2012 University of Arkansas Combined Research and Extension Annual Report of Accomplishments and Results

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I. Report Overview

1. Executive Summary

The University of Arkansas (UA) Division of Agriculture faculty, staff and facilities are located on five university campuses, at five regional Research and Extension Centers, seven Research Stations, and 75 county Extension offices. The UA Division of Agriculture remains committed to this statewide infrastructure with a presence in all 75 Arkansas counties; ensuring that researchers and Extension educators are readily available to address the science and business of agriculture, as well as the broader needs of families and the communities we serve.

The UA Division of Agriculture engaged a large number of stakeholders (including individual clientele, producers, schools, partner agencies and organizations, state government officials, community leaders, underserved groups, and legislators) in the design and development of the 2011-2015 Strategic Plan. Based on stakeholder feedback, the Division identified five emphasis areas which include: Agricultural Production and Processing; Environment, Energy and Climate; Access to Safe and Nutritious Food; Increasing Opportunities for Families and Youth; and Economic and Community Development. With NIFA's change in Planned Program title requirements, the UA Division of Agriculture chose to make significant changes in our report to align planned efforts with these emphasis areas.

2012 Division of Agriculture Planned Program Impact Highlights Include:

Agricultural Production & Processing Highlights-

Agriculture is a critical segment of Arkansas' economy, adding over $16 billion in value to the state in 2010. However, it is an inherently risky business with volatile commodity markets and rising costs, especially today, but knowledge is a powerful tool to counter or manage certain risks. Over 850 participants from 19 counties learned about the Division knowledge tools. Participants' likelihood to use these tools to manage risk and assist in farm management is as follows: Crop Enterprise Budgets 87%; Irrigation Cost Guide 75%; Machinery Cost Guide 77%; Farm Profitability Guide 53%; Grain Drying Decision Aid 48%.

An estimated 2,220,000 acres of soybean were infested with glyphosate-resistant Palmer amaranth (pigweed) in Arkansas in 2012, costing an estimated $200 million dollars in added weed control cost and lost yield. Division scientists conducted field evaluations of the new Liberty Link cultivars in fields with glyphosate resistant weeds and verified that these new varieties yielded as well as the better Roundup Ready varieties. Over the past 3 years, this information and other education efforts to manage resistant pigweed in Arkansas soybeans has resulted in increased use of Liberty Link varieties on 750,000 acres in 2012, providing growers a stopgap measure worth millions to the state's soybean industry.

Input costs for managing forage and pasture for beef cattle production has increased dramatically; especially nitrogen fertilizer, which has increased 300% in the last decade. Division scientists looked at a sustainable fertility option, the use of legumes inter-seeded in bermudagrass pastures to replace some direct nitrogen fertilizer. Because calves were able to start grazing the legume-amended pastures earlier in the spring, they produced more body weight gain/acre and grazing-days/acre than bermudagrass pastures alone receiving nitrogen fertilizer. Results indicate that nitrogen fertilizer can effectively be replaced by either clovers or alfalfa in bermudagrass pastures for growing beef cattle in Arkansas, reducing fertilizer costs and increasing livestock farm profit.

Today's health and diet conscious public focus on meat quality more closely than in the past. Division scientists worked to upgrade the Arkansas Beef Quality Assurance Program (BQA) to better address certain quality issues. "Hands-on" county educational programs were utilized to demonstrate that proper injection and handling of animal health products reduce bruising and improve meat quality. As a result of these efforts, injection-related imperfections in meat dropped from 22% to near zero for cooperator herds. In addition, 84% of respondents to a survey indicated that they had adopted the SubQ injection method in the neck region, two BQA principles to avoid bruising and complications.

Division scientists worked with the Arkansas Pecan Growers Association to conduct a needs assessment for the industry and provide targeted extension resources to growers and industry personnel the past two years. Scientists conducted two surveys, several workshops, and three informal field meetings, taught monitoring of important pests, and launched a new website. The surveys identified substantial knowledge gaps for growers including proper soil and tissue sampling for nutrition; proper fertilization; sustainable practices to maximize production and quality; monitoring and managing pests; efficient irrigation; monitoring nut quality at harvest; and even where to obtain valid information. Most growers surveyed indicated the need for additional assistance and excitement about the research and extension efforts being made.

In recent years rice water weevils and grape colaspis have caused serious losses for Arkansas rice farmers, up to $120 per acre. Recent systemic insecticide seed treatment technology has the potential to offer very efficient and effective management of these pests. Over the past three years, Division efforts led to adoption of seed treatments for management of these early season rice pests and use of foliar insecticides have dropped to less than 5%. Demonstrations and grower results have documented 15 bushels per acre yield protection compared to untreated seed, and improved stand emergence and uniformity resulting in an easier to manage rice field.

The pesticide safety education program in Arkansas has had historical success in educating applicators on the proper use of pesticides and on safety. Almost 4,500 Arkansas agricultural producers were certified or recertified as private pesticide applicators in 2012. About 50% of evaluated respondents changed their pesticide practices due to this education, mostly in increased use of protective gear, reading the label closely, and better calibration. In 2011 and 2012, the program provided more than 100 iPads to county extension educators to assist with pesticide use and safety education. These devices have been very effective in improving acceptance of important points.

While yield is paramount to cotton growers, improved fiber quality would give Arkansas cotton producers a competitive edge over other cotton production areas. The Division cotton breeding program developed an objective fiber quality index (Q-score) that greatly speeds up the process of discarding individual plant selections and progeny based on fiber quality. As a result, recently UA48, UA103, and UA222 varieties were released along with one germplasm line (Arkot 0111). These lines have comparable yield of any commercially available U.S. cotton varieties but exceed all in lint quality. Stakeholders note that early results with UA48 showed it to set a new standard for southern, U.S. cotton quality.

Flag the Technology defines a color-coded bicycle flag system to mark fields, with each color signifying a particular herbicide resistant trait in the planted crop. The goal was to reduce mistakes in applying the wrong herbicide or injuring nearby crops by off-target drift, a continual problem in the state. In 2012, more than 25,000 color-coded flags were used to mark at least 15,000 fields. Participants indicated that they believed the marking system prevented mistakes and reduced drift in tested areas by reminding applicators to be careful, check records, and be aware of crops next to fields being applied. The FTT system has now been adopted by the Weed Science Society of America as well as the states of Tennessee and Mississippi.

Strobilurin fungicides were introduced in 1997 in Arkansas for field crops, and since have become a mainstay for disease management in rice, corn, wheat and soybeans. Seventy percent of soybean acreage was treated in 2012. Unfortunately, these fungicides have a single mode of action that can be overcome by fungi through simple mutation, resulting in resistant populations. Fungal pathogens tend to be cross resistant to the entire class of strobilurin chemistry (all products). Strobilurin-resistant frogeye leaf spot was confirmed in seven counties in Arkansas during 2012 and the level of resistance was similar to that reported in other states. This information was distributed in time to allow growers to plan for

management of the disease in 2013 by selecting frogeye-resistant varieties and rotating to triazole fungicides, the other class of fungicide chemistry available, which remain effective against this major disease.

All farmers struggle with finding and using competitive markets. The online Arkansas MarketMaker program has helped our growers connect to new markets. In 2012, the Arkansas portal averaged 23,051 hits per month with September exceeding 31,000. Routine users grew from 750 to 2,494, and by the end of September 2012, there were 95 individual farmers/businesses, 53 farmers markets, 17 agritourism entities, and eight wineries with business profiles. Two new projects, "farm-to-school" and "non-GMO soybeans", have the potential to greatly increase local grower participation.

Environment, Energy, & Climate Highlights-

The Nitrogen Soil Test for Rice, N-STaR, is the first soil-based N test for field specific recommendations. During the first year of wide-scale use, two trends were observed. Roughly 50% of the samples processed through the N-STaR lab reported N rate recommendations that were significantly less than what the producer had intended to apply resulting in increased profitability through N fertilizer savings. N-STaR provides a field-specific recommendation to maximize rice yield and profitability and N-STaR should reduce potentially negative environmental impacts associated with rice N fertilization.

Division scientists investigated dissolved ozone as a means for the destruction of broad-host-range (BHR) plasmids, which can spread among unrelated organisms, and chromosomal DNA, under controlled conditions and in pilot-scale tests using an experimental unit in a municipal WWTP. None of the disinfection methods completely destroyed BHR plasmids or chromosomal DNA, indicating high concentrations of dissolved ozone or other disinfection strategies may be necessary to ensure complete destruction of BHR plasmid DNA in WWTP effluent. Mobile genetic elements such as BHR plasmids can be considered emerging contaminants. The lack of congruency between methodological approaches highlights the need to calibrate molecular methods with more traditional culture-based methods for quantification of fecal indicator bacteria and genetic elements such as BHR plasmids.

Management of animal manure is a critical issue for livestock producers, poultry producers, the poultry industry and the general public. Division researchers compared 59 different BMPs in terms of net returns risk reduction for hay producers, emphasizing cost-effective practices to reduce total phosphorous (TP) runoff while maintaining profitability. This simulation provided evidence that TP runoff could be reduced without affecting producers' expected net returns when environmentally efficient and economically acceptable BMPs are implemented. Results showed that decision makers will be reluctant to adopt BMPs that reduce drastically their net returns regardless of their water quality benefits. Consequently, decision makers should compare net returns risks and environmental benefits of implementing BMPs to reduce TP runoff, so that producers will be able to select BMPs with the lowest negative economic impact in their hay production operations.

Division researchers found through biomass harvest research that it may be possible to obtain co-products from sweetgum bark that could be used in the food industry. Knowing that oak and sweetgum wood can be mixed in dilute acid pretreatment, without affecting saccharification yields, will enable the design of harvesting scenarios that can tolerate hardwood mixtures. Not having to collect pure sweetgum will minimize the footprint of the harvesting operation, simplifying the harvesting operation.

Access To Safe & Nutritious Food Highlights-

Food Safety

The Division of Agriculture continues to have a strong emphasis on Food Safety with efforts in both basic and applied research and supporting extension efforts for youth, the public and the food industry. Research efforts are focused mostly on protein foods and an emphasis is placed on basic research on pathogens such as Listeria monocytogenes, E-Coli and Salmonella. For example, current basic research is focused on Salmonella metabolism and genetic regulation of stress responses when grown under processing conditions. In addition, more applied research on microbial decontamination methods and

processes made significant strides. For example, the use of various antimicrobials and cleaning cloths materials for decontamination of delis has led to the identification of most effective antimicrobials/cloth combinations and the development of deli operator training programs. Arkansas has a large food industry with needs for food safety training for their employees. Food safety educational programs help food processing companies remain nationally competitive and prevent foodborne illness. One such program is the Better Process Control School which has certified over 3,000 food processing employees since its inception in 1973. In addition, several classes are offered for restaurant employees and food handlers. In FY2012, 178 foodservice managers and associates took a ServSafe class from the Division of Agriculture and 85% of those people (151) passed the examination to become a Certified Food Protection Manager. The effect of having a certified manager in the kitchen environment enables them to lead and teach the people doing the actual food handling to avoid bare hand contact with food, which is a primary cause of norovirus outbreaks. For every manager certified, many others become better food handlers through better understanding of how foodborne illness really occurs.

Food Processing Innovation

The state of Arkansas has a large food manufacturing sector that needs a qualified workforce. To this end, Division of Agriculture faculty have developed programs addressing the needs of the industry. Of particular importance is the development of Culinary training for Research & Development personnel working in the poultry industry. The curriculum developed has allowed numerous employees to achieve the status of Certified Culinary Scientist. This recognition is from the Research Chefs Association, a group dedicated to the blending of culinary arts and food technology called Culinology™. This experience is meant to enable the food technologist to understand what the R & D chef wants and be better able to translate that vision and taste to the production plant floor. To date, 98 scientists have taken classes from the program, 66 have completed the courses and 48 have achieved certification.

In addition, the Division of Agriculture contributes the State's economic development by providing assistance to entrepreneurs. The Institute of Food Science & Engineering (IFSE) assists small food processing companies and entrepreneurs by providing necessary programs such as FDA process approval (FDA form 2541a), measuring pH, water activity (Aw), providing nutritional labels, developing food labels, delivering food related workshops and other forms of technical and business assistance much of which is available through a dedicated website for entrepreneurs. The IFSE assistance program generally assists 15-25 entrepreneurs each year. Although all do not make it into being fully profitable, some do make and all are appreciative of the efforts. Over the past several years, several food companies have emerged with the assistance of the program.

Division of Agriculture faculty also conduct innovative research in food processing. For example, the impact of rice milling on rice hydration during cooking, energy use and rice quality was investigated. It was determined that rice could be milled to lesser degrees without affecting cooking characteristics and eating quality, thereby offering an opportunity to improve health benefits associated with rice consumption without negatively affecting rice sensory quality.

In another research project, a Division of Agriculture faculty developed a technology to produce a highprotein soybean meal with enhanced digestibility that could open new markets for soybean meal--for instance, aquaculture--and be sold at a premium. The process, which consists of reducing the amount of soluble sugars and thus increasing protein content, leaves a byproduct rich in fermentable sugars that can be used to produce valuable compounds such as ethanol and lactic acid.

Food Security

Arkansas face challenges when it comes to obesity and food insecurity. Arkansas is listed as one of the top states that has a prevalence of obesity equal to or greater than 30% while 18.6% of households in Arkansas are Food Insecure. EFNEP, Expanded Food and Nutrition Education Program, continues to be important mechanism for the University of Arkansas Division of Agriculture to assist limited income families and youth to acquire knowledge and skills leading to attitudes and behavior changes necessary to maintain nutritionally sound diets. EFNEP is implemented in 12 counties throughout the state of Arkansas. Arkansas EFNEP uses the Eating Smart -Being Active curriculum developed by Colorado State University

and University of California. It is designed for para-professional nutrition educators to use when teaching low-income families with young children to learn healthy lifestyle choices. The curriculum consists of eight core lessons, each 60 to 90 minutes long, designed to be taught in order. The goals of this curriculum include encouraging increased consumption of fruits and vegetables, dairy foods, whole-grains, savvy shopping, increased physical activity and reduce fat. In 2012, 2,200 adults graduated from EFNEP and 4,270 youth were reached. 94% of participants reported healthier behaviors while 64% increased their physical activity.

Nutritious Food

In Arkansas, 68% of adults are overweight or obese, 9.6% have diabetes, 40% have high blood cholesterol and 36% have high blood pressure. Research shows that even small changes in diet and small decreases in weight can lower the risks for diabetes, heart disease and hypertension. The Reshape Yourself healthy weight program was offered in 5 counties. Participants learned to plan healthy meals, balance calorie intake with calorie expenditure, read food labels, reduce fat and sodium intake and manage blood glucose. Cooking schools offered in 5 counties helped people learn skills that enable them to plan and prepare healthier meals at home. Participants learned how to cook using healthier techniques; eat more locally grown foods and save money by eating at home more often. As a result of these Extension nutrition programs, 1,073 participants adopted healthier eating practices, 215 lost weight and 33% improved blood pressure, glucose or cholesterol. With much of the growth in health care spending linked to rising rates of diabetes, hypertension and heart disease, programs that help Arkansans reduce weight and improve health can reduce health care costs. Health experts estimate that every $1 invested in proven community-based disease prevention programs saves Arkansas $5 in health care costs.

A significant portion of food related research within the Division of Agriculture deals with developing healthier food products and ingredients and with the study of health beneficial compounds found in food. For example, a Division of Agriculture faculty developed a set of novel processes enabling the production of soybean oils with high concentrations of Conjugated Linoleic Acid, a health beneficial fat. This specialty oil has the potential to find its way in many food products including frying oils, salad dressings and margarines. In other research dealing with the health beneficial compounds found in many juices, a Division of Agriculture researcher demonstrated that juice pasteurization and juice storage results in the these health beneficial compounds forming large polymers that may not have the same health benefits. This puts in question the shelf life (for delivering health benefits) of juices containing these compounds. Finally, a large research project investigated the role of social environment on the incidence of childhood obesity in Arkansas. Factors including proximity to a grocery store, proximity of fast food chains to schools and others are being used to determine the most important factors influencing rates of childhood obesity. The results of this study can be used to develop Extension programing targeted at "at risk" populations or for shaping policies.

Increasing Opportunities for Families & Youth Highlights-

Arkansas averages more than 15 ATV-related deaths per year and has one of the nation's highest rates of injury for those 16 and under. Due to the work of the Arkansas 4-H ATV Safety educational program, in the past 4 years over 34,000 individuals have been exposed to the 4-H ATV Safety message. This extraordinary effort has resulted in 918 youth and adults participating in the 4 hour ASI RiderCourse and becoming certified safe riders through the Arkansas 4-H ATV Safety Program. Potential economic impact from reduced medical costs can be estimated as high as $19.5 million over this 4 year period.

Research indicates that for every dollar spent on early childhood intervention programs, there is a benefit of $2.50-7.00. In 2012, with a budget of $343,979 in external funding, 4,677 child care professionals successfully completed 33,498 hours of training. Our Best Care (face-to-face) program trained 1,964 providers who completed 14,806 hours of training. Our Best Care Connected (online) program trained 1,359 providers who completed 6,795 hours of training. Our Guiding Children Successfully (self-guided) program trained 1,354 providers who completed 11,897 hours of training. That means the benefit within the state of AR for our child care training programs is between $860,000-$2.4

million dollars.

Most people today do not have time to go to a parenting class or marriage workshop. When they need answers they are likely to turn to the Internet. The Navigating Life's Journey program is a way of reaching out to today's clientele where they learn and live. With email, blogs, Facebook, and Twitter, this program is delivered to a wide-reaching audience. Virtually all of the recipients report that the information is valuable and 91% report that it has actually improved their relationships.

Adult leaders, trained by Cooperative Extension Service Faculty in all 75 counties, use the "learn by doing" method to teach 4-H youth. Leadership, citizenship, and other skills learned guide 4-H'ers to success in adulthood. A survey of 102 county extension staff found a critical need for marketing materials targeting potential 4-H volunteers. These materials were developed and an in-service training focused on volunteer development was conducted, where county faculty were challenged to increase adult volunteers by 10%. Expanded efforts to recruit and retain 4-H volunteers resulted in a 51% increase in volunteer leader enrollment over the previous year. Twenty-eight percent of Arkansas youth in grades K-12 are involved in 4-H programs and activities. Nearly 17,000 volunteers guided the 133,302 youth reached annually through Arkansas 4-H programs. On average, volunteers contributed 60 hours of service this year. Overall volunteer service value tops $22 million.

With 15% of Arkansas residents age 65+ (ranked 10th nationally up 12% since 2010) the health issues that accompany growing older: chronic disease, disability, and dependence are of particular importance because they bring diminished quality of life and increase costs to the public. Exercise is an important part of reducing many of the health issues that accompany aging. To allow more opportunities for individuals to engage in exercise, especially in rural areas, Extension offered four different programs: Fit in 10, Strong Women & Men, Arthritis Exercise, and Walk Across Arkansas. Through the efforts of the Extension Service, 34,040 non-duplicated individuals participated in an Extension Exercise program. 100% of those individuals increased their physical activities as a result of participating in an Extension Program.

One of the reasons that many senior adults fall is a lack of lower body muscle strength. Through the Strong Women & Men program offered by the Cooperative Extension Service, strength training programs using free weights and leg weights are offered throughout the state in group settings. Fifty-five counties offered the Strong Women & Men program in FY 2012. Three hundred sixty-three of the 496 (73%) individuals who completed a pre- and post- physical assessment increased lower body strength. With the average hospital cost for a fall injury being $17,500, that is an estimated $1,397,550 hospital cost reduction due to the Extension Program.

Arkansas 4-H has been delivering citizenship and leadership training for many years. A new multi-session Citizenship curriculum was introduced in 2012 for integration into the county outreach efforts. Community Engagement, citizenship and youth adult partnerships empowered young people to become well-informed and involved citizens within their communities. In 2012, over 12,500 volunteer hours and $272,375.00 in volunteer time was realized by engaging youth and adults in activities focused on helping their neighbors and communities. Local 4-H clubs reached 103,000 people through such efforts as: collecting 15,000 pounds of food; making 2,400 care packages with a total value of $50,000; cleaning 10,000 pounds of trash from 1200 miles of roadway; teaching 1,600 people through educational events and raising $8,600.00 in monetary support.

Economics & Community Development Highlights-

A study by the United States General Accounting Office showed that as a result of trained tax professionals, most taxpayers believe they benefit by using a paid tax preparer. Because this is a fee-based program, the Arkansas Cooperative Extension Service is able to provide this valuable service to tax preparers and taxpayers while at the same time covering our costs. The schools enable preparers to meet CE requirements from an approved provider, renew their license, and stay gainfully employed providing more dollars into the Arkansas economy. Satisfaction with the schools is evident, with ninety percent of participants indicating they plan to attend to course again next year. When asked, "What new information did you learn?" participants most commonly cited knowledge related to depreciation; alternative minimum tax (AMT); new laws, rules and regulations; 1099K; and preparer tax identification number (PTIN).

Fulton County's classification as a "food desert" created an opportunity to provide families access to fresh food. Extension agents and faculty met with a group of 34 potential vendors, consumers, and other interested individuals to discuss basic market start-up and potential obstacles. As a result of Extension's efforts, the Salem Farmers' Market was up and running within 3 months of that initial meeting. The market has since been open every Saturday morning throughout the summer, providing Fulton County vegetable and flower vendors a better market to sell their products. Additionally, it has created an opportunity for Fulton County residents to buy locally grown produce and flowers, and the market has resulted in a greater sense of community on Saturday mornings around the courthouse square and boosted the local economy during these challenging financial times. This is just one example of the results of similar efforts around the state where Arkansas Extension's educational programs have resulted in real change within our communities.

Government entities need qualified companies from which to purchase goods and services. The purpose of Arkansas Procurement Assistance Center (APAC) program is to generate employment and to improve the economy of Arkansas by assisting business firms in obtaining and performing under federal, state and local government contracts. As a result of training and technical assistance, APAC clients were awarded over $44.5 million in government contracts. For every dollar that it cost to provide APAC services under the Cooperative Agreement there was $103 in revenue generated in the state of Arkansas as a result of clients being awarded government contracts. APAC clients are finding value in the services bring provided.

