time jobs annually. The overall value of the horse industry, including goods and services in approximately $102 billion per annum. There are approximately 30 million acres of fescue in the United States and approximately 80% of that estimated is to be E+ tall fescue. Although currently there is no estimate of the economic impact of grazing E+ fescue in horses, in cattle the economic impact is reported to be approximately $600 million annually, so it is easy to understand that the economic impact of fescue toxicosis in horses could be of considerable significance. These appear to be the first experiments demonstrating that endophyte infected fescue causes vasoconstriction in horses in vivo, and that blood flow to the reproductive tract is altered. This new knowledge and technology, may, for the first time, provide veterinarians, farm manages, and research scientists with a convenient and satisfactory response variable to determine premonitory signs of fescue toxicosis in broodmares.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems
307	Animal Management Systems

Outcome #9

1. Outcome Measures

Availability of methods to increase reproductive efficiency in cattle

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Reproductive efficiency continues to be a major problem in lactating dairy cows. Improved procedures for estrous synchronization in heifers and lactating dairy cows are needed to increase farm income by increasing milk production, through reduced days open and genetic improvement (widespread use of artificial insemination). Early pregnancy detection is essential for the application of modern timed artificial insemination (TAI) protocols such as RESYNCH. Many producers do not have regular access to ultrasound and must rely on other methods of early pregnancy detection. A limitation to the use of blood- based detection procedures by producers is the difficulty in obtaining the blood sample. On dairy farms, it may be easier to obtain milk samples.

What has been done
Experiments were conducted to compare the accuracy of the IDEXX pregnancy detection assay after modification for the use of milk samples to the established, blood-based assay system. Lactating Holstein dairy cows (n=19) were bred by artificial insemination and assessed for pregnancy by transrectal ultrasonography. Milk and blood plasma samples were analyzed for pregnancy associated glycoproteins (PAGs) using the IDEXX proprietary, enzyme-linked immunosorbent assay (ELISA). Results indicated that the milk PAG ELISA identifies pregnant and nonpregnant cows with a high degree of accuracy as early as 30 days after insemination and

is comparable to the established, blood-based assay system.

Results

This study has identified a new, potentially more convenient tool for dairy producers to improve estrous synchronization and increase milk production. Successful implementation of RESYNCH protocols can be expected to shorten the average days open by 5-10 days (average cost of $5.00/cow/day open), saving American dairy farmers about $300 million per year.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals

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 Programmatic Challenges

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

See outcomes 1-5 for results

Key Items of Evaluation

Surveys, observations, one-on-one interviews

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Agricultural and Environmental Quality

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
101	Appraisal of Soil Resources	0%	0%	16%	0%
102	Soil, Plant, Water, Nutrient Relationships	0%	0%	15%	30%
104	Protect Soil from Harmful Effects of Natural Elements	0%	0%	2%	0%
112	Watershed Protection and Management	2%	0%	16%	0%
123	Management and Sustainability of Forest Resources	21%	75%	0%	10%
131	Alternative Uses of Land	0%	25%	2%	10%
133	Pollution Prevention and Mitigation	0%	0%	16%	20%
135	Aquatic and Terrestrial Wildlife	0%	0%	0%	10%
136	Conservation of Biological Diversity	0%	0%	3%	0%
205	Plant Management Systems	21%	0%	3%	0%
213	Weeds Affecting Plants	0%	0%	6%	0%
215	Biological Control of Pests Affecting Plants	0%	0%	0%	20%
302	Nutrient Utilization in Animals	0%	0%	10%	0%
403	Waste Disposal, Recycling, and Reuse	6%	0%	6%	0%
605	Natural Resource and Environmental Economics	50%	0%	5%	0%
	Total	100%	100%	100%	100%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	35.0	1.0	10.0	8.5
Actual Paid Professional	32.0	0.1	11.3	11.7
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**
514183	6311	480690	475720
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
547376	5308	3806796	104077
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

The University of Kentucky and Kentucky State University are engaged in a wide range of programs geared towards achieving greater harmony between agriculture, people, and the environment. All components of the research and extension focus on the broader goal of practicing agricultural and related disciplines in a manner consistent with improving sustainability of resources and protecting ecosystem integrity. Program examples include:

• Master Gardener Program consisting of 12-15 three-hour sessions related to gardening, resource management, botany, soils, pesticides and pesticide safety •Master Logger program consisting of three one-day sessions focusing on best management practices, safety, laws and regulations •Integrated Pest Management programs including programs aimed at homeowner application of pesticies and fertilizers •Woodlot owner education program focusing on best management practices, harvesting, contracts, wood products and alternative forest products •Water quality, Water Pioneer, daycamps, and forestry camp programs aimed at developing a better understanding af stewardship between youth and the environment.