Many young people do not see themselves capable of being a leader due to shyness, lack of self-confidence, or just by not being in the "right crowd." Benton County Teen Leader Club's strive to teach leadership life skills including goal setting, accepting responsibility, teamwork and cooperation, communication, character, and marketable skills. Teen Leaders planned, conducted, and evaluated three camps for 155 youth. Thirty-five Teen Leaders taught project workshops to 109 youth. Three Teen Leaders served as 2011-12 State Officers, including State President. One was elected as a 2012-13 State Officer. Ten Teen Leaders volunteered to be State Camp Counselors. Out of the seven graduating senior Teen Leaders, all seven received scholarships and attended college. Of these, all were involved in school sponsored organizations during their freshman year of college and six of those were holding at least one leadership role in student organizations and/or student government their very first semester.

Ballot issues are full of legal terms unknown to many of Arkansas' 1.6 million voters. The Center for Public Policy simplifies the language in a non-partisan way and trains county agents to share potential impacts of ballot issues so voters can be more confident in their decisions. More than 20,000 copies of three ballot issue fact sheets were distributed in 2012, and versions in English and Spanish were posted online and shared on Facebook. Forty-nine county agents were trained to give similar presentations, especially in low voter turnout counties, or to answer voter questions. Thousands of Arkansans had access to research-based information on the ballot issues, something that is not readily provided elsewhere in the state.

The Secretary of State's Office referred voters to our website for ballot issue education. Newspapers with a combined circulation of more than 200,000 subscribers printed election news stories citing our fact sheets and AETN aired our ballot program four times to an estimated 40,000 viewers. County agents reported positive feedback from residents, who indicated they better understood the ballot issues.

The 2012 Executive Summary showcases only a few examples of the UA Division of Agriculture's impact in support of diverse stakeholders across Arkansas. It should be self-evident that most of the Divisions' efforts are currently multidisciplinary and integrated. We believe that all Arkansans benefitted during 2012 in one way or another from the progress we were able to make in concert with state agencies, commodity boards, communities, organizations, businesses, individuals, and our federal partner. The Division serves stakeholders in all walks of life by helping to ensure the safety and security of our food and fiber system; improve the health and nutrition of Arkansans; conserve and sustain natural resources; and expand horizons for youth, families and communities.

Respectfully submitted,

Dr. Mark J. Cochran, Vice-President for Agriculture, University of Arkansas
Dr. Tony E. Windham, Associate Vice-President for Agriculture - Extension
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Total Actual Amount of professional FTEs/SYs for this State

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	533.1	0.0	142.6	0.0
Actual	341.1	0.0	469.8	0.0

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
- Expert Peer Review

2. Brief Explanation

Programs went through a three-tiered review process:

1. Stakeholder program identification and review
2. Administrative approval and review
3. External review

Stakeholder Program Identification and Review

Stakeholder input into program identification and review was derived from both formal and informal means for all program areas. Public comment on current and future Extension and research programs was obtained from county and community meetings, commodity and community associations, commodity check-off boards, state legislative committees and open public forums concerning specific issues. Open public meetings, field days and county and regional production meetings provided forums for stakeholder input open to under-served or under-represented individuals, groups or organizations.

For Extension, county councils and advisory groups met during the summer of 2012 (at a minimum) to provide input, feedback and/or review of program implementation, redirection, or newly identified needs. Members of these groups were invited to participate in programs, field days, special tours, workshops and conferences throughout the year and for the duration of the program. All reviews of research and Extension programs included a stakeholder member or members of the community or industry most influenced by the program area. Open public forums were held to address specific issues of importance to the stakeholder community or industry.

Administrative Approval and Review

Identified planned program areas for research and Extension activities were administratively reviewed and approved by the Director of the Agricultural Experiment Station and/or Cooperative Extension Service, as appropriate, within the context of the Division of Agriculture's Strategic Plan and the specific needs identified by stakeholder groups. Smith-Lever, Hatch, McIntire-Stennis, Animal Health and regional research projects were administratively reviewed and approved by the subject matter department head

and the director of the Arkansas Agricultural Experiment Station. All research projects were reviewed by three outside scientists prior to submission to the respective subject matter department head and the experiment station.

External Review

Merit review is conducted as part of the Division of Agriculture's on-going program review process. The reviews have been departmental or programmatic and cut across departments. Reviews are scheduled on a five to seven-year cycle and conducted concurrently for research, Extension and instruction. All reviews have been conducted by a team of recognized outside research, Extension and teaching professionals balanced to reflect the programmatic needs and diversity. All reviews include one or more stakeholders. The actual review process involves a period of self-study, followed by program assessment and bench marking. The review team evaluates the programs' effectiveness relative to the stated mission and goals of the department or program as well as the needs of stakeholders. Following the outside review teams' written evaluation, the department or program prepares a response to the review. The Division of Agriculture and University administration then meet with the department or program faculty one more times to develop a plan for implementing changes. As a result, annual progress is reported to Division and University administration.

III. Stakeholder Input

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

- Targeted invitation to traditional stakeholder groups
- Targeted invitation to non-traditional stakeholder groups
- Targeted invitation to traditional stakeholder individuals
- Targeted invitation to selected individuals from general public
- Survey of traditional stakeholder groups
- Survey of traditional stakeholder individuals
- Survey of selected individuals from the general public
- Other (County Council planning meetings.)

Brief explanation.

The University of Arkansas Division of Agriculture has utilized both formal and informal mechanisms for ensuring the planned programs address areas of strategic importance to the state. Each planned program was based on the needs identified in a series of regional and statewide listening sessions with current and potential stakeholders representing the diversity of the population in the regions and state. Single issue meetings were held as needed to address emerging issues and to craft additional program responses if needed to promptly address the problem.

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
- Needs Assessments
- Use Surveys

Brief explanation.

In 2012, the University of Arkansas Division of Agriculture sought input from diverse stakeholder groups. Stakeholders serve on county councils, advisory committees, and boards that advise and oversee the work of the Division. Individuals and stakeholder groups were identified by Arkansas Experiment Station faculty and administrators and by asking county Extension staffs to identify individuals in their local communities who were representative of one or more of the following fifteen stakeholder categories: county services (e.g., DHS, Food Bank or Pantry); financial sector (e.g., banks, agricultural lending, investments); faith-based sector (e.g., church, youth minister); education (public, private, vocational); commercial sector (e.g., chambers of commerce, industry); health (e.g., hospital, public health, doctor); agricultural production; agricultural businesses; county Extension council; 4-H program (e.g., leader, teen, alumni, foundation); government official (e.g., county, city); Extension homemaker; natural resources (e.g., wildlife, forestry, conservation); media (e.g., radio, newspaper, television); and youth services (e.g., community center, youth organizations). In addition to these criteria, Extension agents were also asked to identify individuals within the fifteen categories who were representative of the gender, racial, ethnic, and socioeconomic demographic make-up of the counties.

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
- Meeting with traditional Stakeholder individuals
- Survey of traditional Stakeholder individuals
- Meeting with the general public (open meeting advertised to all)
- Meeting specifically with non-traditional groups
- Meeting specifically with non-traditional individuals
- Meeting with invited selected individuals from the general public
- Other (Meeting with regulatory groups, state agencies, & commodity prom)

Brief explanation.

During the summer of 2012, Extension faculty met with county council members and program sub-committees to identify local needs for the program planning year beginning October first. County profiles developed by state faculty were utilized to examine the diversity of needs and to understand the changing demographics within each county. Stakeholder-developed materials, such as the Farm Bureau policy development process was used to identify research needs. Several priority-setting activities were scheduled during 2012 with specific commodity and stakeholder groups to seek input on the research planning process.
In addition to the standard methods of obtaining stakeholder input described above, in 2010, the University of Arkansas Division of Agriculture updated its strategic plan. The 2011-2015 strategic plan for the Division included input from internal and external stakeholders statewide. A total of 780 internal and external stakeholders participated in these processes. Specific surveys were conducted with individuals representing underserved or under-represented groups, women in agriculture and small farm operation producers.

3. A statement of how the input will be considered

- To Identify Emerging Issues
- Redirect Extension Programs
- Redirect Research Programs
- In the Action Plans
- To Set Priorities
- Other (Strategic Planning)

Brief explanation.

Research and Extension faculty and scientists met with UA Division of Agriculture administration to discuss stakeholder needs solicited at meetings throughout the year. Identified needs were integrated into the Extension and research planning process to ensure program relevance. Several departments and many of our institutes and centers maintain external advisory boards that provide direct feedback to the unit on the specific research or educational program. Stakeholder representatives served on most policy-setting groups or program reviews to ensure that the public has a voice in the decision-making process and in program evaluation.
Special meetings were held as needed to address major issues impacting any stakeholder group. Stakeholder input remains vital to ensuring program relevance, and each year programs are adjusted to address identified needs.

Brief Explanation of what you learned from your Stakeholders

Stakeholders want to be involved. Due to the size and scope of the University of Arkansas Division of Agriculture, reporting all specific stakeholder feedback would exceed the space allocation for this item. Stakeholders participate in establishing annual Cooperative Extension program priorities for each of the 75 counties in Arkansas. Stakeholders are also involved in identification of research needs and priorities.
During the statewide listening sessions in support of our new five-year strategic plan, 172 policy makers and key community and state organizational leaders considered critical and emerging needs within our state, and the role of the Division in addressing those needs. This group voiced their concerns about population changes across the state and challenges facing communities in a competitive economy. We heard comments concerning the different issues Arkansans must struggle with every day, including maintaining a competitive edge in agriculture and childhood health and obesity.

The following emphasis areas were identified for 2011-2015:

- Agricultural Production & Processing
- Environment, Energy & Climate
- Access to Safe & Nutritious Food
- Increasing Opportunities For Families & Youth
- Economic & Community Development

The Division's 2011-2015 Strategic Plan outlines the specific objectives for each area and is based on what we learned from our stakeholders.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
5794796	0	4229347	0

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	4502593	0	4229346	0
Actual Matching	5794796	0	51804933	0
Actual All Other	41855976	0	10310372	0
Total Actual Expended	52153365	0	66344651	0

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous				
Carryover	4502593	0	0	0

V. Planned Program Table of Content

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Agricultural Production & Processing

☑ 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	4%		6%	
102	Soil, Plant, Water, Nutrient Relationships	9%		7%	
111	Conservation and Efficient Use of Water	4%		5%	
112	Watershed Protection and Management	4%		5%	
201	Plant Genome, Genetics, and Genetic Mechanisms	4%		5%	
204	Plant Product Quality and Utility (Preharvest)	6%		9%	
205	Plant Management Systems	10%		10%	
211	Insects, Mites, and Other Arthropods Affecting Plants	1%		1%	
212	Pathogens and Nematodes Affecting Plants	1%		1%	
213	Weeds Affecting Plants	7%		7%	
215	Biological Control of Pests Affecting Plants	10%		3%	
216	Integrated Pest Management Systems	20%		5%	
301	Reproductive Performance of Animals	2%		4%	
302	Nutrient Utilization in Animals	2%		4%	
303	Genetic Improvement of Animals	2%		4%	
306	Environmental Stress in Animals	4%		6%	
307	Animal Management Systems	2%		5%	
311	Animal Diseases	3%		6%	
601	Economics of Agricultural Production and Farm Management	4%		6%	
722	Zoonotic Diseases and Parasites Affecting Humans	1%		1%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	125.1	0.0	56.1	0.0
Actual Paid Professional	119.3	0.0	259.6	0.0
Actual Volunteer	101.9	0.0	15.0	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
1858486	0	2716685	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
2391854	0	30067758	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
17276431	0	4426647	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Agriculture accounts for almost a quarter of Arkansas' economic activity, at $16 billion per year, a greater percentage than any other southern state and well above the national average. The Division of Agriculture assists the state's producers with objective research and extension programs to assure improved efficiency, sustainability and environmental stewardship.

About 54 percent of Arkansas land is in forest with another 42 percent in family farms. The public value of our agricultural environment includes enhanced natural beauty, diversity of plant and animal life, and rural charm.

Challenges for growers and those associated with agricultural processing and marketing are more diverse and complex than in the past, including climate change, changing consumer beliefs and demographics, complex integrated ag markets and businesses, global travel and trade, and rapidly evolving technology. While challenges may be daunting and complex, opportunities for agricultural production and processing gains are enormous due to the same factors.

Facing challenges and developing opportunities require the Division of Agriculture to stay on the cutting edge in research, education and extension. The discovery of new knowledge, its use in educating coming generations, and adoption to improve lives will all be more critical than ever in the coming years.

Efficient Production and Processing

Arkansas is a leading state in the production of rice, cotton, broilers, baitfish, soybeans, beef, timber, forages and a growing player in corn and specialty crops. To remain efficient and competitive, science-based information and problem-solving will be more critical for current and future agriculture in the state. At the same time, science-based and objectively researched answers have become increasingly clouded by the advent of the Internet and the "Information Age", where there is information at the fingertips about almost everything - but there is little if any quality control. The increasing volume of questionable information increases inefficiency, since as a result of "information overload" many things are tried that do not work; paid for that are not effective; and time and money are wasted. In an increasingly globally competitive marketplace, this level of inefficiency cannot be sustained so the Division of Agriculture and

other land grant institutions have to work harder to combat ineffective information while still discovering facts to be relied upon, and recognized as such.

Critical efficiency areas in the near term include the use of energy in agriculture; sustaining quality water for irrigation and other agricultural uses; sustainability of soil fertility; the efficient use of pesticides and other inputs; and environmental costs/benefits. Division faculty strive to be on the cutting edge of all. An example of a new discovery that spans several critical arenas is the nitrogen soil test for rice, or N-STAR. This new technology maximizes the ability of growers to apply the correct amount of N fertilizer to rice and produce optimum yield while minimizing the risks of excessive N to the environment.

The Division will continue to strive to develop and deliver efficient, sustainable agricultural production and processing best management practices; discover and promote adoption of breakthrough science-based technologies; and analyze/explain the impact of issues affecting Arkansas agricultural production and processing.

Competitive Marketing

Marketing of Arkansas products and services in an increasingly global environment is a difficult challenge, but one rich with opportunities for growers and businesses involved in agriculture. Research and extension to identify and connect emerging supply chains; adjust to evolving global conditions; meet increasing certification requirements; and adopt to new regulatory and consumer demands are and will be critically needed.

An example of Division effort in this area is the Arkansas Global Rice Model, a program that provides insight into forces that impact commodity prices in the global marketplace; while on a smaller scale, MarketMaker matches ag producers with specialty crop markets.

In this area, the Division will analyze global and local commodity and product market opportunities and constraints; identify and address the needs of diverse agricultural enterprises related to marketing supply chains; analyze and explain the impact of issues affecting Arkansas plant and animal product markets; and help producers and processors take advantage of market opportunities at all levels.

Public Appreciation and Understanding of Agriculture

The public has been removed from direct food, feed and fiber production for decades as technology and urbanization increased after World War II. At present, most people have a poor understanding of the essentials of agriculture and its importance and connection to their lives. At the same time, there appears to have been a diminishing understanding of science and the ability to think critically. This is a reversible problem that needs to be addressed with effective educational and extension programs.

The Division will continue to stress the importance of agriculture in Arkansas and the world, and provide science-based education to college students and effective extension to the public. It will also provide insightful and clear media to our increasingly diverse clientele via traditional and emerging communication outlets, including the WEB.

An example of new communication and educational efforts for the Division include the development of useful agricultural APPS for mobile devices; social media Ag sites; and popular blogs such as one for Master Gardeners by Janet Carson.

In this regard, the Division plans to increase public awareness of Arkansas agriculture's economic and environmental benefits; teach the science behind agriculture through youth and adult education programs; recruit and retain agricultural and forestry professionals and leaders; and analyze and communicate science-based information about sustainable agriculture issues to the public.

2. Brief description of the target audience

Target audiences for the Agricultural Production & Processing planned program include, but are not limited to:

Agricultural food crop growers/producers
Livestock/poultry producers
Aquaculture producers
Non-farm private landowners
Agricultural consultants
Agribusiness/allied Industry personnel
Horticulture production and service business personnel
Local, state and federal agency personnel
Master gardeners
Community leaders
Policy and decision makers
First responder emergency personnel
Research funders
General Public

3. How was eXtension used?

UA Division faculty contribute to eXtension community of practices as well as articles hosted on eXtension.org . Examples follow:

http://www.arnatural.org/wildlife/dealing/invasive.htm;
http://www.extension.org/sites/default/files/w/9/9f/FarmPondManagementforRecreationalFishing.pdf;
http://www.extension.org/pages/65666/extension-and-education-on-swine-greenhouse-gas-emissions;
http://www.extension.org/mediawiki/files/8/8e/Nutritioan_and_Feeding_of_Baitfish.pdf;
http://www.extension.org/sites/default/files/Three%20Pillars%20of%20Successful%20Aquaculture%20Businesses.pdf;
http://www.extension.org/pages/19975/information-for-arkansas-residents;
http://www.extension.org/pages/65665/manure-management-and-algal-nutrient-removal-impacts-on-swine-greenhouse-gas-emissions;
http://www.extension.org/pages/10489/arkansas-cotton-varieties;
http://www.extension.org/pages/59532/mindfulness-creativity-keys-to-conserving-water-during-drought;
http://www.extension.org/sites/default/files/12julflyer.pdf;
http://www.extension.org/sites/default/files/w/4/46/digestive_system.pdf;
http://www.extension.org/pages/60425/managing-small-hive-beetles

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	278081	828453	13187	4773

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

Patent Applications Submitted

Year:	2012
Actual:	6

Patents listed

1.Compositions and Methods of Enhancing Immune Responses, Divisional EP 12165985.8. 4/27/2012 Hargis, et.al.
2.Bovine Polymorphisms and Methods of Predicting Bovine Traits, Divisional US 13/211,452. 8/17/2011 Rosenkrans
3.Flooring Challenge Systems for Culling Poultry, Non-Provisional US 13/471,665. 5/15/2012 Wideman
4.Lactic Acid Bacteria and Their Use in Swine Direct-Fed Microbials, IN 5701/CHENP/2011. 8/5/2011 Maxwell
5.Compositions and Methods for Increasing Health and Reducing Pathogenic Bacteria in Animals Provisional US 61/506,981 7/12/2011 Hargis, et.al.
6. UA222 Cotton. US utility patent application #13/345,289 was filed 1.6.12
UA03 Cotton. US Utility patent Application #13/268,051 was filed 10.7.12

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	31	283	314

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- # of agronomic production education meetings related to food production

Year	Actual
2012	4320

Output #2

Output Measure

- # of demonstrations/on-farm research related to food crop production

Year	Actual
2012	789

Output #3

Output Measure

- # of farm visits related to food crop production

Year	Actual
2012	13693

Output #4

Output Measure

- # of row crop field days related to food production

Year	Actual
2012	261

Output #5

Output Measure

- # of educational meetings, demonstrations, field days, site visits, and other group events held to educate commercial and consumer clientele in fruit, nut, and vegetable production
  Not reporting on this Output for this Annual Report

Output #6

Output Measure

- # of clientele contacts from educational classes, workshops, group discussions, one-on-one interventions, demonstrations, and other educational methods related to food crop production.

Year	Actual
2012	71765

Output #7

Output Measure

- # of livestock or poultry related educational programs, workshops, educational meetings and/or field days.

Year	Actual
2012	1149

Output #8

Output Measure

- # of clientele attending livestock or poultry related educational programs (field days, workshops, etc.)

Year	Actual
2012	38749

Output #9

Output Measure

- # of producers receiving livestock or poultry related educational materials (newsletters, fact sheets, etc.)

Year	Actual
2012	38275

Output #10

Output Measure

- # of producers conducting livestock or poultry related on-farm demonstrations.

Year	Actual
2012	393

Output #11

Output Measure

- # of livestock or poultry related farm visits or one-on-one consultations with producers.

Year	Actual
2012	11076

Output #12

Output Measure

- # of clientele trained on agricultural and food biosecurity.

Year	Actual
2012	9174

Output #13

Output Measure

- # of educational materials developed on agricultural and food biosecurity.

Year	Actual
2012	73

Output #14

Output Measure

- # of requested consultations related to exotic animal disease concerns.

Year	Actual

2012	110

Output #15

Output Measure

- # of hits to the CES Website regarding avian biosecurity.

Year	Actual
2012	6281

Output #16

Output Measure

- # of hits to the CES Website regarding livestock biosecurity.

Year	Actual
2012	18843

Output #17

Output Measure

- # of plant sites surveyed or monitored related to biosecurity.

Year	Actual
2012	6

Output #18

Output Measure

- # of farm visits or one-on-one consultations with clientele related to biosecurity.

Year	Actual
2012	122

Output #19

Output Measure

- # attending food production alternative agricultural systems related education classes, workshops, group discussions, and other educational events.

Year	Actual
2012	4106

Output #20

Output Measure

- # of food production alternative agricultural systems related demonstrations (e.g., demonstration study farm, food plots, etc.)