Agricultural and environmental research included: •the influence of forest harvesting on hydrology and water quality •challenges of large mammal conservation and restoration •prescribed fire as a management tool in forests •water research as it relates to karst landscapes, groundwater, and streamside management. •creation of alternative riparian zone treatments for surface water management •mine research related to disposal and management of waste water •preventing adverse compaction of soil on mine reclamation sites •methods for dealing with insect pests of urban landscapes •environmental impact and hazard of chemical pesticides in landscapes and turf

KSU Extension Programs continued to support efforts related to policies to improve environmental quality •Gardendata.org •Organic Agricultural Programs

KSU research projects focusing on improving environmental quality include: soil conditioners and constructed wetlands for water quality improvement, the ecological impact of organic, conventional and biotechnology enhanced cropping methods are being evaluated using sweet corn as a model, weed control options in organic sweet corn and potato production is under study, and leaf beetle biodiversity is being used as an indicator of habitat biodiversity and environmental health in many Kentucky production and natural systems.

2. Brief description of the target audience

• General public •Community volunteers advanced in horticulture instruction and willing to give back to the community •Individual commercial loggers in Kentucky and those out of state wishing to do

business in Kentucky •Woodlot owners •Farm owners and operators •Homeowners

3. How was eXtension used?

Resource materials were accessed and considered for program use

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	214601	931063	139984	595270

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

Patent Applications Submitted

Year: 2012

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	20	34	54

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Graduate student research assistants

  Not reporting on this Output for this Annual Report

Output #2

Output Measure

- Published research journal articles

Year	Actual
2012	30

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of individuals adopting practices that protect water quality.
2	Number of people utilizing forest management practices.
3	Number of acres upon which new or additional conservation practices are used.
4	Number of individuals adopting one or more practices related to conserving, sustaining and/or protecting soil resources.

Outcome #1

1. Outcome Measures

Number of individuals adopting practices that protect water quality.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	23917

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Several rural and urban Kentucky communities are facing issues related to water quantity, conservation, and quality. Across the state, there are existing challenges of protecting valuable natural resources from growth and pollution. Now more than ever, there is a great need for public education involving water education, adequate food production systems, and community resources.

What has been done
Eight counties piloted a Natural Resource Environmental Science Academy. The goal was to offer an on-going developmental learning experience in Natural Resource and Environmental Sciences for youth with high academic ability in a challenging educational setting. Also, Carter County 4-H Teen Council members have been trained over the past 3 years to help teach water education to elementary and middle school students. In Jefferson County, more than 2500 elementary and middle school students expanded their knowledge about water and how they as consumers play an important role in preserving it for future existence. Students engaged in in-class school enrichment programs and took part in an out of classroom experiential learning programs by participating in the Louisville Water Company (LWC) Adventure in Water Festival.

Results
Counties used curricula that included lessons on watersheds and water quality. When given the option to participate in the youth 20-gallon challenge, ninety-five students pledged to save over 9,200 gallons of water, or approximately 99 gallons per student. Due to projects in Jefferson county, students demonstrated an increase in knowledge of how erosion causes turbidity in the waterways, that salt water creates greater or more osmotic pressure that forces objects to the surface of water, and how to identify water qualities based on mixture types and their properties.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management
123	Management and Sustainability of Forest Resources
133	Pollution Prevention and Mitigation

Outcome #2

1. Outcome Measures

Number of people utilizing forest management practices.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	4451

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The public visibility of the forestry and forest products industries is low in Kentucky, even though one out of every nine manufacturing workers is employed by a forest products company. There continues to be a need to educate the public on the value of forestry in the state and proper methods to sustain these resources.

What has been done
Specific youth programs have been conducted, including the Wood Magic Science Fair program (designed to raise the awareness of wood products' importance for elementary school-age children), Junior 4-H Forestry, Senior 4-H Forestry, and Win With Wood. These programs work to complement the basic environmental education that children receive in grades 1-12.

Results
Programs raise the awareness of the importance of the wood and wood products industries and the importance of their products in everyday life. These programs have not only benefited students. Some Kentucky Division of Forestry personnel have been trained in Wood Magic, for example, and are independently using portions of the Extension program materials in their line of work.

4. Associated Knowledge Areas

KA Code	Knowledge Area
123	Management and Sustainability of Forest Resources

Outcome #3

1. Outcome Measures

Number of acres upon which new or additional conservation practices are used.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	10480

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Environmental stewardship and natural resource conservation are important to the overall well-being of individuals, families and communities. However, education in this area is a challenge due to the complexity of the issues and the lack of awareness about how even small individual behaviors impact the environment.

What has been done
KSU collaborated with the Nature Conservancy to provide GIS training and support in land management to develop a prioritization plan based on assessing known biological resources in need of protection. Another resource in Kentucky is the Woodland Owners Short Course (WOSC), which targets private woodland owners and is designed to assist them in the management of their woodlands. The WOSC is the largest woodland owner educational program offered in the state and is a collaboration between Extension and more than 10 forestry and natural resource agencies and organizations.

Results
KSU, in conjunction with the Nature Conservancy, developed data and analyses in order to document gaps in the currently protected land base (easements, etc). In addition, more than 124 people attended the 2011 WOSC representing 20,712 woodland acres. One hundred percent of the WOSC participants indicated they would use some of the information in the management of

their woodlands and that attending the program better prepared them to manage their woodlands. The long-term impacts from this program will result in increased revenue earned from timber sales for those using a professional forester, improved wildlife habitat, increased woodland productivity, and improved woodland health.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
123	Management and Sustainability of Forest Resources
131	Alternative Uses of Land

Outcome #4

1. Outcome Measures

Number of individuals adopting one or more practices related to conserving, sustaining and/or protecting soil resources.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	13050

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Environmental stewardship has come to the forefront, as farmers push grain production on more sloping and environmentally sensitive land. Fortunately, most of the soils (usually Memphis Silt Loam) in Union County are very productive and without natural fragipans. However, soil erosion can be a very difficult issue if not properly addressed. Extension, along with NRCS and FSA, have been successful in getting farmers to be aware of and quickly correct potential problems.

What has been done
Educational opportunities have been made available through farmer meetings and news media for farmers to gain knowledge and put into use Best Management Practices. A major thrust has been to advise and assist farmers using the very latest, unbiased, researched-base information.

Results

As a result of these efforts, no-till cover crops and gully plugs are being used on a record number of acres, even with limited financial assistance. Wildlife and farmers thrive as drainage waters run clear as a result of truly dedicated professional agricultural workers in Union County.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
123	Management and Sustainability of Forest Resources
131	Alternative Uses of Land

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

See outcomes 1-4 for results

Key Items of Evaluation

Follow up calls, pre-post surveys

V(A). Planned Program (Summary)

Program # 7

1. Name of the Planned Program

Food Safety

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	0%	10%	0%	0%
501	New and Improved Food Processing Technologies	4%	0%	46%	0%
601	Economics of Agricultural Production and Farm Management	0%	10%	0%	0%
703	Nutrition Education and Behavior	45%	0%	0%	0%
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	0%	80%	0%	0%
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	0%	0%	54%	0%
724	Healthy Lifestyle	51%	0%	0%	0%
	Total	100%	100%	100%	0%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	12.0	0.0	2.0	0.0
Actual Paid Professional	12.0	0.1	2.5	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**
171394	6311	251483	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
182459	5308	823573	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

-Training and certification workshops were conducted for home-based microprocessors through the Food systems Innovation Center
-Research was conducted on best practices to reduce contamination of food pathogens and toxins in pre- and post- harvest environments
-Research was conducted on better detection methods for monitoring food risks
-Educational programs were targeted toward parents and others who prepare food in the home
-Educational programs were directed toward young children and teens on basic cleanliness such as hand washing

2. Brief description of the target audience

-extension agents
-food producers
-food processors
-parents
-volunteer leaders
-youth and children
-consumers

3. How was eXtension used?

Resource materials were accessed to develop programs

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	111162	67281	49427	30227

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

Patent Applications Submitted

Year:	2012
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	1	1

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Published research journal articles