Year	Actual
2012	12

Output #21

Output Measure

- # of food and nutrition clientele contacts from education classes, workshops, group discussions, one-on-one interventions, demonstrations, and other educational methods.
  Not reporting on this Output for this Annual Report

Output #22

Output Measure

- of food and nutrition education classes, workshops, group discussions, one-on-one interventions, demonstrations, and other educational events,
  Not reporting on this Output for this Annual Report

Output #23

Output Measure

- Pest Mgmt - # of farm tours related to pest management

Year	Actual
2012	142

Output #24

Output Measure

- Pest Mgmt - # of farm visits made related to pest management

Year	Actual
2012	2461

Output #25

Output Measure

- Pest Mgmt - # of pesticide applicator education classes

Year	Actual
2012	207

Output #26

Output Measure

- Pest Mgmt - # of homeowner education classes related to pest management

Year	Actual
2012	11

Output #27

Output Measure

- Pest Mgmt - # of research field days related to pest management

Year	Actual
2012	27

Output #28

Output Measure

- Pest Mgmt - # of workshops related to pest management

Year	Actual
2012	6

Output #29

Output Measure

- Pest Mgmt - # of newsletter articles related to pest management

Year	Actual
2012	56

Output #30

Output Measure

- Pest Mgmt - # of Arkansas Commodity Board grants received

Year	Actual
2012	18

Output #31

Output Measure

- Pest Mgmt - # of federal grants and contracts

Year	Actual
2012	15

Output #32

Output Measure

- Pest Mgmt - # of educational classes related to pest management

Year	Actual
2012	223

Output #33

Output Measure

- Pest Mgmt - # of Pest Management clientele contacts from education classes, workshops, group discussions, one-on-one interventions, demonstrations, and other educational methods

Year	Actual
2012	26926

Output #34

Output Measure

- Non-Food Plants - # of production education meetings related to production of agronomic non-food crops

Year	Actual
2012	378

Output #35

Output Measure

- Non-Food Plants - # of demonstrations/on-farm research related to production of non-food crops

Year	Actual
2012	326

Output #36

Output Measure

- Non-Food Plants - # of farm visits related to production of non-food crops

Year	Actual
2012	2403

Output #37

Output Measure

- Non-Food Plants - # of row crop field days related to production of non-food crops

Year	Actual
2012	91

Output #38

Output Measure

- Non-Food Plants - # of educational meetings, demonstrations, field days, site visits, and other group events held to educate commercial and consumer clientele in horticulture

Year	Actual
2012	6095

Output #39

Output Measure

- Non-Food Plants - # of educational meetings, demonstrations, farm visits and/or field days held to educate clientele on forage production and grazing management

Year	Actual
2012	13857

Output #40

Output Measure

- Non-Food Plants - # of clientele participating in educational events related to non-food crop production

Year	Actual
2012	50911

Output #41

Output Measure

- Economics - Number of educational products and materials developed or updated for print, electronic media, radio, podcasts, or display

Year	Actual
2012	435

Output #42

Output Measure

- Economics - Number of educational activities conducted related to economics and commerce

Year	Actual
2012	1664

Output #43

Output Measure

- Economics - Number of clientele attending educational activities related to economics and commerce

Year	Actual
2012	8419

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	# of clientele (non-duplicated) who use the DD50 program for improved rice production.
2	# of clientele using the RICESEED program.
3	# of clientele that utilize SOYVA to assist with variety selection.
4	# of livestock producers who increased knowledge related to livestock production management practices.
5	# of livestock producers who initiated or improved their record keeping.
6	# of poultry producers who adopted new practices or technology.
7	# of allied poultry industry personnel who adopt new practices or technology.
8	# of livestock producers who changed an existing management practice or adopted a new practice.
9	# of growers/producers reporting knowledge gained about the need for biosecurity.
10	# of growers/producers reporting intent to adopt new biosecurity practices for animal production facilities.
11	# of diagnostic plant pest samples submitted.
12	# of diagnostic nematode samples submitted.
13	# of avian samples submitted to diagnostic labs for exotic animal surveillance disease testing.
14	# of Asian Soybean Rust positive samples.
15	# of livestock samples submitted to diagnostic labs for exotic animal diseases testing.
16	# of clientele who reported knowledge gained about alternative food products.
17	# of clientele who initiated an alternative agricultural food-related enterprise.

18	# of participants who indicated that they increased their knowledge related to food, nutrition and/or food resource management following completion of a nutrition education program.
19	# of participants who adopted at least one positive nutrition practice.
20	# of participants who indicated that they intend to adopt one or more healthy food/nutrition/resource management practice.
21	# of participants who adopted at least one food resource management practice.
22	# of participants who reported saving money on groceries following completion of a nutrition education program.
23	# of participants who reported they less often run out of food before the end of the month following completion of a nutrition education program.
24	Economics - Number of participants who increase knowledge of Agricultural Economics and Agribusiness
25	Economics - Sustainable, vibrant and globally competitive agricultural sector for Arkansas as indicated by Arkansas Cash Farm Receipts (in thousand dollars) (NASS)
26	Economics - Sustainable, vibrant and globally competitive agricultural sector for Arkansas as indicated by Arkansas Net Farm Incomes (in thousand dollars) (ERS)
27	# of participants gaining knowledge of proper pesticide application practices
28	# of participants passing commercial pesticide certification exams
29	Pest Mgmt - # of clients using scouting programs
30	Pest Mgmt - # of pest monitoring traps utilized
31	Annual soybean yield - bushels per acre
32	Annual value of soybean production (Dollars)
33	Annual rice (all) yield -- pounds per acre
34	Annual value of rice (all) production (dollars)
35	Annual cotton (all) yield -- pounds per acre
36	Pest Mgmt - % of soybean acreage receiving herbicide applications
37	Pest Mgmt - % of soybean acreage receiving fungicide applications

38	Non-Food Plants - # of forage producers who gained knowledge, changed or adapted new management practices or technology
39	Non-Food Plants - # of new Master Gardeners trained and certified
40	Non-Food Plants - # of Master Gardeners who re-certified
41	Non-Food Plants - # of new horticultural businesses and new farmers markets
42	Non-Food Plants - Total production (bales) of harvested cotton (all)
43	# of clientele adopting new practices outlined in educational programs to improve biosecurity through proper methods of sanitation, disease prevention, recognition, and control
44	# of alternative enterprises maintaining and adopting recommended management practices
45	# of acres managed with improved water management and conservation practices
46	# of clients that increased knowledge about sustainable production technologies

Outcome #1

1. Outcome Measures

# of clientele (non-duplicated) who use the DD50 program for improved rice production.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	659

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
201	Plant Genome, Genetics, and Genetic Mechanisms
205	Plant Management Systems

Outcome #2

1. Outcome Measures

# of clientele using the RICESEED program.

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

# of clientele that utilize SOYVA to assist with variety selection.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	573

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
An estimated 2,220,000 acres of soybean were infested with glyphosate-resistant Palmer amaranth(pigweed) in Arkansas in 2012. This problem cost growers at least $200 million dollars in added weed control cost and lost yield. The only weed-control system similar to RoundUp-

Ready is the LibertyLink herbicide system. Since LibertyLink soybean varieties have only been commercially available since 2009, little is known about how these varieties perform in Arkansas.

What has been done
Since 2009, a RoundUp/LibertyLink systems comparison study has been conducted at two different locations.

Results
Results show that currently available LibertyLink soybean varieties have yields very comparable to some of the highest yielding and popular RoundUp-Ready soybean varieties. Since the beginning of these studies, planting of LibertyLink soybean varieties has increased to 750,000 acres in Arkansas during 2012. This system provides an effective alternative to management of glyphosate-resistant weeds in Arkansas soybean production.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
201	Plant Genome, Genetics, and Genetic Mechanisms
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
213	Weeds Affecting Plants
216	Integrated Pest Management Systems

Outcome #4

1. Outcome Measures

# of livestock producers who increased knowledge related to livestock production management practices.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	21226

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Increasing costs of production are causing beef producers to look at alternative production systems and production practices. From 2002 to 2008, the cost of synthetic N has increased by over 300%, contributing to elevated costs of production and cost of bodyweight gain. The inexpensive N fertilizers of the 1950s and 1960s led to replacement of grass-clover pasture combinations with more productive N fertilization of grass pastures, with increasing N fertilizer cost, economic conditions are present for a shift back to legume inclusion in pasture systems. Although estimates vary depending on a multitude of conditions, clovers contribute from 20 to over 200 lb N/acre to pastures, but direct transfer of N from legumes to grasses growing in the same season is extremely low. The objective of this research was to determine the effects of white and red clover or alfalfa additions to bermudagrass pastures on steer performance in relation to a range of N fertilization rates.

What has been done

This research took place on 40 acres of bermudagrass pasture located at the University of Arkansas Livestock and Forestry Research Station near Batesville in northeast Arkansas. Bermudagrass pastures were interseeded with red clover and ladino white clover or were seeded with alfalfa. Additional bermudagrass pastures received 0, 50, or 100 lb N/acre as ammonium nitrate in split applications (one-half of total N per application) in May and July each summer. Over 3 years, growing beef steers (n = 431, bodyweight = 542 ± 73 lb) grazed pastures in this put and take experiment in which each year four steers were selected for each pasture to measure animal performance and additional steers were added or removed in order to maintain similar forage allowance among pastures.

Results

Daily gains and total bodyweight gain/acre of growing steers increased linearly with increasing nitrogen rate. Daily gains of clover and alfalfa pastures did not differ from 50 lb nitrogen rate, but were less than 100 lb nitrogen rate. Gains of clover and alfalfa steers did not differ. Because calves were able to start grazing the legume pastures earlier in the spring, the legume pastures produced more body weight gain/acre and grazing-days/acre than nitrogen fertilizer. Grazing/acre of alfalfa was greater than clover, yet BW gain/acre did not differ. Nitrogen fertilizer can effectively be replaced by either clovers or alfalfa in bermudagrass pastures for growing beef steers.

4. Associated Knowledge Areas

KA Code	Knowledge Area
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
303	Genetic Improvement of Animals
306	Environmental Stress in Animals
307	Animal Management Systems
311	Animal Diseases
601	Economics of Agricultural Production and Farm Management

Outcome #5

1. Outcome Measures

# of livestock producers who initiated or improved their record keeping.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	2264

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
303	Genetic Improvement of Animals
306	Environmental Stress in Animals
307	Animal Management Systems
311	Animal Diseases
601	Economics of Agricultural Production and Farm Management

Outcome #6

1. Outcome Measures

# of poultry producers who adopted new practices or technology.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	310

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Agricultural production and processing accounted for roughly one-sixth of Arkansas's income, value-added and employment in 2010. Of this, approximately one-third is attributable to animal agriculture, predominantly poultry production and processing. Poultry is more concentrated in the western half of the state, thus making its importance greater in western Arkansas.

What has been done
We developed three primary research efforts that center on the poultry industry: 1) development of a poultry litter baling technology that has been commercialized privately by White River Fertilizers; 2) estimation of the impacts on farm net revenues from utilizing poultry litter on select row crops and 3) description of the poultry meat market by cut based upon price structures within the market. These research efforts have been on-going for the past eight years, with recent efforts centering on farm net revenues and market structures. Research topics 1) and 2) involved scientists from several disciplines, including crop and soil sciences, bio and agricultural engineering and poultry science. The market topic was addressed within Agricultural Economics, but involved professionals from the poultry industry and private firms specializing in poultry pricing.

Results
Numerous leading farmers in the Arkansas Delta experienced encouraging results from use of the baled poultry litter system developed by the Division of Agriculture, now commercialized by White River Fertilizers. In actual farm use, application of one ton per acre produced a 32% yield increase in average yield this year on 500 acres of cotton, using supplemental N to meet soil requirements. This farm will increase use to 3000 acres. A rice farm used 2 tons per acre on severely cut rice ground and obtained yields of 178 bushels per acre, greater than expected. Numerous others have had similar results on other crops. The Northwest Arkansas Conservancy

Authority is considering adopting the Poultry Litter/Dewatered Municipal Biosolids system developed by this research program, at their regional sewage treatment plant near Centerton. Successful implementation of the system at that site could allow in excess of 200,000 tons of PL/DMB to be moved from the nutrient-excess NWA region to nutrient-deficit row crop production areas in Eastern Arkansas and surrounding states.

4. Associated Knowledge Areas

KA Code	Knowledge Area
306	Environmental Stress in Animals
311	Animal Diseases

Outcome #7

1. Outcome Measures

# of allied poultry industry personnel who adopt new practices or technology.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	86

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
303	Genetic Improvement of Animals
306	Environmental Stress in Animals

307	Animal Management Systems
311	Animal Diseases
601	Economics of Agricultural Production and Farm Management

Outcome #8

1. Outcome Measures

# of livestock producers who changed an existing management practice or adopted a new practice.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	6166

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Arkansas is a cow/calf state producing weaned calves sold at auction barns as stockers. Beef Cows that have calved (909,000 head) and calves less than 500 pounds (400,000 head) made up the largest part of the Arkansas cattle calves inventory. The 2011 economic values of the cattle industry was $457,808,000. In addition, consumers are concerned about the safety of the food they eat. The perception of safety and wholesomeness plays a major role in the buying decisions of a health- and diet-conscious America.

What has been done
In response to that opportunity, the Arkansas Beef Quality Assurance Program was developed. This educational program illustrates the importance of management practices at the cow-calf and stocker production level that affect beef quality. County educational programs were developed to address the importance of properly injecting cattle with animal health products, properly handling animal health products, reduce bruising and ultimately improving meat quality. In order to survey BQA adoption and assess current management practices among cattle producers across the U.S., a survey consisting of 43 questions was developed.

Results
Since the initiation of the BQA program, non-active scars and active, fluid-filled lesions in the top butt have gone from a 22% and 12.5% incident rate, respectively, to almost being nonexistent. A total of 3,755 cattle producers from 45 different states (including Arkansas) responded, with the majority of respondents characterizing themselves as commercial cow/calf operators (74.8

percent). Injection-site management has been a cornerstone issue discussed in BQA trainings. In this survey, 84% of respondents said their preferred route of administration was SubQ, which is taught as a BQA principle. Placing injections in the neck area is another BQA principle, and over 87% of respondents said their preferred location for injections was in front of the shoulder in the neck area. When respondents were asked why they choose to follow best management practices consistent with BQA, 87% said because it was "the right thing to do" and 84% also responded because "I am committed to continuous improvement on my cattle operation."

4. Associated Knowledge Areas

KA Code	Knowledge Area
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
303	Genetic Improvement of Animals
306	Environmental Stress in Animals
307	Animal Management Systems
311	Animal Diseases
601	Economics of Agricultural Production and Farm Management

Outcome #9

1. Outcome Measures

# of growers/producers reporting knowledge gained about the need for biosecurity.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	233

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
213	Weeds Affecting Plants
311	Animal Diseases
722	Zoonotic Diseases and Parasites Affecting Humans

Outcome #10

1. Outcome Measures

# of growers/producers reporting intent to adopt new biosecurity practices for animal production facilities.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	103

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
311	Animal Diseases
722	Zoonotic Diseases and Parasites Affecting Humans

Outcome #11

1. Outcome Measures

# of diagnostic plant pest samples submitted.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	3559

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Arkansas plants are subject to numerous disease problems, and the first step to proper management is a correct diagnosis. For this, we offer the Plant Health Clinic, a full service diagnostic facility. In addition to diagnostic services, Clinic staff serve as a diagnostic resource to other Division personnel and the public, often teaching the basics of plant diagnosis.
The Clinic is connected nationally to The Southern Plant Diagnostic Network (SPDN), and the National Plant Diagnostic Network (NPDN), and sample information and diagnoses are hosted on the regional DDDI web network.

What has been done
The clinic diagnosed 3559 samples and issued 28 timely newsletters read by an estimated 6000 persons. We trained 120 master gardeners on diagnostics in 9 counties, and participated in an advanced master gardener training for the state. Our portable Clinic and display was visited by more than 9000 individuals at several field days and the Flower and Garden show. The Clinic also hosted a Homeowner Horticultural Problems in service training for 50 county extension agents; and a turf diagnostics workshop attended by 93 turf managers. Clinic personnel updated sections of the annual MP 154 Plant Disease Management Guide and coordinated updating of the Arkansas Small Fruit Schedule MP 467.

Results
Overall sample numbers increased in 2012, a good indicator of satisfaction from clientele. Evaluations of attendees at the Homeowner Problem Training and the Turf Workship indicated an overwhelming need for additional training in diagnostics, including advanced and field training. Respondents were overwhelmingly positive about the MP467 and Clinic web pages, especially the Digital Image Library resource.

4. Associated Knowledge Areas

KA Code	Knowledge Area
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
213	Weeds Affecting Plants
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems

Outcome #12

1. Outcome Measures

# of diagnostic nematode samples submitted.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	400

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
212	Pathogens and Nematodes Affecting Plants
216	Integrated Pest Management Systems

Outcome #13

1. Outcome Measures

# of avian samples submitted to diagnostic labs for exotic animal surveillance disease testing.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
311	Animal Diseases
722	Zoonotic Diseases and Parasites Affecting Humans

Outcome #14

1. Outcome Measures

# of Asian Soybean Rust positive samples.

Not Reporting on this Outcome Measure

Outcome #15

1. Outcome Measures

# of livestock samples submitted to diagnostic labs for exotic animal diseases testing.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	9

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
311	Animal Diseases
722	Zoonotic Diseases and Parasites Affecting Humans

Outcome #16

1. Outcome Measures

# of clientele who reported knowledge gained about alternative food products.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	4346

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
601	Economics of Agricultural Production and Farm Management

Outcome #17

1. Outcome Measures

# of clientele who initiated an alternative agricultural food-related enterprise.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	39

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Pecans are regarded as the most important commercial nut crop grown in the eastern United States. In 2011, the United States exported 45,000 metric tons (MT) of unshelled, or in-shell, pecans valued at $143 million and 12,948 MT of shelled pecans valued at nearly $109 million. Currently, Arkansas pecan production is inefficient but could be a more viable alternative crop. The reasons for our inefficiency and research and extension gaps are not well know due to lack of effort in this crop in many years.

What has been done
We worked with the Arkansas Pecan Growers Association to conduct a needs assessment for the industry and provide educational opportunities to growers and industry representatives over the past two years. Activities included two surveys, several workshops, 3 informal field meetings, monitoring of important pests, and launching of a website.

Results
Significant knowledge gaps identified by the survey included soil and tissue sampling for nutrition; proper fertilization; practices to maximize production and quality; monitoring and managing pests; irrigation; monitoring nut quality at harvest; and where to obtain valid information. Most growers surveyed indicated desire for additional assistance and satisfaction with the research and extension progress made to date. Pecans should have a brighter future in Arkansas.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
307	Animal Management Systems
601	Economics of Agricultural Production and Farm Management

Outcome #18

1. Outcome Measures

of participants who indicated that they increased their knowledge related to food, nutrition and/or food resource management following completion of a nutrition education program.

Not Reporting on this Outcome Measure

Outcome #19

1. Outcome Measures

of participants who adopted at least one positive nutrition practice.

Not Reporting on this Outcome Measure

Outcome #20

1. **Outcome Measures**

   # of participants who indicated that they intend to adopt one or more healthy food/nutrition/resource management practice.

   Not Reporting on this Outcome Measure

Outcome #21

1. **Outcome Measures**

   # of participants who adopted at least one food resource management practice.

   Not Reporting on this Outcome Measure

Outcome #22

1. **Outcome Measures**

   # of participants who reported saving money on groceries following completion of a nutrition education program.

   Not Reporting on this Outcome Measure

Outcome #23

1. **Outcome Measures**

   # of participants who reported they less often run out of food before the end of the month following completion of a nutrition education program.

   Not Reporting on this Outcome Measure

Outcome #24

1. **Outcome Measures**

   Economics - Number of participants who increase knowledge of Agricultural Economics and Agribusiness

2. **Associated Institution Types**

   - 1862 Extension
   - 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	25868

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Agriculture is a critical segment of Arkansas' economy. In 2010 agriculture was responsible for generating $7.7 billion in sales, 256,244 jobs (nearly 17% of Arkansas' workforce), and $16 billion in value added (16.6% of Arkansas' total) according to an economic base analysis conducted by the Division. Agriculture is an inherently risky business with volatile commodity markets and rising input prices. Knowledge is a powerful tool for economic success.

What has been done
During 2012, we offered numerous educational meetings focusing on the understanding and use of important economic tools to a diverse cross section of agricultural producers in the state. Tools included:
* Crop Enterprise Budgets
* Irrigation Costs Guide
* Machinery Costs Guide
* Farm Profitability Measures
* Grain Drying Decision Aid

Results
Over 850 participants from 19 counties attended the meetings in which farm and risk management information was presented in 2012. An evaluation of participants showed that 98% felt the presentations were very good to excellent. Participants also rated the tools as to likelihood of future use as follows:
* Crop Enterprise Budgets 87%
* Irrigation Cost Guide 75%
* Machinery Cost Guide 77%
* Farm Profitability Guide 53%
* Grain Drying Decision Aid 48%

4. Associated Knowledge Areas

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

Outcome #25

1. Outcome Measures

Economics - Sustainable, vibrant and globally competitive agricultural sector for Arkansas as indicated by Arkansas Cash Farm Receipts (in thousand dollars) (NASS)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	8415896

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Many areas of Arkansas are well suited for grazing stocker calves on winter wheat forage, but few cattle operations have taken advantage of this potential value-adding opportunity. In addition, many areas that could potentially benefit from this practice are highly erodible, and conservation tillage winter wheat forage management may be needed to best ensure the existing natural resource base is not degraded over time. Profit generation is also a major consideration when evaluating alternative winter wheat forage production methods. Conventional tillage requires the use of large and expensive pieces of equipment and is very fuel and labor intensive. In contrast, conservation tillage systems require less machinery and equipment and are less fuel and labor intensive. This study evaluates both profitability and return variability of grazing stocker steers on conservation tillage winter wheat pasture using simulation analysis.

What has been done
The simulation model SIMETAR (Simulation and Econometrics To Analyze Risk) is used to simulate 500 iterations of average daily gains (ADGs), steer purchase and sell prices, death loss percent, and prices for key winter wheat forage production inputs (diesel, fertilizer, and glyphosate). These data are then used along with input and field operation data from experimental winter small grains pastures at the Livestock and Forestry Branch Station (LFBS) near Batesville, Arkansas to calculate net return distributions for stocker steers grazed on winter wheat forage produced under conventional tillage (CT), reduced tillage (RT) and no-till (NT) management. Average daily gains are simulated based on seven years of stocker weight gain data varying by tillage treatment from the LFBS. Steer prices are simulated based on historical steer price data from the Arkansas Weekly Livestock Summary (USDA, Agricultural Marketing Service). Prices for key production inputs such as diesel, fertilizer, and glyphosate are simulated based on historical April US prices for urea, diammonium phosphate (DAP), potash, diesel, and glyphosate obtained from the USDA, National Agricultural Statistics Service. All weight gain and

historical price data used in the simulations are collected for the period 2002-2003 to 2008-2009.