Year	Actual
2012	1

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of individuals who experience a change in knowledge, opinions, skills or aspirations regarding the safe production, storage, handling, or preparation of food (safe preservation techniques, hand washing, following time and temperature guidelines)
2	Number of individuals who implement recommended practices for the safe production, storage, handling or preparation of food (safe preservation techniques, hand washing, following time and temperature guidelines)

Outcome #1

1. Outcome Measures

Number of individuals who experience a change in knowledge, opinions, skills or aspirations regarding the safe production, storage, handling, or preparation of food (safe preservation techniques, hand washing, following time and temperature guidelines)

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	44524

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Due to the economic downturn, there has been an increase in home gardening, freezing, food preservation and using other methods for long term storage. Due to this there has been a surge in requests for information about home food preservation, home gardening and stretching the family's resources. Unfortunately, some are using unsafe recipes and processes that could endanger the lives of family and friends.

What has been done
To address issues related to home food preservation and how to stretch the food dollar, County Family and Consumer Sciences Extension Agents have conducted Food Preservation workshops. These workshops focused on how to select fresh fruits and vegetables, picking produce at its peak, preserving food at its peak (for best quality and nutrition), cleaning and preparing produce to be preserved, basics of boil water canning, basics of freezing, equipment and methods that are not recommended or safe.

Results
Participants were given pretests at the beginning of the workshop followed by a posttest at the end of the workshop to determine any increase in knowledge of food preservation. In two counties, 100% of the participants gained knowledge in food preservation. Twelve weeks following the food preservation workshop a follow up evaluation was mailed to participants and returned to the Extension Office. Information gathered from the follow up surveys showed participants were not afraid to try and preserve new foods they had not preserved before including: meat, vegetables, fruits and pickles. From the novice to experienced canners - all said they will continue preserving food at home with the knowledge they gained from the workshop.

4. Associated Knowledge Areas

KA Code	Knowledge Area
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
724	Healthy Lifestyle

Outcome #2

1. Outcome Measures

Number of individuals who implement recommended practices for the safe production, storage, handling or preparation of food (safe preservation techniques, hand washing, following time and temperature guidelines)

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	28817

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Due to the economic downturn, there has been an increase in home gardening, freezing, food preservation and using other methods for long term storage. As a result, there has been a surge in requests for information about home food preservation, home gardening and stretching the family?s resources. Unfortunately, some are using unsafe recipes and processes that could endanger the lives of family and friends.

What has been done
Family and Consumer Sciences Extension Agents have conducted Food Preservation workshops to address appropriate methods of selecting fresh fruits and vegetables, cleaning and preparing produce to be preserved.

Results
In one county, results from a survey mailed four months after the workshop showed that before the class, 82% of the 91 participants had little or no experience with the pressure canner. After

the program, 65% reported preserving more foods using the information they learned about drying, freezing or canning (participants reported canning nearly 700 items since the class). Also, 65% reported changing at least one method of food preservation since the class, such as using correct equipment, using approved recipes or accurate techniques.

In another county where there were 128 participants, 77% reported using the food storage charts distributed in class to store foods successfully, 79% were using new techniques shown in class to freeze accurately, 94% were now using a refrigerator/freezer thermometer, 85% reported saving money by purchasing more realistic amounts of food and storing it correctly, while 58% reported actually making more freezer meals.

4. Associated Knowledge Areas

KA Code	Knowledge Area
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
724	Healthy Lifestyle

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

See outcomes 1-2 for evaluation results

Key Items of Evaluation

Pre-post tests, follow-up surveys

V(A). Planned Program (Summary)

Program # 8

1. Name of the Planned Program

Climate Change

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	0%	0%	39%	0%
121	Management of Range Resources	0%	0%	13%	0%
123	Management and Sustainability of Forest Resources	0%	0%	26%	0%
141	Air Resource Protection and Management	0%	0%	9%	0%
403	Waste Disposal, Recycling, and Reuse	0%	0%	13%	0%
601	Economics of Agricultural Production and Farm Management	0%	100%	0%	100%
604	Marketing and Distribution Practices	100%	0%	0%	0%
	Total	100%	100%	100%	100%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	3.0	0.0	1.0	0.0
Actual Paid Professional	1.0	0.0	1.5	0.2
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	4102	34267	15289
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
0	3174	399487	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