Results

The results indicate stocker steer returns are greater on average and are least variable under the NT wheat forage system, while stocker steer returns are smallest on average and most variable under the CT wheat forage system. Average stocker steer net returns to the three systems were $39, $19, and -$4 per acre for NT, RT, and CT, respectively. The results also indicate that all three forage systems have potential to be both highly lucrative and highly unprofitable. Maximum returns ranged from $236 per acre for NT to $166 per acre for CT, while minimum returns ranged from -$143 per acre for RT to -$176 per acre for CT. Of the three forage systems, the NT system had the smallest probability of receiving a negative return (25 percent) followed by the RT system (37 percent) and the CT system (45 percent). These results imply that winter wheat forage systems that keep tillage to a minimum and maintain the natural resource base have the greatest probability of generating positive returns to stocker grazing.

4. Associated Knowledge Areas

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

Outcome #26

1. Outcome Measures

Economics - Sustainable, vibrant and globally competitive agricultural sector for Arkansas as indicated by Arkansas Net Farm Incomes (in thousand dollars) (ERS)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1422739

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #27

1. Outcome Measures

of participants gaining knowledge of proper pesticide application practices

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	8022

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
In recent years rice water weevils have had a devastating impact for many growers in the state, Studies indicate that the rice water weevil can cost as much as $40-$120 per acre in moderate to severe infestations. Another insect of growing concern is the grape colaspis, in both rice and soybean. Also known as the "lespedeza worm" this pest has been an increasing concern for many growers throughout the Grand Prairie region as well as other areas of the state. The most efficient means to manage these pests, at this time, is through insecticide seed treatments. There are two new ones available now and another to be labeled soon.

What has been done
We conducted more than 40 field trials to assess the effectiveness of the various materials - the management and environmental systems where they provide the most economic benefit. Conducting insecticide efficacy trials for rice pests can be extremely difficult because you never know when and where insects will be a problem. With that in mind, our approach was to get the trials out in as many locations as possible, and hope we would be able to get some meaningful data. All sites were selected based on these locations having a prior history of problems with grape colaspis and/or rice water weevil. Since this is relatively new technology, results were widely presented at 26 county grower meetings; 5 field days; 8 field tours; 12 industry meetings; and the Arkansas Crop Management Conference.

Results

Results in 2012 were similar to previous years, clearly showing these products to have marked effectiveness in controlling both insect pests when applied at proper and exact rates as seed treatment, with up to a 15 bu per acre yield increase in severe settings; and improved stand emergence and uniformity.

4. Associated Knowledge Areas

KA Code	Knowledge Area
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
216	Integrated Pest Management Systems

Outcome #28

1. Outcome Measures

# of participants passing commercial pesticide certification exams

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	914

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Pest management is a very broad area encompassing agriculture, urban situations, public health concerns, trade issues, etc. The Environmental Protection Agency (EPA) requires that pesticides be used properly and judiciously. The Agency also requires that most individuals and businesses that apply pesticides receive proper and recurrent training on the proper use of pest control products. The pesticide safety education program in Arkansas is the primary way that pesticide applicators are instructed on the proper and safe use of pesticides.

What has been done
Approximately 4,500 Arkansas agricultural producers were certified or recertified as private pesticide applicators in the 2012 training season. The PAT training included information on pesticide labeling, safety precautions, first aid, protective gear, storage, handling, disposal, integrated pest management, environmental concerns, application equipment and calibration, groundwater protection, pesticide recordkeeping, and spray drift management.

Results
Approximately 4,500 Arkansas agricultural producers were certified or recertified as private pesticide applicators in the 2012 training season. The PAT training included information on pesticide labeling, safety precautions, first aid, protective gear, storage, handling, disposal, integrated pest management, environmental concerns, application equipment and calibration, groundwater protection, pesticide recordkeeping, and spray drift management.

4. Associated Knowledge Areas

KA Code	Knowledge Area
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
216	Integrated Pest Management Systems

Outcome #29

1. Outcome Measures

Pest Mgmt - # of clients using scouting programs

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	2700

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Arkansas has about 200 acres of brambles and 500 acres each of blueberries, peaches and strawberries. In July 2012, a new pest, the spotted wing Drosophila, was detected in three counties in Arkansas and was causing some damage in fall ripening blackberries in Fayetteville. This pest originated in eastern Asia and Japan and apparently was recently introduced into the U.S. in imported fruit. In 2009, it was found damaging ripening fruit in the east and west coastal states and has since been moving into the interior of the United States. The spotted wing Drosophila lays eggs in ripening fruit, especially those with thin skins including: blueberries, brambles, cherries, peaches and strawberries. Some fruit growers in other states have already experienced as much as 100% fruit loss to this new invasive fruit pest. In addition, this pest has caused growers to increase use of insecticides and increase spray frequency to every 5 to 7 days during the fruit ripening and harvest periods.

What has been done
It is very important to alert Arkansas fruit growers of this new pest and educate them about scouting and management practices that prevent fruit damage. In 2012, we prepared for the invasion of this fruit pest by publishing a University of Arkansas Extension Fact Sheet (FSA 7079). This fact sheet describes: how to identify the spotted wing drosophila; seasonal biology; fruit crops attacked; damage caused; how to sample for this fly around fruit plantings or for larvae in fruit; and recommends cultural and insecticidal management practices to prevent pest damage to ripening fruit. We have also included spotted wing drosophila management recommendations in 2013 Arkansas Insecticide Recommendations MP144 and MP467 and Midwest and Southeast regional spray guides. In addition, several talks have been given to county extension agents and growers at several meetings.

Results
We are in the early stages of the awareness effort but increasing concern was voiced by the state's fruit producers during fall meetings in 2012. As a result, we plan a more intensive program of workshops and monitoring for the 2013 growing season, especially after having detected the pest overwintering in high tunnels in Fayetteville, AR. The potential for severe damage to emerging specialty crops in the state remains very high.

4. Associated Knowledge Areas

KA Code	Knowledge Area
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems

Outcome #30

1. Outcome Measures

Pest Mgmt - # of pest monitoring traps utilized

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	450

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
216	Integrated Pest Management Systems

Outcome #31

1. Outcome Measures

Annual soybean yield - bushels per acre

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	40

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Farmers in Arkansas desire assistance and guidance in planning for field crop production. The primary objective of crop enterprise budgets is to assist producers in planning for crop expenses. Budgets include expenses and returns, which are based on typical Arkansas yields and expected commodity prices. Coordination of budget development by crop enterprise enables producers to make decisions based on comparative costs and returns among crops. The Department of Agricultural Economics and Agribusiness at the University of Arkansas has revised its crop enterprise budget program in order to provide improved service to producers and other constituents. The crop enterprise budget program is intended to more effectively and efficiently meet the needs of clientele, as well as to expand the program for application in analyzing the crop

production sector of the Arkansas economy.

What has been done
Methods employed for developing crop enterprise budgets include input prices that are estimated directly from information available from suppliers and other sources, as well as costs estimated from engineering formulas developed by the American Society of Agricultural and Biological Engineers. Analyses are for generalized circumstances with a focus on consistent and coordinated application of budget methods for all field crops. This approach results in meaningful costs and returns comparisons for farmer decision making related to acreage allocations among field crops.

In addition to printed budgets, the program includes online interactive budgets. Producers can enter their production costs, as well as expected yields and commodity prices. This provides unique expected costs and returns calculated for base Extension production methods.

Results
Enterprise budgets are utilized by numerous participants in Arkansas crop production. Enterprise budgets contain information for others interested in the financial situation of Arkansas field crops. The University of Arkansas budget program is intended to provide financial planning services to producers and to better inform all stakeholders of Arkansas agriculture. For the annual period ending in October 2011, the budget web link had 88,991 visits. The computational program is used for economic analysis of the crop research verification program. This program investigates production methods for all field crops produced in Arkansas.

4. Associated Knowledge Areas

KA Code	Knowledge Area
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants

Outcome #32

1. Outcome Measures

Annual value of soybean production (Dollars)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual

2012 0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Arkansas soybean producers in 2012 have enjoyed soybean market prices that reached levels unrivaled in recent years. The cost of this production was escalated by increased irrigation costs as temperatures soared and rainfall amounts fell behind seasonal averages. These challenges, added to typical adjustments to new disease/insect pressures and production inputs/technologies, required that producers develop a greater understanding of their exposure to risk in both the domestic and global economies.

What has been done

The three objective approach taken to address these issues was to: (1) continue conducting economic analyses of production practices used in the Arkansas Soybean Research Verification Program that impact profitability and verify Extension recommendations; (2) standardize the economic analysis by integrating current year verification program data with data from previous years to document the long-term benefits of the Soybean Research Verification Program (SRVP); and (3) provide economic assistance for other research projects, specifically the "Improving Technology Transfer for Profitable and Sustainable Soybean Production" project of the UA Cooperative Extension Service (CES). Individual economic budget analyses were developed for each SRVP producer and the overall program results were compiled by production system. Daily quotes from Arkansas soybean markets were recorded with analysis and summaries distributed electronically across the CES network in the weekly "Soybean Notes" portion of the Arkansas Row Crops electronic newsletters. More specific information was shared through county and regional soybean meeting presentations by the CES. Soybean economic information generated by this effort was distributed beyond Arkansas by poster presentations at multi-state soybean forums.

Results

Soybean production in Arkansas was estimated to cover 3.3 million acres in 2012 with 94% of the total acreage in herbicide resistant varieties. Irrigated acreage in 2011 was over 2.6 million. Total 2011 production exceeded 124.3 million bushels with a total value of more than $1.49 billion. The Soybean Research Verification Program has helped producers increase bean yields from 26 bushels per acre in 1995 to an expected record 39 bushels in 2012. Twenty six counties produced more than 1 million bushels each in 2011 with seven counties over 6 million. The economic analysis provided by this project continues to address new technology with producers receiving decision-making information and being shown how their choices impact the entire Arkansas soybean industry.

4. Associated Knowledge Areas

KA Code	Knowledge Area
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems

Outcome #33

1. Outcome Measures

Annual rice (all) yield -- pounds per acre

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	7449

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Sediment is the primary pollutant identified for most eastern Arkansas waterways, and conservation practices like no-till are commonly recommended as remedial mechanisms. Savings in fuel, labor, and fixed machinery expenses also make no-till more attractive relative to conventional tillage. The profitability of no-till rice has been investigated, but the focus has been from the prospective of the producer only, despite most cropland being owned by someone other than the producer. This study evaluates the profitability and return variability of no-till management in Arkansas rice production from the perspective of both the tenant and the landlord using simulation. Crop yields and prices are simulated for a typical two-year rice-soybean rotation, and tenant and landlord net returns distributions are constructed for popular rental arrangements used in eastern Arkansas rice production.

What has been done
Five hundred iterations of yields and prices are simulated for a typical rice-soybean rotation using the simulation model SIMETAR (Simulation and Econometrics To Analyze Risk). Rice and soybean yields are simulated using seven years of historical data from a rice-based cropping systems study at Stuttgart, Arkansas for the period 2000-2006. Crop prices are simulated using data from the same period (2000-2006). However, expected prices for the simulations are calculated using averages for the period 2004-2006. Direct and fixed expenses are calculated for rice and soybeans by tillage method using the Mississippi State Budget Generator (MSBG) and input data for rice and soybeans grown in a two-year rotation obtained from the long-term rice cropping systems study at Stuttgart, Arkansas. All expenses are in 2006 dollars. Government payments for the study are calculated assuming continuation of the US Farm Security and Rural Investment Act of 2002 (e.g., the 2002 Farm Bill).

Results

The results imply that tenants have more to gain from no-till management in rice production than landlords both in terms of higher expected returns and lower return variability. Average net returns to the tenant are larger under no-till than under conventional till for all rental arrangements examined. The return variability of rental arrangements for the tenant is also lower under no-till than under conventional till for all rental arrangements examined, and the probability of receiving a negative return is greater under conventional till than under no-till for the tenant across all rental arrangements. Average returns to the landlord are approximately equal for no-till relative to conventional till for all rental arrangements examined. The landlord faces less return variability than the tenant across all rental arrangements examined, but the return variability the landlord faces under cropland rental is slightly lowered when no-till management is used in place of conventional tillage on rented land. Therefore landlords with risk aversion may have a slight preference for no-till management.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
215	Biological Control of Pests Affecting Plants
601	Economics of Agricultural Production and Farm Management

Outcome #34

1. Outcome Measures

Annual value of rice (all) production (dollars)

Not Reporting on this Outcome Measure

Outcome #35

1. Outcome Measures

Annual cotton (all) yield -- pounds per acre

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	866

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
If improved yield and fiber quality were positively related, fiber quality would be improved as breeders have selected higher yielding cotton varieties. This obviously has not been the case. Strong negative associations have long been found between lint yield and many fiber traits. Recent data from both U.S. and Australian cotton breeding programs indicate that fiber length and fiber strength are still negatively associated with lint yield. Since the varieties best adapted to Arkansas generally do not have outstanding fiber quality, marketing of Delta-grown cotton suffers in tight market conditions. By improving fiber quality, Arkansas cotton producers will have a competitive edge over other cotton production areas.

What has been done
Poor relationships that are not genetically bound together can be broken, but considerable effort and focus is usually required. Placing a high priority on fiber quality traits in early generations is an approach that appears to help break the negative relationships of fiber quality and yield. A fiber quality index (Q-score) has been developed that greatly facilitates the process of discarding individual plant selections and progeny based on fiber quality. Evaluation on the basis of Q-score can be accomplished with little prejudice since limited other data are available and relatively little time and effort have been invested in the genotype. In addition, discarding individual plants prior to planting decreases the time and space required for field evaluation of progeny. Using high selection pressure for fiber quality in early generations insures that only high fiber quality lines will be advanced in a breeding program. The goal then is to find the best yielding line among the selected high fiber quality lines.

Results
The relative yield and fiber quality of three conventional varieties (UA48, UA103, and UA222) and one germplasm line (Arkot 0111) document the success of this approach. The fiber quality of these four genotypes exceeds that of previously released lines from this program, as well as, most other released cotton varieties. Yields of the three varieties have exceeded those of conventional cultivars in Arkansas tests. The performances of these lines demonstrate that early maturation and enhanced fiber quality can be combined into well-adapted cotton varieties for Arkansas. By setting new standards for combining early maturation, competitive yields and improved fiber quality, these releases should encourage the development of additional varieties that will further enhance the competitiveness of Arkansas-grown cotton.

4. Associated Knowledge Areas

KA Code	Knowledge Area
201	Plant Genome, Genetics, and Genetic Mechanisms
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
215	Biological Control of Pests Affecting Plants

216 Integrated Pest Management Systems

Outcome #36

1. Outcome Measures

Pest Mgmt - % of soybean acreage receiving herbicide applications

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	100

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Flag the Technology: This program was started in Clay County by local agents, but launched statewide in 2011 using an industry grant. The purpose of the program is to provide growers and applicators with a simple system for identifying fields based on their herbicide tolerance/technology. This system hopefully encourages herbicide applicators to use greater care and better avoid drift or mistaken application injury to crops.

What has been done
In 2012, we distributed more than 25000 color-coded flags along with a fact sheet, brochure, stickers and a display. We introduced the system at more than 25 grower meetings during the winter as well. Since flags can be stolen or moved, a cloud-based system to mark fields for precision ag applicators was also initiated and should be released in 2013. This high tech version does not rely on physical markers, but applicators can see fields using GPS and GIS technology inside their machines.

Results
The FTT system was used to mark over 15000 fields in 2012 and participants indicated it helped avoid mistakes and reduced drift by providing a visual warning to be careful. The simple concept has been adopted by the Weed Science Society of America as well as the states of Tennessee and Mississippi. Efforts to document drift and mistake reduction will be made in 2013.

4. Associated Knowledge Areas

KA Code	Knowledge Area

211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
216	Integrated Pest Management Systems

Outcome #37

1. Outcome Measures

Pest Mgmt - % of soybean acreage receiving fungicide applications

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	74

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Strobilurin fungicides were introduced in 1997 in Arkansas for field crops. Since that time, use on soybeans as preventative treatments has increased to more than 70% of acreage treated. Unfortunately, these fungicides have a single mode of action that can be overcome by many fungal pathogens through simple mutation, resulting in resistant populations. Once resistant, fungal pathogens tend to be cross resistant to the entire class of strobilurin chemistry (all products).

What has been done
Due to resistance concerns for frogeye leaf spot on soybeans in other regions, we surveyed Arkansas soybean fields for frogeye leaf spot, collecting random samples of the disease and pathogen. We conducted standard fungicide sensitivity testing in the lab for the isolates obtained and compared them to known fungicide-sensitive isolates. Results were distributed to Arkansas producers and other clientele through the Arkansas Crops Blog and several media outlets.

Results
We confirmed strobilurin-resistant frogeye leaf spot from seven counties in Arkansas during 2012 and the level of resistance was similar to that reported in other states. This information allows growers to plan for management of the disease in 2013 by selecting frogeye-resistant varieties and rotating to triazole fungicides, the other class of fungicide chemistry available, which remain effective against this major disease.

4. Associated Knowledge Areas

KA Code	Knowledge Area
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
216	Integrated Pest Management Systems

Outcome #38

1. Outcome Measures

Non-Food Plants - # of forage producers who gained knowledge, changed or adapted new management practices or technology

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	2666

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Livestock producers face many challenges, but escalating costs of feed, fertilizer, and fuel caused serious problems for producers in Arkansas and throughout the country during 2012. Feeding expenses, both hay and supplements, have become the biggest single cost of livestock production. The typical winter hay feeding season in Arkansas is about 135 days and feeding also occurs during drought. Feeding during droughts of 2011 and 2012 magnified effects of high input costs for livestock producers.

What has been done
Educational programs were combined with on-farm demonstrations of eight key management practices. The management practices were 1) stockpiling fescue, 2) stockpiling bermudagrass, 3) growing legumes, 4) growing summer annual forage, 5) growing winter annual forage, 6) improving grazing management, 7) reducing hay losses in storage, and 8) reducing hay losses during feeding. In addition, three farms were nominated by county agents to incorporate these practices to achieve a grazing season of 300 days. On the Livestock and Forestry Research Station, a cow herd was managed to verify program recommendations and strategies. This combined approach using the same forage and livestock management practices on a production scale simultaneously across multiple environments, producer farms, and a research station is

unlike any other in the country.

Results
To date, 146 demonstrations have been conducted on farms in 50 counties in Arkansas. Direct savings to those producers totaled $283,352. This is a significant impact considering that 80% of Arkansas beef farms have less than 50 cows (average herd size is 38 head) and most livestock farms are less than 200 acres in size.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
213	Weeds Affecting Plants

Outcome #39

1. Outcome Measures

Non-Food Plants - # of new Master Gardeners trained and certified

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	942

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Gardening has grown in popularity, but the trend is more in edible plants than ornamentals. Young people or non-gardeners are often confused about gardening terms, and really do not know how to get started. Our role is to give new gardeners tools for success so that they will continue to garden.

What has been done
The 2012 gardening calendar was redesigned, updated and several thousand distributed to Master Gardeners and key leaders in communities across Arkansas, with a major emphasis on about 1000 potentially new gardeners. The calendar provides monthly gardening tips, along with a monthly vegetable garden planting guide and an application to join Master Gardeners.

Results
Based on feedback from county extension and existing Master Gardeners, we are encouraged that the calendar and other efforts to reach new gardening enthusiasts will result in additional Master Gardeners and lifelong learning about gardening and community service.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
213	Weeds Affecting Plants
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems

Outcome #40

1. Outcome Measures

Non-Food Plants - # of Master Gardeners who re-certified

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	2292

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Interest in home gardening and producing local food has grown exponentially in the country, along with community service initiatives. One of the most visible and active volunteer groups in our state are the Master Gardeners. While the group is vital and dynamic, constant recertification efforts are needed to retain interested volunteers and recruit new members.

What has been done
A new online web reporting program was developed for Arkansas during 2012. Testing was done in a pilot county and statewide training was conducted with agents, Master Gardener volunteers and support staff. The new system will go live as of January 2013.

Results
The Master Gardener Program continues to grow in Arkansas, with over 3200 Master Gardeners in 65 counties. We hope that the new online system will provide more accurate records and give us a better picture of what is happening in our state. Beta-testers were uniformly supportive and enthusiastic about the new system. These records should provide us with additional data to help plan even more effective Master Gardener educational programs.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
213	Weeds Affecting Plants
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems

Outcome #41

1. Outcome Measures

Non-Food Plants - # of new horticultural businesses and new farmers markets

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	9

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
All farmers struggle with understanding and expanding marketing options. Stakeholder feedback from growers and industry stakeholders continues to rank marketing as a primary issue that farmers identify as where they need assistance.

What has been done
The Division continues to offer the Arkansas MarketMaker resource by partnering with the University of Illinois to not only help growers with promotional activities but also demonstrate how farm businesses can differentiate themselves in the marketplace. This year the MarketMaker program offered a Market-Ready training to provide a comprehensive training addressing all facets of retail supply distribution processes.

Results
For the past year, the Arkansas portal has averaged 23,051 website hits with September visits exceeding thirty-one thousand. The program had grown the number of users from 750 to 2,494 over the last year. At the end of September 2012 ninety-five individual farmers/businesses, fifty-three farmers markets, and eight wineries have visited the site to register/develop a unique business profile to post online. Additionally, we have 17 businesses have detailed agritourism enterprises as part of their business product/service offerings.

The program has two projects that are in their infancy, farm-to-school and non-GMO promotional effort, that have the potential to double the number of registered growers. The program also provides increased understanding of our state's network of food system companies by detailing six thousand agribusinesses and over ten thousand business profiles of non-farm businesses. The MarketMaker resource allows growers and consumers to easily enhance their understanding of their local food system. Perry County farmer Chuck Crimmons, a registered user, recently said, "MarketMaker has allowed me to increase my profits by raising awareness of marketing options for my farm and bringing in new customers by raising consumer awareness of available products."

4. Associated Knowledge Areas

KA Code	Knowledge Area
201	Plant Genome, Genetics, and Genetic Mechanisms
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems

Outcome #42

1. Outcome Measures

Non-Food Plants - Total production (bales) of harvested cotton (all)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1320000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Hemipteran pests have become the dominant mid-season pest complex in Mississippi, Louisiana, Arkansas and Tennessee cotton during the last five years. In the MidSouth, 4-8 insecticide applications were commonly made specifically for tarnished plant bugs during the 2010 growing season (Williams 2010). However, as many as 12 applications were documented in 2012 in Arkansas. Arkansas farmers spent over $20 per acre on plant bug control in 2010 (Williams, et al. 2010), which indicated there were many applications spent on low level plant bug populations.

What has been done
Thresholds were re-evaluated to help growers effectively manage these pests and maintain profitability and we now have a new threshold for the midsouth. Sampling studies conducted by the Midsouth Entomologist Working Group (MSEWG) have indicated the proper sampling procedure and now the group has begun to look at other ways to control plant bugs more profitably for growers.

Results
Our recent data indicates that treatments made to control tarnished plant bug on an automatic basis or made for low population levels do not enhance cotton yields. Regional trials also indicated that currently labeled products are not providing the level of control needed to maintain maximum potential yield, particularly in high population areas and in landscape situations where corn, CRP land, or other host situations border cotton. Based on these results and regional collaboration, we were able to obtain a Section 18 emergency use label for Transform insecticide in 2012 to assist growers in better management of this difficult pest.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
201	Plant Genome, Genetics, and Genetic Mechanisms
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
213	Weeds Affecting Plants

Outcome #43

1. Outcome Measures

# of clientele adopting new practices outlined in educational programs to improve biosecurity through proper methods of sanitation, disease prevention, recognition, and control

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	38

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

U.S. animal agriculture production provides approximately 14% of the gross domestic product and approximately 19% of all employment. Exports represent roughly 20% of all animal production and over 140 billion dollars. Agriculture accounted for $16.0 billion of value added to the Arkansas economy in 2010. The value added direct impact of poultry in the state is over $1.8 billion per year. Poultry mortality continues to decrease due to better disease control and management but infectious diseases are still very important, resulting in numerous deaths and condemnation of birds annually. Outbreaks of certain highly contagious diseases could be devastating to our economy, especially if certain exotic diseases are suspected. Given the increase in local food interest and hobby flocks, along with global travel and risks of bioterrorism, the need for biosecurity awareness, knowledge and response is greater than ever.

What has been done

The extension poultry veterinarian has primary responsibility for biosecurity education in the state. As such, he monitors hobby flocks and commercial poultry populations; educates owners as to biosecurity precautions; and performs on-site diagnoses. He also serves as a member of the Arkansas Animal Emergency Disease Response team (AADER), Poultry Health Advisory committee (PHAC), and leads the Division of Agriculture Biosecurity committee. Current education initiatives focus on Mycoplasmosis , Laryngotracheitis, Exotic Newcastle and Avian Influenza. We visited 59 farms for on-site diagnoses of poultry health issues, and provided 150 tentative diagnoses and biosecurity precautions by phone or email. We distributed over 500 copies of the Biosecurity DVD for Poultry at the 2012 Flower and Garden Show, and many others during the year at other venues. We presented Biosecurity information during 59 presentations at 31 organized meetings or other events during 2012. We provided 13 interviews to media on biosecurity related topics and information presentation was picked up by 40 newspapers in 10 states; 20 TV stations in 10 states; 5 radio stations; and 8 websites.

Results

As previously mentioned, the impact of any disease outbreak in poultry in Arkansas can cause huge economic losses, and exotic disease outbreaks would be devastating to our global trade. Our education efforts in 2012 and prior years minimizes this risk by monitoring poultry and animal health statewide, and educating growers as to who to call and steps to prevent spreading potential outbreaks. The ability to quickly identify problems, notify the proper resource personnel, and implement control procedures is vital to maintaining animal health statewide. During 2012, increased emphasis was needed on Avian Flu due to phytosanitary quarantines imposed by China on poultry trade and the risk of this disease to humans, albeit no outbreak has been noted in at least 5 years.

4. Associated Knowledge Areas

KA Code	Knowledge Area
311	Animal Diseases
722	Zoonotic Diseases and Parasites Affecting Humans

Outcome #44

1. Outcome Measures

# of alternative enterprises maintaining and adopting recommended management practices

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	3804

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Commercial peanuts have been an alternative crop in Arkansas for more than 100 years, but in recent decades had declined to essentially zero acreage. A major effort to re-invent peanuts for Arkansas started in 2009 and the crop reached about 20,000 acres in 2012 thanks to several buying companies willing to contract with Arkansas growers. As expected, there has been a steep learning curve for new peanut growers, including disease issues and other management challenges.

What has been done
To address developing issues that could hamper this re-emerging alternative crop, we conducted several field trials to assess five cultivars for susceptibility to southern blight and tomato spotted wilt virus (TSWV) during 2012.

Results
Results showed one popular cultivar to be very susceptible to TSWV, a dangerous disease and in our plots this cultivar had 40% less yield than resistant ones. Clearly, this cultivar is too risky for our region and this information will save growers in 2013 a very expensive lesson in variety selection.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
201	Plant Genome, Genetics, and Genetic Mechanisms
204	Plant Product Quality and Utility (Preharvest)
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
216	Integrated Pest Management Systems
601	Economics of Agricultural Production and Farm Management

Outcome #45

1. Outcome Measures

of acres managed with improved water management and conservation practices

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	3700

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
In recent years there has been increasing awareness that continuous ground water use for irrigation is not sustainable. An increasing proportion of Arkansas' row crop production areas are designated as "critical water areas". Clearly, there is a need to develop conservation management practices and technology to improve water use efficiency. Currently, irrigation water use for four major commodities in Arkansas - rice, corn, soybeans, and cotton is not measured annually. Yet producers are required to report water use to the state, based simply on the number of times a crop is irrigated.

What has been done
In 2012, an effort was made to begin collecting data on irrigation water use for farmer fields participating in the Division commodity research verification and Discovery Farm programs. Where possible farms were fitted with portable turbine style flow meters for the growing season and total water use and precipitation was recorded.

Results
An analysis of rice water use revealed that rice farmers used about 29.8 acre-inches of water per year on average. There was no significant difference in water use between silt loam and clay soil types. Zero-grade rice fields used about 40% less water than contour and precision graded fields. Fields with multiple-inlet irrigation, a conservation practice, had 10 bushel per acre higher yields than fields without. Irrigation costs were $25/acre higher for groundwater sources than surface water sources when adjusted for the producer price index to 2012. Producers utilizing electricity as an energy source saved on average $29/acre compared to diesel powered units, but used six acre-inches more water. These data should allow better decision-making about irrigation for growers and water managers in the state.

4. Associated Knowledge Areas

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

Outcome #46

1. Outcome Measures

# of clients that increased knowledge about sustainable production technologies

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	245

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Arkansas is the primary rice producing state in the U.S. and harvests roughly 1.3 million acres per year. Current N fertilizer recommendations for rice in Arkansas are based on cultivar, previous crop, and soil texture. Recommendations made using the current system do not take into account the amount of N that is being supplied by the soil and thus, can result in over or under application of N fertilizer. This in turn could cause economic losses due to reduced grain yields, increased disease susceptibility and lodging. In recent years, we developed the N-STAR soil nitrogen test to address these issues in Arkansas rice production.

What has been done
In order to promote the adoption and implementation of the N-STAR program for rice produced on silt loam soils, a series of field-scale strip trials were established over the past three years. These strip-trials were designed to compare the producer's standard N rate application against the N-STAR recommendation. Field tours were conducted to allow stakeholders a firsthand view of the technology in action across different soil types, a wide variety of rice cultivars and production settings.

Results
We found that large scale implementation of N-STAR generally supported our small plot results from the past few years. While many soils required less N than the farmer typically applied to reach optimum yield, certain soils actually required more N than usually applied. In general, we found N-STAR to provide a better guide to crop N needs than other methods used in the past, and should result in more accurate N applications by field than previously possible, assuring more consistent yields; fewer lodging and disease problems; and lessened environmental impact from N use.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
215	Biological Control of Pests Affecting Plants
307	Animal Management Systems
601	Economics of Agricultural Production and Farm Management

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)
- Other (Animal or plant disease outbreak)

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Environment, Energy & Climate

☑ 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	3%		3%	
102	Soil, Plant, Water, Nutrient Relationships	20%		19%	
111	Conservation and Efficient Use of Water	10%		7%	
112	Watershed Protection and Management	6%		7%	
123	Management and Sustainability of Forest Resources	5%		5%	
124	Urban Forestry	2%		0%	
131	Alternative Uses of Land	2%		2%	
133	Pollution Prevention and Mitigation	3%		2%	
135	Aquatic and Terrestrial Wildlife	2%		1%	
201	Plant Genome, Genetics, and Genetic Mechanisms	0%		12%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	2%		6%	
204	Plant Product Quality and Utility (Preharvest)	5%		5%	
205	Plant Management Systems	5%		2%	
211	Insects, Mites, and Other Arthropods Affecting Plants	6%		3%	
306	Environmental Stress in Animals	2%		5%	
403	Waste Disposal, Recycling, and Reuse	5%		0%	
405	Drainage and Irrigation Systems and Facilities	5%		4%	
511	New and Improved Non-Food Products and Processes	4%		6%	
605	Natural Resource and Environmental Economics	10%		10%	
610	Domestic Policy Analysis	3%		1%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	17.7	0.0	24.4	0.0
Actual Paid Professional	18.3	0.0	122.7	0.0
Actual Volunteer	2.8	0.0	1.8	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
271468	0	988730	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
349377	0	12988432	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
2523563	0	3515572	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Arkansas has abundant natural resources. Novel water demands, land ownership patterns, regulations, scientific understanding, erasures of environmental sustainability all impact our Natural State. These issues require an ability to adapt, to modify behavior, and to fix the problems of our own making. Whether by rule, incentive or knowledge, we must bring scientific understanding to our daily dollars and cents existence.

Conserving Water Resources

Mounting pressures placed on Arkansas's water resources require conservation of water quantity and quality. Declining groundwater escalates competition among residential, recreational, agricultural, municipal and industrial users. Water quality issues focus attention on identifying and controlling contaminant sources. Science based knowledge is necessary for effective water policy and workable solutions. A clean, ample water supply is essential to Arkansas's future in the competitive global marketplace. Concerns include science based, cost-effective and practical water conservation; better understanding land management trends; conflicting social and economic priorities; conflicting state, local and national regulations; and incentives for improving management and uses of water.

THE U OF A DIVISION OF AGRICULTURE WILL:

- Improve efficient use and conservation of water resources through research and education
- Educate Arkansans about competing demands for water quantity and quality for agricultural, residential, recreational, wildlife, industrial and municipal needs
- Inform decision makers with science based information on water quantity and quality. Collaborate with state and federal agencies to sustain water resources
- Provide the science based information needed to understand changing environmental regulations

Alternative Energy and Conservation

Arkansans are interested in energy conservation and alternative energy sources. Arkansas's strong

agricultural base positions us for developing bioenergy production. Developing alternative energy systems will require impact analysis on the environment, communities and agricultural markets. Although farm and residential energy conservation is needed, information on technologies, practices and expertise for increasing energy efficiencies is frequently lacking. The ability of citizens to respond to the changing energy environment requires an educated public capable of making informed decisions.

THE U OF A DIVISION OF AGRICULTURE WILL:

- Develop sustainable and regionally appropriate bioenergy production systems. Evaluate and demonstrate energy efficiency and conservation for agricultural and residential applications
- Provide science based information to guide public understanding of alternative energy sources
- Collaborate with state and federal agencies on assessing alternative energy options and measuring impacts
- Conduct research on the impact of energy based resource extraction on natural ecosystems.

Natural Resource Sustainability

Balancing socioeconomic development with environmental protection is complex. Opportunities exist to address forest and land management, regulatory policies, knowledge about renewable and reusable resources, nuisance and invasive species issues, and conflicts at the rural/urban interface.

THE U OF A DIVISION OF AGRICULTURE WILL:

- Determine the effects of urbanization and changing rural ownership patterns on natural resources
- Develop natural resource management strategies, balancing socioeconomic development and environmental protection
- Provide science based information to reduce negative impacts of invasive species
- Provide consumers information to make educated decisions regarding "green" choices

Climate Change

Extreme climatic events prompt us to understand the science behind them. Better knowledge should enable decision makers to respond to such events and to influence the development of local, state and national policies. The development of cropping systems adapted to environmental extremes, tools for communities to lessen the effect of climatic events (floods, droughts, tornadoes, etc.) and the development of contingency plans for climate variations are essential. Agricultural and forestry production practices will be evaluated for their potential to mitigate greenhouse gas emissions and sequester carbon in soils and vegetation

THE U OF A DIVISION OF AGRICULTURE WILL:

- Help Arkansas's communities and agriculture adapt to climate variations and extreme weather or climate related events
- Analyze and explain local impact of national and international climate policies
- Provide unbiased information about the science behind the climate debate
- Evaluate agricultural production practices to reduce greenhouse gas emissions and sequester carbon

New Technology

Technologies associated with energy, climate and natural resource use are in a constant state of change. The Division of Agriculture will provide a competent venue for studying technologies and their potential as tools in the pursuit of a sustainable future, including renewable energy adaptations, biosensors and cell phone applications. In phone based control of one's in-home amenities, Arkansas's citizens will be provided with a rapidly changing array of technological tools and choices.

THE U OF A DIVISION OF AGRICULTURE WILL:

- Provide a competent venue for studying available technologies and their potential as tools in the pursuit of a sustainable future

- Explore cell phone-based control of in-home amenities
- Explore how Arkansas's citizens will be provided with a rapidly changing array of technological tools and choices.

2. Brief description of the target audience

4-H Club Youth
Business Personnel
Row Crop Agricultural Producer Organizations
Row Crop Agricultural Producers
Certified Crop Advisors
Conservation District Directors
Consultants
Forest Landowner Groups
Forest Industry personnel
Loggers
Natural Resource Professionals
Registered Foresters
Landowners
Homeowners
Educators
State & Federal Agency personnel
Watershed Organizations
Wildlife Organizations
Private nutrient applicators
Commercial nutrient applicators
Livestock and Poultry producers
Livestock and Poultry industry personnel
Livestock and Poultry producer organizations
General public
Researchers
Policy makers
Youth
Teaching faculty
Research funding personnel and agencies

3. How was eXtension used?

As a member of a feral hog Community of Practice with eXtension.org, an Extension faculty member helped develop and market materials regarding the threat of feral hogs to the environment and effective control strategies for feral hogs. A Facebook page about feral hogs was developed to promote the new eXtension website a series of webinars. The webinars were hosted on the website in late fall 2012.

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	20427	140399	1625	104

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

Patent Applications Submitted

Year: 2012

Actual: 3

Patents listed

System and Method for Optimizing the Dissolution of a Gas in a Liquid US Utility Patent Application 3/415,402, filed 3/8/2012 Inventor: Scott Osborn

Systems and Methods for Wastewater Treatment. US CIP 3/415,539 filed 3/8/2012. Inventor: Scott Osborn, Marty Matlock

Systems and Methods for Maximizing Dissolved Gas Concentration of a Single Species of Gas from a Mixture of

Multiple Gases. US Provisional 61/543,858. Filed 10/6/2011. Inventor: Scott Osborn

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	10	105	115

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of programs held for professional natural resource managers

Year	Actual
2012	10

Output #2

Output Measure

- Number of Natural Resource Educational Meetings conducted for landowners/public

Year	Actual
2012	72

Output #3

Output Measure

- Number of Natural Resource Field Demonstrations

Year	Actual
2012	15

Output #4

Output Measure

- Number of Natural Resource Field Days

Year	Actual
2012	4

Output #5

Output Measure

- Number of Educational Materials & Curricula developed (fact sheets, presentations, handouts)

Year	Actual
2012	130

Output #6

Output Measure

- Number of Natural Resource Newsletters developed

Year	Actual
2012	4

Output #7

Output Measure

- Number of web-based modules, sites developed and/or maintained

Year	Actual
2012	4

Output #8

Output Measure

- Number of Educational Materials & Curricula delivered

Year	Actual
2012	4226

Output #9

Output Measure

- Number of Natural Resource Newsletters delivered
  Not reporting on this Output for this Annual Report

Output #10

Output Measure

- Number of individuals attending manure management related presentations addressing environmental issues

Year	Actual
2012	550

Output #11

Output Measure

- Number of individuals engaged in manure management related consultations addressing environmental issues.

Year	Actual
2012	50

Output #12

Output Measure

- Number of hits at manure management Web page addressing environmental issues.
  Not reporting on this Output for this Annual Report

Output #13

Output Measure

- Number of educational meetings related to air quality/emissions.
  Not reporting on this Output for this Annual Report

Output #14

Output Measure

- Climate Change: Funded Climate Change research amounts (in dollars).

Year	Actual
2012	1029750

Output #15

Output Measure

- Sustainable Energy: Number of educational programs and events held related to sustainable energy.

Year	Actual
2012	32

Output #16

Output Measure

- Sustainable Energy: Number of field days related to sustainable energy.

Year	Actual
2012	0

Output #17

Output Measure

- Sustainable Energy: Number of educational materials & curriculum developed.

Year	Actual
2012	2

Output #18

Output Measure

- Sustainable Energy: Number of locations for bioenergy crop demonstrations and research fields.

Year	Actual
2012	4

Output #19

Output Measure

- Sustainable Energy:Funded Research amounts (in dollars)

Year	Actual
2012	750483

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of participants indicating an increased knowledge of forestry and wildlife management
2	Number of participants who adopt forestry and wildlife management practices as self reported.
3	Number of participants indicating an increased knowledge of air quality/emissions
4	Number of participants indicating an increased knowledge of water quality/quantity
5	Number of participants who adopt water quality/quantity practices
6	Number of registered foresters maintaining certification
7	Number of nutrient management planners and applicators maintaining state certification
8	Number of livestock production clientele who gained knowledge related to manure management issues.
9	Number of clientele who implemented improvements in their manure management practices.
10	Number of participants adopting at least one best management practice related to stormwater.
11	Climate Change: Number of metrics developed for greenhouse gas emissions in agriculture.
12	Climate Change: Life cycle inventory methodology and data for row crops for greenhouse gases.
13	Sustainable Energy: Individuals adopting one practice from the recommended list of energy conserving practices.
14	Sustainable Energy: Number of energy audits conducted.
15	Sustainable Energy: # of livestock clientele who gained knowledge related to manure to energy issues.
16	Number of Research Projects to determine effects of Climate Change on Agricultural Production
17	Number of Research Projects to determine biomass inventory and analysis in forests.

18	Number of soil samples submitted for customized recommendations in the N-StaR program

Outcome #1

1. Outcome Measures

Number of participants indicating an increased knowledge of forestry and wildlife management

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	2436

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Invasive plants and animals such as fire ants, feral hogs,kudzu, Paulownia, Japanese honeysuckle, and privet already have become entrenched in Arkansas' forests. We have no reliable estimate describing the economic losses resulting from these invasive species in Arkansas. We also know that several potential invasive pests could reach Arkansas at any time.

What has been done
Extension collaborated with the Arkansas State Plant Board and USDA Plant Health Inspection Service (APHIS) to develop an outreach program providing information and training regarding new invasive species in Arkansas' forests. In 2012, the program launched a website on invasive pests focusing on six forest invasive pests that had not been identified in Arkansas. Collectively, these invasive pests have the potential to cause tens of millions of dollars damage to Arkansas forests. The web site also includes information on species currently in Arkansas. The website went "live" in September 2012. Faculty members presented information about our program in general and invasive species in particular at several workshops and meetings including Continuing Education workshops for Registered Foresters, Master Gardeners, Arkansas State Park personnel, and the regional Society of American Foresters meeting.

Results
Outreach efforts directly reached over 500 participants. Surveys conducted on-site suggest that we?ve helped increased people's understanding of the problems associated with invasive pests. One Master Gardener wrote, "Because of two presentations of yours that I heard, I removed five 15-year-old burning bushes as well as a 15-year-old wee clump of Japanese Blood grass. I

decided I could not advocate planting natives and removing invasive species when our yard displayed beautiful specimens of plants that are causing environmental problems. People drive by my gardens to get ideas about what to plant; they stop and ask questions too. Rather difficult for me to say, 'Don't plant these' when they are on display in our yard. Just wanted you to know that you are making a difference with your talks".

Funding for the program was received from the Arkansas State Plant Board. Program implementation will continue into 2013. An on-line course will be released in Spring 2013 for county agents. It will also be made available to registered foresters and other interested individuals in late Spring 2013.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
123	Management and Sustainability of Forest Resources
124	Urban Forestry
131	Alternative Uses of Land
133	Pollution Prevention and Mitigation
135	Aquatic and Terrestrial Wildlife
605	Natural Resource and Environmental Economics

Outcome #2

1. Outcome Measures

Number of participants who adopt forestry and wildlife management practices as self reported.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	762

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
123	Management and Sustainability of Forest Resources
124	Urban Forestry
131	Alternative Uses of Land
133	Pollution Prevention and Mitigation
135	Aquatic and Terrestrial Wildlife
605	Natural Resource and Environmental Economics

Outcome #3

1. Outcome Measures

Number of participants indicating an increased knowledge of air quality/emissions

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Number of participants indicating an increased knowledge of water quality/quantity

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	12

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
While wastewater treatment plants (WWTP) employ disinfection protocols which greatly reduce microbial numbers, WWTPs are not designed or required to completely remove diffuse organic pollutants such as genetic elements. Some of the genes that pass through WWTPs and enter receiving streams carry traits such as antibiotic resistance which can affect health and ecology from humans to agriculture to the functioning of ecosystems.

What has been done
We investigated dissolved ozone as a means for the destruction of broad-host-range (BHR) plasmids, which can spread among unrelated organisms, and chromosomal DNA, under controlled conditions and in pilot-scale tests using an experimental unit in a municipal WWTP. We compared results with ultraviolet (UV) irradiation and chlorination methodologies. We used culture based and molecular methods to assess destruction of bacteria and specific genes.