-Emergency preparedness plans were implemented and prepared for all Extension offices
- The Agricultural Weather Center supplys information on temperature and moisture conditions to guide agricultural operations
-Economists, plant pathologists and agronomists conducted educational programs for Extension agents and agricultural producers on ways to reduce risks and manage systems during weather extremes as well as in response to longer-term changes in climate
-Research on the impact of climate change on the ecology of plant pests and diseases was conducted
-Creation of new technologies and best management practices for mitigating greenhouse gas emissions was explored
-KSU offered a floating science lab to show students the impact of climate and human use on aquatic systems

2. Brief description of the target audience

-extension agents
-extension office staff
-agricultural producers
-community leaders
-general public

3. How was eXtension used?

Publications were used

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	345	16185	6	330

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

Patent Applications Submitted

Year:	2012
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	1	9	10

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Peer-reviewed Journal Articles

Year	Actual
2012	8

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of producers utilizing new marketing opportunities
2	Number of incidences of when accurate weather information assisted producers in avoiding crop and livestock damage or loss
3	Increased knowledge of agroecosystem adaptations to improve management strategies for climate change

Outcome #1

1. Outcome Measures

Number of producers utilizing new marketing opportunities

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	4724

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
As prices for corn and soybeans have been increasing, and in many cases dictating farm management decisions, many farmers have purchased equipment and started raising grain crops instead of hay on most of the farms. This has opened opportunities for farmers to rent out property to increase income and for ones that have equipment to increase their acreage. It has also created challenges for marketability.

What has been done
Twenty-five tractor trailers with an average load of 1000 bushels of corn were marketed this year in Clay County. Producers utilized direct marketing techniques to identify buyers for their corn.

Also, KSU provided GIS training and support and The Nature Conservancy provided expertise in land management to develop a prioritization plan and data analyses to document gaps in the currently protected land base (easements, etc).

KSU and UK collaboratively conducted trainings using web technology to address direct marketing, budgets and economics of livestock enterprises, animal health issues, crossbreeding and selection, and nutrition.

Results
With corn selling for an average price of $6.25 per bushel, over $156,250 was brought into the Clay County agricultural economy. With corn acreage in Clay County expanding over 25% since 2011, producers had flooded local markets. Nine producers worked together to identify brokers and local markets that could purchase more corn. Three producers expanded their operations to allow for tractor-trailer trucks to come to their farms to be loaded. Three combines were

purchased and two producers added grain bins to allow for easier harvesting and more holding capacity. Several producers rented more land for corn production this year.

Evaluations from the KSU and UK trainings indicated that producers are willing to utilize web capabilities to conduct producer meetings as an alternative to costly and time-consuming travel.

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices

Outcome #2

1. Outcome Measures

Number of incidences of when accurate weather information assisted producers in avoiding crop and livestock damage or loss

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

Increased knowledge of agroecosystem adaptations to improve management strategies for climate change

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Tall fescue occurs on >15 million hectares within the United States and is considered invasive in some native grasslands. As a forage species it has significant agronomic and economic importance to our nation. The endophyte-tall fescue relationship has received considerable attention because of the negative animal health consequences of eating high concentrations of fungal-produced ergot alkaloids. However, recent research has begun to demonstrate that this

symbiotic relationship can have other significant ecological impacts, such as altering productivity-diversity relationships, community invasibility, trophic dynamics, and carbon sequestration rates. Ecosystem effects of the endophyte-plant symbiosis are known to vary depending on environmental factors, particularly drought, which is significant given that climate models predict alterations in precipitation and temperature resulting from global change for much of the range in which tall fescue is currently grown.

What has been done

Research was conducted to determine if reported ecosystem effects of endophyte infection on soil nutrient pools and microbial communities in tall fescue pastures in Georgia are observed across a broader geographic range of sites. In addition, research was conducted to determine whether endophyte infection status alters the ability of tall fescue to respond to changes in climate. Activities included field experiments that illustrated the effects of endophyte infection on tall fescue's ability to respond to climate change and evaluated the effects of common toxic endophyte infection on tall fescue pasture carbon sequestration, soil nutrient pools, litter decomposition, and soil microbial communities.

Results

This project has contributed substantial new knowledge about the ecological effects of fungal endophyte symbioses in grasses within the primary discipline and related fields. For example, we have shown that the fescue-endophyte story is not as straightforward as it is widely represented in the literature to be. Although there are negative animal effects of common toxic endophyte infection, the presence of this organism in fescue pastures increases their carbon sequestration capacity. We have shown for the first time that novel endophytes have the ability to affect soil processes differently than the common toxic endophyte. We have demonstrated in the field that warming associated with climate change is likely to increase the concentration of toxic alkaloids in fescue infected with the common toxic strain of the endophyte, which has significant animal health and production implications for much of the eastern U.S. Our work conclusively illustrates that, similar to other grasses, the fescue-endophyte relationship varies in its degree of mutualism, depending on the genetics of the host and endophyte and the surrounding environmental conditions. This knowledge will be critical for developing new management strategies for pastures.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

The nature of climate change poses challenges for researching its effects on production systems due to the difficulty of simulating conditions in the field and the need

for long-term observation of experimental systems. While the University of Kenentucky has had a dedicated field facility for studying the impact of higher temperatures and altered precipitation on pasture systems for several years, the results of those studies are just starting to be revealed.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

See outcome 1 for evaluation results

Key Items of Evaluation

Follow-up, testimonials

V(A). Planned Program (Summary)

Program # 9

1. Name of the Planned Program

Sustainable Energy

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
201	Plant Genome, Genetics, and Genetic Mechanisms	0%	0%	9%	0%
204	Plant Product Quality and Utility (Preharvest)	15%	3%	24%	0%
205	Plant Management Systems	0%	0%	19%	0%
206	Basic Plant Biology	0%	0%	14%	0%
402	Engineering Systems and Equipment	34%	0%	0%	0%
511	New and Improved Non-Food Products and Processes	0%	0%	30%	0%
512	Quality Maintenance in Storing and Marketing Non-Food Products	0%	0%	4%	0%
723	Hazards to Human Health and Safety	51%	97%	0%	0%
	Total	100%	100%	100%	0%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	5.4	0.0	5.0	0.0
Actual Paid Professional	4.0	0.0	6.4	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**
85697	4102	415720	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
91229	3174	2401422	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

Sustainable energy research continues to be an important component of plant science and biosystems engineering research programs at the University of Kentucky. Research in energy science included both basic studies in plant biology for developing improved feedstocks and applied, pilot-scale demonstrations of bio-based production processes. The production and utilization of switchgrass as a feedstock continues to be an area of emphasis for our researxh and extension programs. Another important area of research for UK's programs is the improvement of oilseeds for energy applications and other bio-based chemical development.

2. Brief description of the target audience

-producers
-extension agents
-electric company representatives
-other researchers and extension specialists

3. How was eXtension used?

online resources/publications used

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	32820	32820	19036	19036

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

Patent Applications Submitted

Year: 2012
Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	16	16

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Peer reviewed journal articles

Year	Actual
2012	14

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	The number of individuals who will become knowledgeable in the production of switchgrass as a biofuel
2	Availability of sustainable oilseed crops that can enable sustainable bioenergy production

Outcome #1

1. Outcome Measures

The number of individuals who will become knowledgeable in the production of switchgrass as a biofuel

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1723

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The production and utilization of biomass energy, such as through switchgrass, continues to be explored due to a need to acquire additional sources of energy.

What has been done
The Bracken County Ag Advancement Council received a $50,000 grant from GOAP to study the potential of Biomass production and its conversion to a usable energy as an alternative crop.

UK College of Engineering worked with the 4-H area agent for SET to establish a hands-on bio-fuel research opportunity for local high school students. This program focused on the bio-fuel research being conducted and how this research could benefit programs in the community.

Kentucky State University (KSU) has designed a study to assess biomass production.

Results
Over 175 sixth to eighth grade students have learn how various types of biomass can be converted into usable fuel for transportation, industrial and home use.

The KSU study assessed non-agricultural land for its biomass production potential for land maintained by the Kentucky Transportation Cabinet (KTC). KSU, in conjunction with KTC, digitized and quantified land areas that are mowed and maintained.