Results
None of the disinfection methods completely destroyed BHR plasmids or chromosomal DNA, indicating high concentrations of dissolved ozone or other disinfection strategies may be necessary to ensure complete destruction of BHR plasmid DNA in WWTP effluent. Mobile genetic elements such as BHR plasmids can be considered emerging contaminants. The lack of congruency between methodological approaches highlights the need to calibrate molecular methods with more traditional culture-based methods for quantification of fecal indicator bacteria and genetic elements such as BHR plasmids.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
133	Pollution Prevention and Mitigation

Outcome #5

1. Outcome Measures

Number of participants who adopt water quality/quantity practices

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	7

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Agriculture in Arkansas is under pressure to manage nutrients and sediment in an environmentally sustainable manner. This has created constraints to remaining competitive in today's global market place. Increasing national attention is being focused on reducing nutrients to the Gulf of Mexico, which will increase the need for nutrient efficiency while declining groundwater levels in crop producing areas of eastern Arkansas will increase the need for greater water efficiency.

What has been done
In 2012, the Division's Discovery Farm program expanded to include a Cotton Discovery Farm, a row crop farm and we received funding from the Walton Family Foundation to establish a Poultry Livestock Farm. We are monitoring runoff quality from seven farms at six locations as we are quantifying sediment and nutrient losses from all major row crop and livestock commodities including rice, soybean, corn, cotton, poultry and cattle. We are monitoring the quality of runoff from 19 fields using automated water quality samplers, equipped modems that contact us via cell phone when sampling is initiated. On row crop fields, we have increased efforts to monitor water use and needs. All fields are equipped with irrigation flow meters that use dataloggers to record flow data. On two farms, we split fields in half and monitored evapotranspiration with atmometers (ET gages) and compared to our computer irrigation scheduler to calibrate the ET gages as an easier field method for irrigation scheduling.

Results
Over $1.5 million dollars from 15 different funding sources has been raised in support of the Arkansas Discovery Farm program, leveraging nearly $1 million from a Conservation Innovation Grant from NRCS. Ownership has been transferred to a Stakeholder Advisory Committee.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water

112	Watershed Protection and Management
133	Pollution Prevention and Mitigation

Outcome #6

1. Outcome Measures

Number of registered foresters maintaining certification

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	491

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
123	Management and Sustainability of Forest Resources
124	Urban Forestry
131	Alternative Uses of Land
133	Pollution Prevention and Mitigation
135	Aquatic and Terrestrial Wildlife
605	Natural Resource and Environmental Economics

Outcome #7

1. Outcome Measures

Number of nutrient management planners and applicators maintaining state certification

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
133	Pollution Prevention and Mitigation
605	Natural Resource and Environmental Economics

Outcome #8

1. Outcome Measures

Number of livestock production clientele who gained knowledge related to manure management issues.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	12

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Management of animal manure is a critical issue for livestock producers, poultry producers, the poultry industry and the general public. Research has provided evidence of the effectiveness of best management practices (BMPs) in reducing the impact of animal agriculture on water quality. However, an economic evaluation of producers' options when implementing BMPs is scarce. Consequently, this research was designed to economically and environmentally evaluate a range of management alternatives under uncertain production conditions using stochastic dominance with respect to a function (SDRF).

What has been done
We compared 59 different BMPs in terms of net returns risk reduction for hay producers, emphasizing cost-effective practices to reduce total phosphorous (TP) runoff while maintaining profitability. To assess the value of BMPs to reduce TP runoff, SDRF was employed to analyze scenarios covering hydrologic, economic and risk analysis components of a hay production farming system. The hydrologic model was run to generate TP loading and bermudagrass yield data for each scenario. Bermudagrass yield data sets were inputs to the economic model. Yield data were utilized to calculate net returns for each scenario analyzed. Outcomes from the hydrologic and economic models were input to the risk model. This last model was employed to evaluate the impact of decision-makers? risk attitudes on BMP scenario preferences under both net returns and TP runoff reductions.

Results
This simulation provided evidence that TP runoff could be reduced without affecting producers' expected net returns when environmentally efficient and economically acceptable BMPs are implemented. Results showed that decision makers will be reluctant to adopt BMPs that reduce drastically their net returns regardless of their water quality benefits. Consequently, decision

makers should compare net returns risks and environmental benefits of implementing BMPs to reduce TP runoff, so that producers will be able to select BMPs with the lowest negative economic impact in their hay production operations.

4. Associated Knowledge Areas

KA Code	Knowledge Area
133	Pollution Prevention and Mitigation
403	Waste Disposal, Recycling, and Reuse

Outcome #9

1. Outcome Measures

Number of clientele who implemented improvements in their manure management practices.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	20

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Consumers and retailers have grown more aware of the environmental impact of their purchases and are interested in mitigating those impacts. Concurrently, agricultural industries are working to improve the environmental performance of their operations in a way that is also economically sustainable. Dairy and pork industries for example are currently focusing on the mitigation of greenhouse gas (GHG) production. However in order to improve environmental performance and continue to meet economic objectives, the industry needs to understand the sources of GHG and the costs of mitigation.

What has been done
Researchers have teamed with others to conduct environmental (GHG) life cycle assessments and related life cycle costing studies for agriculture. Across dairy and pork, manure handling practices contribute substantially to on-farm GHG generation. Similarly, feed represents a large variable cost and manure handling technologies represent large capital costs for producers. Experiments are currently under way to 1) to identify changes in dietary strategies that include ingredients with lower carbon footprints or diets that increase feed efficiency and modify manure

handling practices to reduce GHG emissions without generating large increases in costs.

Results
While there is not a one-size-fits-all solution to GHG emissions reduction in the livestock sector, reduction opportunities do exist across the spectrum of farm management options. However, as with all decisions, it is important to weigh potential trade-offs with economic costs and even other environmental impacts (or example the possibility of increased eutrophication under nutrient retention management options) to ensure producers, consumers and retailers can take actions to move towards a fully sustainable agricultural system.

4. Associated Knowledge Areas

KA Code	Knowledge Area
133	Pollution Prevention and Mitigation
403	Waste Disposal, Recycling, and Reuse

Outcome #10

1. Outcome Measures

Number of participants adopting at least one best management practice related to stormwater.

Not Reporting on this Outcome Measure

Outcome #11

1. Outcome Measures

Climate Change: Number of metrics developed for greenhouse gas emissions in agriculture.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	10

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Rice ranks highest among cereal crops in global warming potential, largely attributed to methane emissions resulting from growing rice in flooded conditions. There are reported differences in cultivar gas emissions and elevated nitrous oxide emissions resulting from overuse of nitrogen fertilizer. It is important to understand the potential for reducing greenhouse gas emissions in rice production and to capitalize on carbon credit revenues predicted to be in the near future. Rice producers in Arkansas will be in a unique position to capitalize on additional revenues from a carbon market and specialized markets that pay a premium for green rice.

What has been done
Research in collaboration with the University of California at Davis establishing base lines on GHG emissions and evaluating management changes that would reduce GHGs. The impact of nitrogen fertilizer levels on nitrous oxide emissions and possible varietal differences in total greenhouse gas emissions was measured with a static-chamber gas collection system. Variables included flood management and duration and rice variety.

Results
Drill-seeded rice production, as practiced in Arkansas, results in reduced greenhouse gas emissions when compared to a the water-seeded system used in California and much of the world. With proper nitrogen fertilizer management it is possible to reduce nitrous oxide emissions in rice to those similar to a properly managed corn or wheat production system. Over two years we found that nitrous oxide emission differences varied according to variety over a growing season. These results indicate a high potential to reduce global warming potential through variety selection. Results illustrate a potential for rice farmers to capitalize on any benefits related to reducing global warming in rice production by simply making the correct production practice changes needed to maintain production in a reduced irrigation water environment. Nitrogen fertilizer management and developing rice varieties with reduced methane emissions will aid this effort.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
131	Alternative Uses of Land
605	Natural Resource and Environmental Economics

Outcome #12

1. Outcome Measures

Climate Change: Life cycle inventory methodology and data for row crops for greenhouse gases.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	12

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Methane (CH4) has GHG potentially 23 times greater than carbon dioxide. Rice, as a semi-aquatic plant, rice is produced under flooded conditions for the majority of the time it is actively growing. Flooding results in soil chemical changes, including methane emissions in soils when the soil is highly anaerobic. Data concerning directly measured methane fluxes from Arkansas, the largest rice-producing state, are lacking.

What has been done
A study conducted in 2012 to investigate CH4 emissions from Arkansas rice production practices, evaluating the effects of previous crop (i.e., rice and soybean) and variety (i.e., conventional and hybrid rice) on season-long methane emissions on silt loam. Similarly, research was conducted on a Sharkey clay to evaluate season-long methane emissions from a conventional rice variety. A chamber-based gas sampling procedure was used to quantify methane fluxes over the growing season from flooding to after harvest.

Results
Preliminary results indicate that methane emissions are greater from rice following rice than from rice following soybean, presumably due to substantial differences in carbon returned to the soil between rice and soybean, and that methane emissions may be lower from hybrid rice than from conventional varieties. Furthermore, it appears that methane emissions in general are significantly lower from clay than from silt-loam soils. Overall, it is clear that soil texture, rice variety, and previous crop are key factors controlling methane emissions from rice.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
131	Alternative Uses of Land
605	Natural Resource and Environmental Economics

Outcome #13

1. **Outcome Measures**

Sustainable Energy: Individuals adopting one practice from the recommended list of energy conserving practices.

Not Reporting on this Outcome Measure

Outcome #14

1. **Outcome Measures**

Sustainable Energy: Number of energy audits conducted.

Not Reporting on this Outcome Measure

Outcome #15

1. **Outcome Measures**

Sustainable Energy: # of livestock clientele who gained knowledge related to manure to energy issues.

Not Reporting on this Outcome Measure

Outcome #16

1. **Outcome Measures**

Number of Research Projects to determine effects of Climate Change on Agricultural Production

2. **Associated Institution Types**

- 1862 Research

3a. **Outcome Type:**

Change in Knowledge Outcome Measure

3b. **Quantitative Outcome**

Year	Actual
2012	1

3c. **Qualitative Outcome or Impact Statement**

Issue (Who cares and Why)

Mid-south rice comprises approximately 80% of U.S. rice production. Increasing variations in milling quality and other quality parameters in Mid-south rice have been largely unexplained. A hypothesis that elevated ambient temperatures were a culprit for this variation needs to be tested to ensure that proper solutions to quality challenges are pursued.

What has been done
Experiments conducted in growth chambers and phytotrons provided evidence that nighttime air temperatures during kernel-formation reduced rice milling yields and physicochemical properties. Also, field studies were conducted to determine if nighttime air temperatures were correlated to rice quality. Six locations were strategically selected in Arkansas during 2007 to 2010. At each location, six cultivars ranging in milling yield stability, were planted in replicated plots. Air temperatures and rice physiological growth stage was measured at each location for each cultivar. Once harvested, a complete set of milling and property measurements were taken.

Results
The study clearly showed that nighttime air temperatures during the kernel-filling stages of development were strongly correlated to visual, milling, and functional properties. While somewhat cultivar specific, as nighttime air temperatures during kernel filling increased, milling yields dramatically decreased. Of the milled rice produced, chalkiness increased dramatically as nighttime air temperatures increased above approximately 25oC. Proximate properties such as amylose content and crude protein content decreased linearly, while total lipid content increased linearly. These property changes in turn impacted functional properties. Because impacts were cultivar specific provides some promise that genetic improvements can be sought to reduce the impact of high nighttime air temperatures.

4. Associated Knowledge Areas

KA Code	Knowledge Area
201	Plant Genome, Genetics, and Genetic Mechanisms
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants

Outcome #17

1. Outcome Measures

Number of Research Projects to determine biomass inventory and analysis in forests.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
In pine forests of the southern United States, pine stems are typically 50-65% of the stems present and Sweetgum represents 10-15% of all stems. The USDA Forest Service database revealed that 83,993,116 oven dry Mg of sweetgum biomass exists in softwood cover types in Arkansas, and is generally a "nuisance" tree. Harvesting understory trees in concurrent operations with pine harvests can generate mixed biomass at delivered prices of $45-55 per oven dry Mg in a radius of 35 miles around a potential bio-refinery. Sorting so that biomass harvests have relatively pure (>95% sweetgum) biomass will add $15-20 per oven dry Mg to the delivered price.

What has been done
Dilute acid pretreatment at 160 C for 20 minutes, followed by enzymatic hydrolysis resulted in a glucose recovery of 65% for a mixture of 70% sweetgum wood and 30% oak wood. This was the highest glucose recovery of all the tested conditions. Hot water sweetgum bark extracts displayed anti-microbial properties, specifically against Listeria monocytogenes.

Results
These results illustrate that it may be possible to obtain co-products from sweetgum bark that could be used in the food industry. Knowing that oak and sweetgum wood can be mixed in dilute acid pretreatment, without affecting saccharification yields, will enable the design of harvesting scenarios that can tolerate hardwood mixtures. Not having to collect pure sweetgum will minimize the footprint of the harvesting operation, simplifying the harvesting operation.

4. Associated Knowledge Areas

KA Code	Knowledge Area
123	Management and Sustainability of Forest Resources
131	Alternative Uses of Land
205	Plant Management Systems
511	New and Improved Non-Food Products and Processes
605	Natural Resource and Environmental Economics

Outcome #18

1. Outcome Measures

Number of soil samples submitted for customized recommendations in the N-StaR program

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	3800

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Current nitrogen (N)fertilizer recommendations for rice in Arkansas are based on variety, soil texture and yield goal, with little to no account for the soil's ability to supply N to the crop. All soils have the ability to supply N to crops, but some soils due to their parent material, cropping history and intrinsic nutrient supplying capacity can produce the same yield with much lower N fertilizer inputs. Understanding how soils differ in their ability to supply crops with N has been the focal point of soil fertility researchers for years.

What has been done
The University of Arkansas recently developed soil testing procedures to accurately quantify the soil's ability to supply N to growing crops and develop N fertilizer recommendations on a field-specific basis. The Nitrogen Soil Test for Rice, N-STaR, is the first soil-based N test for field specific recommendations. N-STaR quantifies the soil's ability to supply N during the growing season and predicts the N fertilizer rate required to maximize rice yield. Rice is a very energy and management intensive crop and the ability to apply N fertilizer on a field-specific basis is a major step towards increasing the sustainability of rice production systems, while reducing the potential for negative environmental impacts.

Results
N-STaR is now released for Mid-South rice produced on silt loam and clay soils. During the first year of wide-scale use, two trends were observed. Roughly 50% of the samples processed through the N-STaR lab reported N rate recommendations that were significantly less than what the producer had intended to apply resulting in increased profitability through N fertilizer savings. The remainder of the samples processed resulted in N rate recommendations equal to or slightly higher than the current N rate recommendation. In research locations and production fields where N-STaR recommended more nitrogen fertilizer, there was a significant yield increase. Nitrogen applications on a field-specific basis is a major step towards securing long-term sustainability of Arkansas rice production. N-STaR provides a scientific basis for the need to apply more N to maximize rice yields in some fields. N-STaR provides a field-specific recommendation to maximize rice yield and profitability and N-STaR should reduce potentially negative environmental impacts associated with rice N fertilization.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
112	Watershed Protection and Management
133	Pollution Prevention and Mitigation
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants

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
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

Drought conditions and extreme high temperatures were prevalant in 2012. Forage production was reduced sharply due to weather conditions and cattle production was thus affected. Non-irrigated row crop production was negatively affected by 2012 weather and while irrigated yields were surprisingly good, the quality of certain crops was affected. For essentially all animal and crop production, the drought and heat increased production costs, including increased water costs for irrigation, supplemental hay and feed costs and costs for cooling in CAFOs.

Biofuel production in Arkansas has received some attention from investors, but the opportunities for biofuels in the state hinge upon policies that have long term consequences. While Arkansas has abundant feedstocks for biofuel production, the infrastructure for processing feedstocks into biofuels is largely absent.

In general, managing timberland in the Midsouth has been unprofitable for several years. Thus the interest among land owners and managers has been very weak. As economic prospects for timber and forest management return, the interest in implementing best practices will increase.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

The Discovery Farms uses a Stakeholder Advisory Committee to provide evaluation and feedback for the Program. The Discovery Farms is also conducting a mail survey for producers in the Illinois River Watershed. The Advisory Board for our Watershed Steward program gives feedback on success of the program in addition to a pre and post survey at meetings for evaluation.

The best measure of success for the N-StaR program is the rate of adoption for this novel technology. N-StaR is now only two years old and the soil testing lab processed 3800 N-StaR samples in 2012.

Key Items of Evaluation

3800 N-StaR soil samples were submitted and analyzed by the soil testing laboratory in 2012.

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Access to Safe & Nutritious Food

☑ 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
403	Waste Disposal, Recycling, and Reuse	5%		0%	
501	New and Improved Food Processing Technologies	10%		20%	
502	New and Improved Food Products	10%		20%	
503	Quality Maintenance in Storing and Marketing Food Products	5%		10%	
504	Home and Commercial Food Service	5%		0%	
701	Nutrient Composition of Food	5%		10%	
702	Requirements and Function of Nutrients and Other Food Components	10%		10%	
703	Nutrition Education and Behavior	10%		0%	
704	Nutrition and Hunger in the Population	10%		0%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	10%		30%	
724	Healthy Lifestyle	10%		0%	
806	Youth Development	10%		0%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	86.8	0.0	22.9	0.0
Actual Paid Professional	51.1	0.0	55.6	0.0
Actual Volunteer	8.0	0.0	1.5	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**
546658	0	270469	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
703544	0	5803547	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
5081718	0	1249072	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Healthy Food Choices:

Division of Agriculture faculty will improve consumer nutrition literacy and cooking skills in preparing and consuming healthy foods by:

1. Developing, evaluating, and disseminating education programs and curricula, incorporating new research and emphasizing healthy lifestyles. Programs Include but are not limited to:
   Living Well with Diabetes
   Right Bite Cooking School
   Mediterranean Cooking School
2. Developing, evaluating, and disseminating education programs and curricula, incorporating new research and emphasizing healthy lifestyles. Programs include but are not limited to:
   Supplemental Nutrition Assistance Program Education (SNAP- Ed) Adult and Youth
   Expanded Food and Nutrition Education Program (EFNEP) Youth
   Reshape Yourself Healthy Weight Program
   HOPE2 Program
   Walk Across Arkansas Youth
   BodyWalk
   Best Care
   Adventures in Grandparenting

Division of Agriculture faculty will conduct novel research on obesity, energy balance, nutrient density, behavior modification and food choices.

Food Security:

Division of Agriculture faculty will:

Increase food security in Arkansas by teaching consumers how to locate, select, prepare and preserve economical and nutritious foods.

Increase awareness among low-income households of available nutrition assistance programs.

Engage volunteers to help develop home, school and community gardens.

Inform decisions makers about best practices for increasing community food security.

Food Industry Innovation:

Division of Agriculture faculty will:

Train a qualified workforce for the food processing industry by conducting workshops and round tables on topics including culinary arts, food safety, food processing, and food labeling.

Conduct research to improve existing, and develop new, processing technologies to produce healthy, high-quality foods and reduce environmental impact.

Conduct research to enhance the nutritional value and consumer acceptance of foods, the efficiency of food processes and the use of food by-products.

Provide assistance to small food companies and entrepreneurs in the form of services, nutritional labeling, and consulting

Food Safety:

Division of Agriculture faculty will:

Conduct research to control food-borne pathogens and toxins in the food supply.

Develop innovative methods to detect, identify and control food-borne pathogens, toxins and contaminants in agricultural production and processing.

Educate food producers, retailers, processors and consumers about food safety.

Educate Arkansans how to minimize risks of agro-terrorism.

Investigate economical, practical and naturally occurring antimicrobials and other compounds that target food pathogens.

2. Brief description of the target audience

Food Companies
Entrepreneurs and Restaurants
Adults
Grandparents
Child Care Providers
School personnel
Health Professionals
Worksites
Farmers
Consumers
Commodity Boards
Employees
County, State and Federal Agency Employees
Researchers
Food manufacturers

3. How was eXtension used?

eXtension was not used.

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	32266	2159270	242241	18

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

Patent Applications Submitted

Year: 2012

Actual: 3

Patents listed

Application of Material Properties to Improve Grain Drying. Nationalized CN 201080043272. 3/23/2012. Inventor(s): PI - Siebenmorgen, Terry / Ondier, George

Trans-, Trans-Conjugated Linoleic Acid Compositions and use thereof. Non-Provisional US 13/471,624 5/15/2012. Inventor(s): Proctor, et.al.

Use of lactic acid bacteria to reduce pathogens and as a bio-sanitizer. Provisional US 61/513,851. 8/1/2011. Inventor(s): Crandall, Philip / Ricke, Steven / Ware, Douglas

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	99	99

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- # of 4-H Youth Food, Nutrition and Health programs delivered
  Not reporting on this Output for this Annual Report

Output #2

Output Measure

- # of 4-H participants in Food, Nutrition, and Health programs
  Not reporting on this Output for this Annual Report

Output #3

Output Measure

- # of funded commodity board grants

Year	Actual
2012	3

Output #4

Output Measure

- # of funded Federal grants and contracts

Year	Actual
2012	7

Output #5

Output Measure

- # of funded non-federal grants/contracts funded

Year	Actual
2012	41

Output #6

Output Measure

- $ received through commodity board grants/contracts

Year	Actual
2012	275994

Output #7

Output Measure

- $ received through funded Federal grants and contracts

Year	Actual
2012	2813453

Output #8

Output Measure

- $ received through non-federal grants/contracts funded (industry, state)

Year	Actual
2012	1183756

Output #9

Output Measure

- # of Food, Nutrition, and Health adult clientele contacts from educational events

Year	Actual
2012	20557

Output #10

Output Measure

- # of Food, Nutrition, and Health adult educational events

Year	Actual
2012	2324

Output #11

Output Measure

- # of adults enrolled in physical activity programs

Year	Actual
2012	12337

Output #12

Output Measure

- # of Nutrition labels developed

Year	Actual
2012	72

Output #13

Output Measure

- Number of new food businesses started

Year	Actual
2012	16

Output #14

Output Measure

- # of adults enrolled in the Strong Women program
  Not reporting on this Output for this Annual Report

Output #15

Output Measure

- Food Safety - Number of participants in educational programs leading to certification for food handlers (ServSafe and Better Process Control School)

Year	Actual
2012	290

Output #16

Output Measure

- Food Safety - Number of participants in quarterly HACCP roundtables

Year	Actual
2012	125

Output #17

Output Measure

- Food Safety - Number of ServSafe classes offered

Year	Actual
2012	4

Output #18

Output Measure

- Food Safety - Number of Food Safety clientele contacts from education classes, workshops, group discussions, one-on-one interventions, demonstrations, and other educational methods

Year	Actual
2012	725

Output #19

Output Measure

- Food Safety - Number of Online Master of Agriculture (Food Safety Emphasis) students enrolled in courses.

Year	Actual
2012	24

Output #20

Output Measure

- Childhood Obesity - # of 4-H/Youth Food, Nutrition and Physical activity programs delivered related to eating healthy and being active

Year	Actual
2012	12337

Output #21

Output Measure

- Childhood Obesity - # of participants in 4-H/ Youth Food, Nutrition, and Physical Activity programs related to eating healthy and being active

Year	Actual
2012	40544

Output #22

Output Measure

- Childhood Obesity - # of adult clientele contacts from educational events (educational classes, workshops, group discussions, one-on-one interventions, demonstrations and other educational activities) related to eating healthy and being active

Year	Actual
2012	7053

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	# of participants who indicated that they increased their knowledge related to food, nutrition and/or health following an educational class, seminar or workshop
2	# of individuals who increased physical activities as a result of completing an Extension program
3	# of participants who adopted at least one positive health or nutrition practice.
4	# of participants reporting a reduction of at least one risk factor for chronic disease after an educational program
5	# of Participants who indicated that they have gained new knowledge on universal design, assistive technology, services available, housing options or other issues related to aging in place.
6	# of participants who practiced at least 1 technique learned in an extension health program
7	# of adults enrolled in Strong Women program who completed assessment
8	# of adults who increased upper body strength after completing the Strong Women program
9	# of adults who increased lower body strength after completing the Strong Women program
10	Childhood Obesity - # of children and youth who increased consumption of foods recommended by the U.S. Dietary Guidelines for Americans.
11	Childhood Obesity - # of families/caregivers who increased consumption of foods recommended by the U.S. Dietary Guidelines for Americans.
12	Childhood Obesity - # of Children/Youth who intend to adopt healthy eating patterns.
13	Childhood Obesity - # of Families/Caregivers who intend to adopt healthy eating patterns.
14	Childhood Obesity - # of Children/Youth who gained knowledge of foods to increase as recommended by the U.S. dietary Guidelines for Americans.
15	Childhood Obesity - # of Families/Caregivers who gained knowledge of foods to increase as recommended by the U.S. dietary Guidelines for Americans.
16	Childhood Obesity - # of Children/Youth who gained knowledge of foods to decrease as recommended by the U.S. dietary Guidelines for Americans.
17	Childhood Obesity - # of Families/Caregivers who gained knowledge of foods to decrease as recommended by the U.S. dietary Guidelines for Americans.

18	Childhood Obesity - # of Children/Youth who gained knowledge about healthy eating patterns.
19	Childhood Obesity - Number and/or increased/improved technologies and processes that enhance the nutritional value and marketability of foods and food products.
20	Childhood Obesity - Number increased as it relates to the generation, dissemination, and utilization of research to support dietary recommendations and their adoption.
21	Childhood Obesity - # of environmental changes implemented to support healthy eating guidelines.
22	Childhood Obesity - # of Children/Youth who increased their physical activity and/or reduced sedentary time.
23	Childhood Obesity - # of Families/Caregivers who increased their physical activity and/or reduced sedentary time.
24	Childhood Obesity - # of Children/Youth who increased physical activity to 60 minutes or more daily.
25	Childhood Obesity - # of Families/Caregivers who plan time together for physical activity following an Extension program.
26	Childhood Obesity - # of Children/Youth who understand the importance of balancing food intake and physical activity.
27	Childhood Obesity - # of environmental changes implemented to support physical activity guidelines.
28	Childhood Obesity - # of families with children who supplement their diets with healthy foods that they produce/preserve/obtain utilizing community/backyard gardens, fishing, hunting, etc.
29	Childhood Obesity - # of stakeholders who made healthy foods more accessible in their communities in personally and socially acceptable ways.
30	Childhood Obesity - # of families with children who access/produce/preserve healthy foods.
31	Childhood Obesity - # of families with children who increased knowledge of how to access/produce/preserve healthy foods.
32	Food Safety - Number of participants who indicated that they increased their knowledge related of Food Safety following an educational class, seminar or workshop.
33	Food Safety - Number of participants receiving certification in Better Process Control and ServSafe
34	Food Safety - Number of participants who adopted positive safe food handling practices.
35	Number of food industry employees receiving certification as Culinary Scientists
36	Number of food industry employees receiving Food Protection Manager Certification

37	Decrease in the number of food plant audits as a result of the Global Food Safety Initiative implementation.
38	Impact of cleaning and training strategies on mitigation of cross contamination in the retail environment

Outcome #1

1. Outcome Measures

# of participants who indicated that they increased their knowledge related to food, nutrition and/or health following an educational class, seminar or workshop

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	5443

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Arkansas face challenges when it comes to obesity and food insecurity in the state. Arkansas is listed as one of the top states that has a prevalence of obesity equal to or greater than 30%. 18.6% of households in Arkansas are Food Insecure. Arkansas EFNEP is positioned to address these issues in the state.

What has been done
Arkansas EFNEP uses the Eating Smart -Being Active curriculum developed by Colorado State University and University of California. It is designed for para-professional nutrition educators to use when teaching low-income families with young children to learn healthy lifestyle choices. The curriculum consists of eight core lessons, each 60 to 90 minutes long, designed to be taught in order. The goals include encouraging increased consumption of fruits and vegetables, dairy foods, whole-grains, savvy shopping, increased physical activity and reduce fat. EFNEP is conducted in 12 counties in the state.

Results
As a result of participating in EFNEP, based on a 2012 EFNEP Nutrition Education Evaluation and Reporting Systems (NEERS):
17,701 food demonstrations and nutrition education lessons were taught.
7,783 participants were reached through small group educational sessions.
2,200 adults graduated from EFNEP.
4,270 youth were reached through EFNEP.

2,160 increase their physical activity.
416 Hispanic participants graduated from EFNEP.

4. Associated Knowledge Areas

KA Code	Knowledge Area
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
724	Healthy Lifestyle

Outcome #2

1. Outcome Measures

# of individuals who increased physical activities as a result of completing an Extension program

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

# of participants who adopted at least one positive health or nutrition practice.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	2867

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
In Arkansas, 68% of adults are overweight or obese, 9.6% have diabetes, 40% have high blood cholesterol and 36% have high blood pressure. Research shows that even small changes in diet and small decreases in weight can lower the risks for diabetes, heart disease and hypertension.

What has been done
The Reshape Yourself healthy weight program was offered in 5 counties. Participants learned to to plan healthy meals, balance calorie intake with calorie expenditure, read food labels, reduce fat and sodium intake and manage blood glucose. Cooking schools offered in 5 counties helped

people learn skills that enable them to plan and prepare healthier meals at home. Participants learned how to cook using healthier techniques; eat more locally grown foods and save money by eating at home more often.

Results

As a result of Extension nutrition programs, 1,073 participants adopted healthier eating practices, 215 lost weight and 33% improved blood pressure, glucose or cholesterol. Some participants were able to reduce medications. Changes like these can reduce the risk for diet-related chronic diseases and save participants money. With much of the growth in health care spending linked to rising rates of diabetes, hypertension and heart disease, programs that help Arkansas reduce weight and improve health can reduce health care costs. Health experts estimate that every $1 invested in proven community-based disease prevention programs saves Arkansas $5 in health care costs.

4. Associated Knowledge Areas

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

Outcome #4

1. Outcome Measures

# of participants reporting a reduction of at least one risk factor for chronic disease after an educational program

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	217

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #5

1. **Outcome Measures**

# of Participants who indicated that they have gained new knowledge on universal design, assistive technology, services available, housing options or other issues related to aging in place.

Not Reporting on this Outcome Measure

Outcome #6

1. **Outcome Measures**

# of participants who practiced at least 1 technique learned in an extension health program

Not Reporting on this Outcome Measure

Outcome #7

1. **Outcome Measures**

# of adults enrolled in Strong Women program who completed assessment

Not Reporting on this Outcome Measure

Outcome #8

1. **Outcome Measures**

# of adults who increased upper body strength after completing the Strong Women program

Not Reporting on this Outcome Measure

Outcome #9

1. **Outcome Measures**

# of adults who increased lower body strength after completing the Strong Women program

Not Reporting on this Outcome Measure

Outcome #10

1. Outcome Measures

Childhood Obesity - # of children and youth who increased consumption of foods recommended by the U.S. Dietary Guidelines for Americans.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	4541

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
In Arkansas, approximately 23% of the total population receives SNAP benefits. Thirty-eight percent of school-aged children and adolescents, and 67% of adults are overweight or obese. Research shows that a healthy diet can lead to weight loss and lower the risk for heart disease, diabetes and certain cancers.

What has been done
SNAP-Ed programs were conducted at 325 locations throughout Arkansas including schools, Head Starts, senior centers, food banks and pantries, shelters, DHS offices, WIC offices and grocery stores. Lessons focused on: making healthy choices within a limited budget, learning how to read food labels, cook, grocery shop and increase physical activity. Parents in seventeen counties whose children participated in school-based nutrition projects were surveyed to determine if the SNAP-Ed program was reaching parents through children.

Results
As a result of SNAP-Ed in schools in FY12, Arkansas families reported the following:
- 83% reported their child talked to them about healthy foods and snacks.
- 76% reported their child asked for more or different fruits, vegetables, milk, or yogurt.
- 60% made changes in their family's eating and/or were more physically active.

4. Associated Knowledge Areas

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

806 Youth Development

Outcome #11

1. Outcome Measures

Childhood Obesity - # of families/caregivers who increased consumption of foods recommended by the U.S. Dietary Guidelines for Americans.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1638

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #12

1. Outcome Measures

Childhood Obesity - # of Children/Youth who intend to adopt healthy eating patterns.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	5250

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #13

1. Outcome Measures

Childhood Obesity - # of Families/Caregivers who intend to adopt healthy eating patterns.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1445

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #14

1. Outcome Measures

Childhood Obesity - # of Children/Youth who gained knowledge of foods to increase as recommended by the U.S. dietary Guidelines for Americans.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	3881

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

806 Youth Development

Outcome #15

1. Outcome Measures

Childhood Obesity - # of Families/Caregivers who gained knowledge of foods to increase as recommended by the U.S. dietary Guidelines for Americans.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	2016

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #16

1. Outcome Measures

Childhood Obesity - # of Children/Youth who gained knowledge of foods to decrease as recommended by the U.S. dietary Guidelines for Americans.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	3410

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #17

1. Outcome Measures

Childhood Obesity - # of Families/Caregivers who gained knowledge of foods to decrease as recommended by the U.S. dietary Guidelines for Americans.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1454

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #18

1. Outcome Measures

Childhood Obesity - # of Children/Youth who gained knowledge about healthy eating patterns.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	7053

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Childhood obesity is a major public health issue and is presently receiving great deal of attention due to its broader economic consequences and long term effects on children's overall health, academic accomplishments, quality of life and productivity as they become adults. Arkansas school children are especially at risk for obesity.

What has been done
Division of Agriculture researchers examined the link between childhood obesity outcomes and features of the built and social environment. This work is being done to ensure that interventions are targeted to those children most at-risk for obesity. Starting in 2004, Arkansas public schoolchildren have been measured for BMI and ACHI has facilitated geocoding records in this

dataset, merging these with geo-referenced data on the commercial food environment.

Results
Based on this research, interventions are being developed to improve the diets of young children, promote physical activity, and encourage other healthy behaviors. These interventions are woven into a comprehensive curriculum designed for use in Head Start, preschool, and early elementary classrooms. Work is being done to improve access to fresh fruits and vegetables via a direct farm-to-school distribution network linking local farmers to these schools. Finally, a formal education program is being developed that will prepare the next generation of childcare providers, early childhood educators, and other career professionals in such a way that they will have a better understanding of childhood obesity and will be in a better position to address this crisis throughout their professional lives.

4. Associated Knowledge Areas

KA Code	Knowledge Area
502	New and Improved Food Products
703	Nutrition Education and Behavior
724	Healthy Lifestyle
806	Youth Development

Outcome #19

1. Outcome Measures

Childhood Obesity - Number and/or increased/improved technologies and processes that enhance the nutritional value and marketability of foods and food products.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Dietary CLA is well recognized for its ability to protect against obesity related diseases and three grams of CLA per day has been proposed to be required to obtain the optimal human health benefits. However, conventional CLA food sources, such as beef and dairy fats contain only 0.2-2% CLA, which are quite low levels to satisfy CLA dietary needs. Consuming enough beef or

dairy products to obtain three grams of CLA per day would result in an unhealthy increase dietary saturated fat and cholesterol. Therefore, the development of foods with a much greater CLA content, while low in saturated fat and containing no cholesterol, would be valuable in promoting a healthy diet and realizing the nutritional benefits of CLA.

Soy oil is naturally cholesterol free, low in saturated fat and composed of 50% linoleic acid (LA). A 20% CLA-rich soy oil was produced by converting soy oil LA to CLA, using ultraviolet light and an iodine catalyst. However, the problem with this processing method is the need to remove the iodine for food use.

What has been done

Division of Agriculture researchers have developed a new technology using a low pressure and steam in the presence of a solid metal catalyst to produce a 20% CLA-rich soy oil. The advantage of this method relative to the iodine processing method is that the solid catalyst can be easily be removed by filtration or centrifugation to produce a food grade oil. Furthermore, the process takes only 2 hours, relative to the 12 hours required for photo-processing to produce CLA-rich oil.

Results

The University of Arkansas has filed a patent to protect the novel technology and significant industrial interest is expected, as the conditions used to produce the CLA-rich oil are already used in conventional commercial refining of vegetable oils.

Half an ounce of CLA-rich salad oil or an ounce and half of CLA-rich potato chips will provide the 3g of CLA needed to obtain the health benefits reported for CLA. In contrast, an 8 ounce serving of beef or milk will only provide 0.27g and 0.06g of CLA. Only by increasing saturated fat and cholesterol from these animal sources can 3g of dietary CLA per day be realized. Therefore, including a small amount of CLA-rich oil in the US diet could be a major factor in reducing heart disease and diabetes risk factors.

4. Associated Knowledge Areas

KA Code	Knowledge Area
501	New and Improved Food Processing Technologies
502	New and Improved Food Products
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components

Outcome #20

1. Outcome Measures

Childhood Obesity - Number increased as it relates to the generation, dissemination, and utilization of research to support dietary recommendations and their adoption.

Not Reporting on this Outcome Measure

Outcome #21

1. Outcome Measures

Childhood Obesity - # of environmental changes implemented to support healthy eating guidelines.

Not Reporting on this Outcome Measure

Outcome #22

1. Outcome Measures

Childhood Obesity - # of Children/Youth who increased their physical activity and/or reduced sedentary time.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	2086

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #23

1. **Outcome Measures**

Childhood Obesity - # of Families/Caregivers who increased their physical activity and/or reduced sedentary time.

2. **Associated Institution Types**

- 1862 Extension

3a. **Outcome Type:**

Change in Action Outcome Measure

3b. **Quantitative Outcome**

Year	Actual
2012	721

3c. **Qualitative Outcome or Impact Statement**

Issue (Who cares and Why)

What has been done

Results

4. **Associated Knowledge Areas**

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

Outcome #24

1. **Outcome Measures**

Childhood Obesity - # of Children/Youth who increased physical activity to 60 minutes or more daily.

2. **Associated Institution Types**

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1080

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle
806	Youth Development

Outcome #25

1. Outcome Measures

Childhood Obesity - # of Families/Caregivers who plan time together for physical activity following an Extension program.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	174

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #26

1. Outcome Measures

Childhood Obesity - # of Children/Youth who understand the importance of balancing food intake and physical activity.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1189

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #27

1. Outcome Measures

Childhood Obesity - # of environmental changes implemented to support physical activity guidelines.

Not Reporting on this Outcome Measure

Outcome #28

1. Outcome Measures

Childhood Obesity - # of families with children who supplement their diets with healthy foods that they produce/preserve/obtain utilizing community/backyard gardens, fishing, hunting, etc.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	56

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #29

1. Outcome Measures

Childhood Obesity - # of stakeholders who made healthy foods more accessible in their communities in personally and socially acceptable ways.

Not Reporting on this Outcome Measure

Outcome #30

1. Outcome Measures

Childhood Obesity - # of families with children who access/produce/preserve healthy foods.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	105

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #31

1. **Outcome Measures**

Childhood Obesity - # of families with children who increased knowledge of how to access/produce/preserve healthy foods.

2. **Associated Institution Types**

- 1862 Extension

3a. **Outcome Type:**

Change in Knowledge Outcome Measure

3b. **Quantitative Outcome**

Year	Actual
2012	156

3c. **Qualitative Outcome or Impact Statement**

Issue (Who cares and Why)

What has been done

Results

4. **Associated Knowledge Areas**

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

Outcome #32

1. **Outcome Measures**

Food Safety - Number of participants who indicated that they increased their knowledge related of Food Safety following an educational class, seminar or workshop.

2. **Associated Institution Types**

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	732

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #33

1. Outcome Measures

Food Safety - Number of participants receiving certification in Better Process Control and ServSafe

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	251

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The food industry of Arkansas needs continuous training to remain globally competitive. Workshops and training sessions offered and conducted will allow them to remain prosperous and competitive.

What has been done
The Institute of Food Science & Engineering and Cooperative Extension Service in Fayetteville has been offering the Better Process Control School (BPCS) since 1973 which is one of the oldest in the nation and required for FDA controlled canning industries. Twenty-eight BPCS are offered nationally each year and historically Arkansas is the only contiguous state except for Texas offering the program. The number of Better Process Control Schools and number of students has ramped up the past 2 years and the number of BPCS conducted within the region has averaged 4 per year for 2 years in a row.

Results
Since starting the Better Process Control School in Fayetteville in 1973, over 3,000 people have been certified mostly from major canning companies in the region. This allows for these Arkansas-based companies to train a large number of their employees at a reduced cost since travel expenses are minimal. In 2012, four BPCS were offered in Arkansas and surrounding states (Oklahoma and Missouri). For the Cooperative Extension Service, the Better Process Control School has served as a springboard to other food-related workshops for industry to include food safety, food defense, food labeling, microbiology, sensory evaluation and other courses under development.

4. Associated Knowledge Areas

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

Outcome #34

1. Outcome Measures

Food Safety - Number of participants who adopted positive safe food handling practices.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual

2012	494

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #35

1. Outcome Measures

Number of food industry employees receiving certification as Culinary Scientists

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	48

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

From the U of A Division of Agriculture Strategic Plan, 2011 - 2015 "The long-term growth of the food industry in Arkansas is dependent upon the industry's ability to innovate, to respond to consumers' taste and expectations, to employ a quality workforce." The poultry/meat industry is a mature industry that is part commodity market and part value-added with higher profit margins. Individual company growth in profits can be expected from increased percentage of value-added and foodservice markets.

What has been done

Early in 2005, Dr. John Marcy, U of A Division of Agriculture Poultry Processing Specialist and local chef, Suzie Stephens, approached Tyson Foods Research & Development to offer hands-on culinary classes at the University of Arkansas to enable their food technologists / product developers to achieve a certificate as a "Certified Culinary Scientist", This recognition is from the Research Chefs Association, a group dedicated to the blending of culinary arts and food technology called Culinology(TM). This experience is meant to enable the food technologist to understand what the R & D chef wants and be better able to translate that vision and taste to the production plant floor. They are also respected for their culinary knowledge by the customer as well.

Results
As of February 2013, there are 170 Certified Culinary Scientists recognized by RCA worldwide. August 2012 completed the original goal of 60 Tyson Foods associates through the program set in 2005 after 25 week-long classes during the 7 year period. During this period, 98 Tyson associates took at least one class at the University of Arkansas. Sixty-six current associates have completed all classes and 48 have received certification. Conducting these classes at the University of Arkansas is what made the program possible for Tyson as well as other Arkansas companies. The cost savings to Tyson Foods to have people take this program in Arkansas saved them upwards of $380,000 in reduced tuition but primarily in travel costs over the 7 year period. Since 2007, the Division of Agriculture has reached another 67 food professionals from Arkansas and from around the country for at least one class and 23 of them have finished all three classes. The Division continues to offer all three week-long classes every year.

4. Associated Knowledge Areas

KA Code	Knowledge Area
504	Home and Commercial Food Service

Outcome #36

1. Outcome Measures

Number of food industry employees receiving Food Protection Manager Certification

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	151

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The Centers for Disease Control and Prevention estimated in 2011 that 9.4 million people will be made ill each year from a combination of 31 known pathogens and 58% or 5.5 million will be caused by 1 pathogen, norovirus. In 2006, CDC published a study done by the National Center for Environmental Health on the differences between outbreak restaurants and non-outbreak restaurants. The primary cause of outbreaks in the one-year study was norovirus at 42%. The primary environmental difference between an outbreak restaurant and a non-outbreak restaurant was a Certified Kitchen Manager (CKM). The presence of a CKM was associated with the absence of bare-hand contact with foods as a contributing factor, fewer norovirus outbreaks, and the absence of outbreaks associated with Clostridium perfringens.

The 2009 Food Code now uses the term certified food protection manager. This refers to a person who has successfully demonstrated knowledge by taking one of four tests to receive the Food Protection Manager Certificate. The testing to achieve this designation is accredited by the American National Standards Institute and the standards by which accreditation is judged come from the Conference for Food Protection. Two of the four FPMC tests accepted nationally are used by the Division of Agriculture; the ServSafe Food Protection Manager exam from the National Restaurant Association and the Food Protection Manager exam from the National Registry for Food Safety Professionals.

What has been done

Every year, the University of Arkansas Division of Agriculture offers restaurant managers the opportunity to take classes and an exam to become a Certified Food Protection Manager. In addition, several classes are also offered for restaurant employees and food handlers.