4. Associated Knowledge Areas

KA Code	Knowledge Area
402	Engineering Systems and Equipment

Outcome #2

1. Outcome Measures

Availability of sustainable oilseed crops that can enable sustainable bioenergy production

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Plant oils are mainly composed of triacylglycerol (TAG) which represent an important edible and industrial resource. Oil from crops such as soybeans is the main substrate for biodiesel and can be an important source of renewable chemicals for the future. The basis of selective accumulation of specific fatty acids and the final synthesis of TAG in seed oil are not fully understood. An improved understanding of seed oil biosynthesis will lead to improved breeding and bioengineering methods for developing crops with optimal oil content. One target of our work on triacylglycerol biosynthesis and higher oil levels in soybeans is for renewable lubricant applications with branch-chain fatty acids (BCFAs). This will increase the profitability of agricultural production, enhance rural economic opportunities. A considerable market currently exists for lubricants with worldwide demand ~ 36 Mt with motor oils accounting for a little over half of this market, most of which is currently derived from petroleum.

What has been done
A detailed analysis was conducted of the expression of the primary enzyme responsible for most oilseed triacylglycerol, diacylglycerol acyltransferase (DGAT), during soybean and Arabidopsis seed development. Studies looked at the effect of blocking expression of the enzyme on oil accumulation in seed. Insight achieved through this work was used to engineer soybean lines with higher oil content. We grew out higher oil + protein soybean lines we developed for additional generations in the field and greenhouse in 2012 and further verified development of soybean lines with 4% or higher oil contents with no reductions in protein content. We also obtained high oil seed from two collaborating breeding programs and crossed these lines with our high oil lines developed by metabolic engineering. In addition, soybean somatic embryos have been transformed with BCFA gene constructs and progeny plants are being screened for the presence of the gene(s). Plants confirmed to have the BCFA genes were grown out in the greenhouse and additional lines analyzed for BCFA genes.

Results

Significant progress was made toward the goal of metabolically engineering soybean oils as a source of renewable lubricants such as motor oils. Genes have been cloned for conversion of soybean oil into BCFA as a new use of soybean oil as a lubricant source. Some of the new soybean lines with 4% or greater oil levels and total oil + protein levels have been further characterized and found to exhibit higher oil + protein levels for another generation in the greenhouse and in field trials. Further chemical analyses are consistent with the other prior work indicating higher oil and protein levels than soybeans previously developed. Additional yield trials were conducted in 2012 of some of our new high oil + protein lines for which sufficient seed was available and no significant reduction in yield is seen with some of the high oil lines. As much as 20% more oil per acre may be possible with some of our soybean lines with protein yield per acre as conventional lines. This increased oil production could make more than $2 billion of renewable oil produced by US soybean growers per year and increase this renewable resource for edible, fuel and renewable chemical applications without requiring more land for the production.

4. Associated Knowledge Areas

KA Code	Knowledge Area
201	Plant Genome, Genetics, and Genetic Mechanisms
204	Plant Product Quality and Utility (Preharvest)
206	Basic Plant Biology

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

See outcome 1; increased awareness; pilot study

Key Items of Evaluation

Feedback from participants, preliminary findings

V(A). Planned Program (Summary)

Program # 10

1. Name of the Planned Program

Childhood Obesity

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
609	Economic Theory and Methods	0%	0%	25%	0%
703	Nutrition Education and Behavior	27%	26%	75%	50%
724	Healthy Lifestyle	73%	74%	0%	50%
	Total	100%	100%	100%	100%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	30.0	0.0	0.5	0.0
Actual Paid Professional	29.0	0.1	1.0	2.3
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
428486	34713	0	155751
1862 Matching	1890 Matching	1862 Matching	1890 Matching
456147	26671	179497	8554
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

-conducting educational programs for children
-training extension agents
-developing educational materials
-conducting programs with parents
-evaluating the impact of the Expanded Food and Nutrition Education Program

2. Brief description of the target audience

-children
-youth
-extension agents
-teachers
-parents

3. How was eXtension used?

Online resources were used to enhance programming

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	167304	13483	282033	22957

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

Patent Applications Submitted

Year:	2012
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	4	4

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Peer reviewed journal articles

Year	Actual
2012	4

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of children who experience a change in knowledge, opinion, skills, or aspirations regarding lifestyle changes (diet, exercise, etc.) that improve personal health.
2	Number of pre-school children reporting making lifestyle changes for the purpose of improving their health.
3	Number of elementary aged children reporting making lifestyle changes for the purpose of improving their health.

Outcome #1

1. Outcome Measures

Number of children who experience a change in knowledge, opinion, skills, or aspirations regarding lifestyle changes (diet, exercise, etc.) that improve personal health.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	141296

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Nutrition, health, and food safety are important aspects to everyday lives of all age groups. The earlier nutrition habits are established, the longer they will stay with an individual. Several Extension Nutrition programs were offered this past year to youth across the state.

What has been done
KSU, through its EFNEP program, conducted several nutrition workshops.

Lawrence County Extension, as an example, achieved above average results from its EFNEP program.

Results
KSU EFNEP demonstrated that students increased knowledge in areas of nutrition. Currently, 653 students have completed the program at a cost of $184.97 per student. These numbers account for 5 different organizations including schools, churches, and summer groups. Overall, there were approximately 21 different groups of children who went through 6-10 hours of nutrition education.

Lawrence County has both EFNEP and SNAP-Ed nutrition assistants who not only enroll families into the nutrition education program, but also teach children and youth food, nutrition and health education. A total of 98 families graduated from either EFNEP or SNAP-Ed nutrition programs; 97% reported at least one positive change in diet quality/nutrition. Twenty-four (24) youth groups involving 950 children/youth were taught food, nutrition, and health education. As a result, 90% now eat a variety of foods; 93% increased knowledge of human nutrition; 92% improved food prep/safety practices; and 91% increased the ability to select low-cost foods.

4. Associated Knowledge Areas

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

Outcome #2

1. Outcome Measures

Number of pre-school children reporting making lifestyle changes for the purpose of improving their health.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	6602

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Kentucky ranks in the top 10 out of all 50 states for obesity. In order to combat this epidemic, good nutrition should be taught at a young age. Since nutrition is an important part of a healthy and active lifestyle, educating children on the basics and promoting healthy food choices will allow them to continue on this path as adults.

What has been done
LEAP (Literacy, Eating and Activity for Preschoolers) program is an ongoing initiative across the state of Kentucky.

Results
Participants of the program in two western Kentucky counties completed at least 10 sessions of the curriculum. The program was taught to 102 Head Start Preschoolers and 97 Kindergartners. Post Lesson observations concluded that 176 students tasted a new fruit or vegetable during the program; 186 students demonstrated a willingness to try the fruit or vegetable again at home; and 199 students left the sessions knowing at least one good health habit and benefit of exercise and fruit/vegetable consumption.

In reference to other Kentucky counties reporting on the LEAP program, 80% to 95% of the participants gained knowledge and 65% to 98% were willing to try a different food.

4. Associated Knowledge Areas

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

Outcome #3

1. Outcome Measures

Number of elementary aged children reporting making lifestyle changes for the purpose of improving their health.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	37376

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Obesity, and especially childhood obesity, is a significant yet preventable problem in Kentucky. Obesity and a lack of physical activity are linked to many deadly diseases that are on the rise in the United States, such as diabetes. To expose children and families to the benefits of healthy eating and good nutrition habits early in life, Family and Consumer Sciences Extension Agent, FCS Assistants and EFNEP Assistants have worked on a variety of programs to encourage physical activity, understanding, and making healthy food choices.

What has been done
In one county, the School Food Service Director helped to increase awareness of the need for healthy food choices and trying new foods. The New Food Experiences program With grades Kindergarten through fourth grade at the Wayne County School System allowed a bite sized sample of healthy recipes. Each child received a parent newsletter explaining about the new food, including how it is grown, when it is ripe, harvesting and preparation information, along with the new recipe.

In another county, Extension partnered with the school district to offer a health program to 650 preschool through fifth graders during the spring and summer months. The Extension Agent for Family and Consumer Sciences along with local volunteer leaders read stories which introduced nutritious foods, concepts of staying healthy, and being physically active.

Results

Teachers reported that as a result of the Health program, students in these counties showed increased participation in physical activity; were more inclined to taste an unfamiliar fruit or vegetable; and to eat fruits and/or vegetables at mealtime. Teachers also reported that students were able to name a least one or more health benefit of physical activity and consuming nutritious foods (fruits and/or vegetables). Parents of the participants also reported the same or similar changes in behavior at home.

4. Associated Knowledge Areas

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

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

See outcomes 1-3

Key Items of Evaluation

Observations, follow-up surveys, calls to teachers