Results

In 2012, 178 foodservice managers and associates took a ServSafe class from the Division of Agriculture and 85% of those people (151) passed the examination to become a Certified Food Protection Manager. But the story does not end with them. The effect of having a certified manager in the kitchen environment enables them to lead and teach the people doing the actual food handling to avoid bare hand contact with food, which is a primary cause of norovirus outbreaks. For every manager certified, many others become better food handlers through better understanding of how foodborne illness really occurs.

4. Associated Knowledge Areas

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

Outcome #37

1. Outcome Measures

Decrease in the number of food plant audits as a result of the Global Food Safety Initiative implementation.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
International attention has been focused on minimizing costs that may unnecessarily raise food prices. One important aspect to consider is the redundant and overlapping costs of food safety audits.

What has been done
The Global Food Safety Initiative (GFSI) has devised benchmarked schemes based on existing international food safety standards for use as a unifying standard accepted by many retailers. Division of Agriculture researchers conducted a study to evaluate the impact of the decision made by Walmart Stores (Bentonville, AR) to require their food suppliers to become GFSI compliant.

Results
An online survey of retail suppliers was conducted to assess opinions of the requirement by Walmart and the benefits suppliers realized when they transitioned from their previous food safety systems. The most common reason for becoming GFSI compliant was to meet customers' requirements; thus, supplier implementation of the GFSI standards was not entirely voluntary. Other reasons given for compliance were enhancing food safety and remaining competitive. About 54% of food processing plants using GFSI benchmarked schemes followed the guidelines of Safe Quality Food 2000 and 37% followed those of the British Retail Consortium. At the supplier level, 58% followed Safe Quality Food 2000 and 31% followed the British Retail Consortium. Respondents reported that the certification process took about 10 months. The most common reason for selecting a certain GFSI benchmarked scheme was because it was widely accepted by customers (retailers). Four other common reasons were (i)the standard has a good reputation in the industry, (ii) the standard was recommended by others, (iii) the standard is most often used in the industry, and (iv) the standard was required by one of their customers. Most suppliers agreed that increased safety of their products was required to comply with GFSI benchmarked schemes. They also agreed that the GFSI required a more carefully documented food safety management system, which often required improved company food safety practices and increased employee training. Adoption of a GFSI benchmarked scheme resulted in fewer audits, i.e., one less per year. An educational opportunity exists to acquaint retailers and suppliers worldwide with the benefits of having an internationally recognized certification program such as that recognized by the GFSI.

4. Associated Knowledge Areas

KA Code	Knowledge Area

712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #38

1. Outcome Measures

Impact of cleaning and training strategies on mitigation of cross contamination in the retail environment

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)
Contamination of food contact surfaces with pathogens is considered an important vehicle for the indirect transmission of foodborne diseases. Research has also shown that many foodborne illnesses result from employee food handler error, which may be minimized when employees are properly trained and transfer their training to their jobs.

What has been done
Division of Agriculture researchers tested the efficacy of four wipe cloth types (cotton bar towel, nonwoven, microfibre and blended cellulose cotton) with either quaternary ammonia cleaning solution or silver dihydrogen citrate (SDC) in cleaning food contact surfaces. Swab samples were collected from untreated, cloth-treated and cloth disinfectant-treated surfaces and tested using ATP bioluminescence and
aerobic total plate counting (TPC) assays.

Results
The ATP measurements taken after wiping the surfaces showed poor cleaning by nonwoven cloths compared to woven. The cellulose cotton
cloth had the highest reduction in ATP (95%) and CFU values (98.3%) when used in combination with SDC disinfectant. Cleaning effect of wiping cloths on food contact surfaces can be enhanced by dipping them in SDC disinfectant.
The results of this research are being used to develop a carefully planned training program that includes assessing impact of training on both short and long term changes in behavior. If sanitation techniques are better able to clean, sanitize and thermally treat potential L. monocytogenes harborages on food contact surfaces, equipment and
environmental surfaces, then it can be assumed that employees in these environments will be

less likely to cross-contaminate RTE foods with L. monocytogenes. Again, fewer L. monocytogenes harborages and minimal cross-contamination will decrease the hazard and decrease the risk of listeriosis. Extending these findings to impact deli specific training targeting Hispanics and other minority deli employees can decrease one of the principal factors in reducing risk, minimizing or eliminating the hazard that of having employees utilize their food safety training. Short term assessment of training for deli employees to minimize behaviors that cause cross-contamination is fairly achievable. However, long-term behavior changes are difficult to measure in employees where there are high-turnover rates, such as in a deli. Deli specific training with pre-test and post-test assessment of learning, in addition to the usability testing at the Reaction and Learning levels, could make these newly developed training modules part of the solution.

4. Associated Knowledge Areas

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

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
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Increasing Opportunities for Families & Youth

☑ 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
607	Consumer Economics	10%		0%	
723	Hazards to Human Health and Safety	10%		0%	
724	Healthy Lifestyle	10%		0%	
801	Individual and Family Resource Management	10%		0%	
802	Human Development and Family Well-Being	10%		0%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	10%		0%	
805	Community Institutions, Health, and Social Services	10%		0%	
806	Youth Development	30%		0%	
	Total	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	185.3	0.0	3.6	0.0
Actual Paid Professional	132.2	0.0	0.0	0.0
Actual Volunteer	326.4	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**
1480512	0	0	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
1905405	0	0	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
13762792	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

The Division of Agriculture Extension educational programs and activities address family relationships, health and wellness, aging, family economics, safety and 4-H youth development in close collaboration with county, state and federal agencies and policy makers.

Within the Family and Consumer Sciences discipline, science-based research programs focused on content area addressing the following:

Aging:

The Division conducts research on how aging, caregiving, and use of health care services affect individuals and families. The population of older adults in the USA continues to increase. With 15% of Arkansas residents age 65+ (ranked 10th nationally up12% since 2010) the health issues that accompany growing older--chronic disease, disability, and dependence--are of particular importance because they bring diminished quality of life and increase costs to the public. Division programs like Aging in Place, Acknowledging Aging, Walk Across Arkansas, the Arkansas AgrAbility project, Arthritis education, and Fit in 10 help older Arkansans extend productivity and independence into later life, which saves the state millions of dollars each year.

Healthy Living:
The Division delivers educational programs promoting safe and healthy families. People learn the health impact of environmental risks and behavioral risk, become more health literate and increase their understanding of practices that reduce chronic disease through the adoption of practical and lifelong health practices. Programs such as Strong Women/Strong Men, Be Medwise, Healthy Homes Healthy People, ATV Safety and Healthy Lifestyle Choices continue to address Arkansans health-related issues.

Strengthening Families:
Arkansas's approximately 17,000 divorces every year cost taxpayers an estimated $30,000 each or $500 million annually. The Division's marriage and relationship programs and research help Arkansas families face the challenges of economic stress and couple relationships.

Parenting in an increasingly complex society now includes single parenting, step-parenting and grandparents raising grandchildren. The Division's research and extension programs such as The Parenting Journey and Adventures in Grandparenting prepare adults for this vital and challenging role.

The need for quality care for Arkansas's children is greater than ever. To provide the best care

possible, Arkansas's child care professionals are required to get a minimum of 10 hours per year of verified training to maintain their licensure. The Division of Agriculture's Best Care, Best Care Connected, and Guiding Children Successfully programs provide Arkansas's child care professionals with the verified training they need. These programs are delivered through Extension's statewide network so they are readily available to Arkansans in all 75 counties.

Empowering Youth:

The Division is uniquely positioned to teach and demonstrate scientific exploration and application to Arkansas youth. The Division's programming helps young people explore career choices through diverse education, extension and science-based programming. As one of the largest and oldest youth serving organizations in Arkansas, 4-H has a significant statewide impact; reaching youth ages 5-19. The 4-H program uses an experiential learning model to reach 133,000 youth. The Arkansas 4-H youth development program is research-driven and focuses on three statewide initiative areas: Healthy Lifestyles, 4-H Science and Citizenship/Leadership. The 4-H experience is pivotal in building a foundation of leadership and skill attainments that potentially yields success in accomplishing goals and career aspirations.

2. Brief description of the target audience

Adolescents and adults
Adolescents and adults who expect to become parents
Parents
Grandparents
Adult caregivers
4-H members
4-H youth participants
4-H volunteers
4-H parents
Adults
School teachers
Married couples or couples considering marriage
Child care providers
Afterschool Care providers
Military families
Local, state, and community leaders
Elected officials
Consumers
Organizations

3. How was eXtension used?

eXtension was used during employee inservice training, as well in the implementation of the Family and Consumer Sciences and 4-H Youth Development programs outlined in this section. The site is referenced during training and modules developed by experts in the field are utilized as supplemental materials for program implementation. Educators are encouraged to utilize eXtension resources within their programs to expand their outreach efforts. Extension faculty members contribute to their respective teams and participate in the FAQ's. A booth with materials was used during trainings.

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	181361	1952576	275576	129068

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	2	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of organized 4-H Clubs

Year	Actual
2012	875

Output #2

Output Measure

- Number of non-duplicated participants in 4-H Youth Development Healthy Lifestyles programs Not reporting on this Output for this Annual Report

Output #3

Output Measure

- Number non-duplicated participants in 4-H science, technology, engineering and math programs

Year	Actual
2012	27660

Output #4

Output Measure

- Number of non-duplicated participants in 4-H Citizenship programs

Year	Actual
2012	9395

Output #5

Output Measure

- Number of federal grants and contracts submitted

Year	Actual
2012	3

Output #6

Output Measure

- Dollar amounts awarded in 1,000's of federal grants and contracts

Year	Actual
2012	366978

Output #7

Output Measure

- Number of non-federal grants and contracts submitted

Year	Actual
2012	97

Output #8

Output Measure

- Dollar amounts awarded in 1,000's of non-federal grants and contracts

Year	Actual
2012	2045834

Output #9

Output Measure

- Health & Aging - # of adults enrolled in physical activity programs

Year	Actual
2012	1047

Output #10

Output Measure

- Health & Aging - # of adults enrolled in the Strong Women program

Year	Actual
2012	978

Output #11

Output Measure

- Family Economics - # of participants in individual and family resource management programs

Year	Actual
2012	11895

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of 4-H participants who learned life skills
2	Number of participants who increased knowledge through child care professional programs
3	Number of participants who increased knowledge through leadership development programs
4	Number of participants who increased knowledge through parent education programs
5	Number of participants who increased knowledge through marriage and couple education programs
6	Number of participants who increased knowledge through personal development programs
7	Number of 4-H Journals completed
8	Number of volunteer hours contributed through the 4-H program by youth and adults
9	Number of participants (youth and adults) who reported conducting programs, community service projects, adopting new skills or accepting new leadership roles as a result of leadership development educational efforts
10	Estimated dollar value in thousands of 4-H volunteers
11	Estimated dollar value in thousands of EH volunteers
12	Family Economics - Number of participants who increase their knowledge of individual and family resource management
13	Health & Aging - # of individuals who increased physical activities as a result of completing an Extension program
14	Health & Aging - # of participants who adopted at least one positive health practice.
15	Health & Aging - # of participants reporting a reduction of at least one risk factor for chronic disease after an educational program
16	Health & Aging - # of Participants who indicated that they have gained new knowledge on universal design, assistive technology, services available, housing options or other issues related to aging in place.
17	Health & Aging - # of participants who practiced at least 1 technique learned in an extension health program

18	Health & Aging - # of adults enrolled in Strong Women program who completed assessment
19	Health & Aging - # of adults who increased upper body strength after completing the Strong Women program
20	Health & Aging - # of adults who increased lower body strength after completing the Strong Women program
21	Family Economics - Number of participants who adopted recommended financial management practices
22	Family Economics- Number of participants who increased savings or decreased debt
23	Number of youth reporting increasing learning life skills as a result of participating in leadership development and citizenship activities and programs.

Outcome #1

1. Outcome Measures

Number of 4-H participants who learned life skills

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	41577

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Serious ATV injuries affect more than 100,000 people yearly in the United States. Arkansas averages more than 15 ATV-related deaths per year and has one of the nation's highest rates of injury for those 16 and under. Close to 90% of ATV crashes in Arkansas occur with drivers under age 16 driving an adult sized ATV. According to the U.S. Consumer Product Safety Commission, the annual tally of accidents involving ATVs increased by nearly 180 percent between 1995 and 2004. The average cost of hospitalization for the victim of an ATV accident was $21,304.

What has been done
Since June 2008 the Arkansas Cooperative Extension Service has been committed to the development and delivery of a statewide 4-H ATV Safety educational program. We currently have 18 University of Arkansas Cooperative Extension Service county staff and state faculty that are

licensed instructors to deliver the ATV Safety Institute ATV RiderCourse in each of our three statewide Extension districts. In addition we are providing school and community based ATV safety educational programs to our clientele.

Results

Due to the work of the Arkansas 4-H ATV Safety educational program, in the past 4 years over 34,000 individuals have been exposed to the 4-H ATV Safety message. This extraordinary effort has resulted in 918 youth and adults participating in the 4 hour ASI RiderCourse and becoming certified safe riders through the Arkansas 4-H ATV Safety Program. Potential economic impact from reduced medical costs can be estimated as high as $19.5 million over this 4 year period. The greatest impact is often reflected through personal testimony. This story was shared with Boone County Staff Chair Nita Cooper by the father of a Boone County 4-H member:
"We were walking through one of the buildings at the Arkansas State Fairgrounds the other day, and as we walked by the 4-H booth, Clay (his son) commented on the ATV promotional material. Clay pointed to the ATV information and said, 'That program saved my life!' Clay works for a Boone County cattle producer who, like many of our farms, has some very rugged land. He was working in the pasture on an ATV, and as he started up a hill the ATV began to tip over. Clay immediately shifted his weight to keep the ATV from rolling on top of him. Clay had attended an ATV rider course during the summer of 2011 in Harrison. He credited the ATV rider course for giving him the skills necessary to avoid a very serious or fatal injury."

4. Associated Knowledge Areas

KA Code	Knowledge Area
723	Hazards to Human Health and Safety
806	Youth Development

Outcome #2

1. Outcome Measures

Number of participants who increased knowledge through child care professional programs

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	4583

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The need for quality care for Arkansas's children is greater than ever. To provide the best care possible, Arkansas's child care professionals are required to get a minimum of 10 hours per year of verified training to maintain their licensure and 15 hours per year to participate in Better Beginnings - Arkansas's quality approved rating system.

What has been done
In 2012, with a budget of $343,979 in external funding, 4,677 child care professionals successfully completed 33,498 hours of training. Our Best Care (face-to-face) program trained 1,964 providers who completed 14,806 hours of training. Our Best Care Connected (online) program trained 1,359 providers who completed 6,795 hours of training. Our Guiding Children Successfully (self-guided) program trained 1,354 providers who completed 11,897 hours of training.

Results
Research indicates that for every dollar spent on early childhood intervention programs, there is a $2.50-7.00 ROI. That means the ROI within the state of AR for our child care training programs is between $860,000-$2.4 million dollars.

Participants had statistically significant increases in their levels of understanding of all lesson topics after participating in training.

98% increased knowledge of effective child care practices, 98% planned to do something new to be a better child care professional, & 93% made the change they planned on making as a result of their program participation.

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being

Outcome #3

1. Outcome Measures

Number of participants who increased knowledge through leadership development programs

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Number of participants who increased knowledge through parent education programs

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	908

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Most people today do not have time to go to a parenting class or marriage workshop. When they need answers they are likely to turn to the Internet. People are spending time checking emails and on social media outlets, such as Facebook and Twitter, more than ever before.

What has been done
The Navigating Life's Journey program is a way of reaching out to today's clientele where they learn and live. With email, blogs, Facebook, and Twitter, this program is delivered to a wide-reaching audience. The great research-based information is often shared with friends and used in newsletters and for local radio programs.

Results
This new way of reaching people provides a new kind of feedback. Not only do virtually all of the recipients report that the information is valuable, but 91% report that it has actually improved their relationships. While each weekly message constitutes a small "learning session," the constant contact reminds people of the messages and helps them apply them to their everyday lives. It is great that people are getting research-based principles rather than the usual web-based guesses. We think this may be the learning wave of the future!

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being

Outcome #5

1. Outcome Measures

Number of participants who increased knowledge through marriage and couple education programs

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	382

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being

Outcome #6

1. Outcome Measures

Number of participants who increased knowledge through personal development programs

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1307

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being

Outcome #7

1. Outcome Measures

Number of 4-H Journals completed

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	615

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #8

1. Outcome Measures

Number of volunteer hours contributed through the 4-H program by youth and adults

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1013581

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
4-H programs are delivered primarily through volunteers, ensuring thousands of young people have opportunity to participate. Volunteers are critical to program success. According to the National Framework for 4-H Volunteerism vision, "Quality volunteer systems connect young people with caring adults leading to positive outcomes for youth."

What has been done
Adult leaders, trained by Cooperative Extension Service Faculty in all 75 counties, use the "learn by doing" method to teach 4-H youth. Leadership, citizenship, and other skills learned guide 4-H'ers to success in adulthood. A survey of 102 county extension staff found a critical need for marketing materials targeting potential 4-H volunteers. These materials were developed and an in-service training focused on volunteer development was conducted, where county faculty were challenged to increase adult volunteers by 10%. More than 250 leaders were trained at District Forums.

Results
Expanded efforts to recruit and retain 4-H volunteers resulted in a 51% increase in volunteer leader enrollment over the previous year. Twenty-eight percent of Arkansas youth in grades K-12 are involved in 4-H programs and activities. Nearly 17,000 volunteers guided the 133,302 youth reached annually through Arkansas 4-H programs. On average, volunteers contributed 60 hours of service this year. Overall volunteer service value tops $22 million.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #9

1. Outcome Measures

Number of participants (youth and adults) who reported conducting programs, community service projects, adopting new skills or accepting new leadership roles as a result of leadership development educational efforts

Not Reporting on this Outcome Measure

Outcome #10

1. Outcome Measures

Estimated dollar value in thousands of 4-H volunteers

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	22085930

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #11

1. Outcome Measures

Estimated dollar value in thousands of EH volunteers

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	13640407

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #12

1. Outcome Measures

Family Economics - Number of participants who increase their knowledge of individual and family resource management

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	5506

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
607	Consumer Economics
801	Individual and Family Resource Management
803	Sociological and Technological Change Affecting Individuals, Families, and Communities

Outcome #13

1. Outcome Measures

Health & Aging - # of individuals who increased physical activities as a result of completing an Extension program

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	34040

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The population of older adults in the USA continues to increase. With 15% of Arkansas residents age 65+ (ranked 10th nationally up 12% since 2010) the health issues that accompany growing older: chronic disease, disability, and dependence are of particular importance because they bring diminished quality of life and increase costs to the public.

What has been done
Exercise is an important part of reducing many of the health issues that accompany aging. To allow more opportunities for individuals to engage in exercise, especially in rural areas, Extension offered four different programs: Fit in 10, Strong Women & Men, Arthritis Exercise, and Walk Across Arkansas.

Results
Through the efforts of the Extension Service, 34,040 non-duplicated individuals participated in an Extension Exercise program. 100% of those individuals increased their physical activities as a result of participating in an Extension Program.

4. Associated Knowledge Areas

KA Code	Knowledge Area
723	Hazards to Human Health and Safety
724	Healthy Lifestyle
802	Human Development and Family Well-Being

Outcome #14

1. Outcome Measures

Health & Aging - # of participants who adopted at least one positive health practice.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1058

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
723	Hazards to Human Health and Safety
724	Healthy Lifestyle
802	Human Development and Family Well-Being

Outcome #15

1. Outcome Measures

Health & Aging - # of participants reporting a reduction of at least one risk factor for chronic disease after an educational program

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	267

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
723	Hazards to Human Health and Safety
724	Healthy Lifestyle
802	Human Development and Family Well-Being

Outcome #16

1. Outcome Measures

Health & Aging - # of Participants who indicated that they have gained new knowledge on universal design, assistive technology, services available, housing options or other issues related to aging in place.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	35

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
723	Hazards to Human Health and Safety
724	Healthy Lifestyle
802	Human Development and Family Well-Being

Outcome #17

1. Outcome Measures

Health & Aging - # of participants who practiced at least 1 technique learned in an extension health program

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	340

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
723	Hazards to Human Health and Safety
724	Healthy Lifestyle
802	Human Development and Family Well-Being

Outcome #18

1. Outcome Measures

Health & Aging - # of adults enrolled in Strong Women program who completed assessment

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	496

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
723	Hazards to Human Health and Safety
724	Healthy Lifestyle
802	Human Development and Family Well-Being

Outcome #19

1. Outcome Measures

Health & Aging - # of adults who increased upper body strength after completing the Strong Women program

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	379

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The most recent recommendations for physical activity advise adults to participate in at least 150 minutes of moderate-intensity cardiovascular exercise each week, plus at least two days of strength-training for all major muscle groups. Despite compelling evidence of the benefits of strength training for older adults, only 13% of older adults report regular strengthening activities.

What has been done

One approach implemented to increase strength training among older adults in Arkansas is the StrongWomen Program, conducted by the University of Arkansas Cooperative Extension Service. StrongWomen is an evidence-based strength training program for mid-life and older women and is conducted in communities across the state.

Results
Nearly 500 (496) of the women who participated in the StrongWomen program completed both a pre- and post-physical assessment test. Of those individuals, 76% increased upper body strength.

4. Associated Knowledge Areas

KA Code	Knowledge Area
723	Hazards to Human Health and Safety
724	Healthy Lifestyle
802	Human Development and Family Well-Being

Outcome #20

1. Outcome Measures

Health & Aging - # of adults who increased lower body strength after completing the Strong Women program

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	362

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Physical activity is important for adults of all ages, but it is particularly important for older adults. Despite evidence on the positive health effects of regular physical activity, older adults are the least active group of Americans. For the frail elderly, exercise programs that build muscle are particularly important to improving overall health status.

What has been done
One of the reasons that many senior adults fall is a lack of lower body muscle strength. Through the Strong Women & Men program offered by the Cooperative Extension Service, strength training programs using free weights and leg weights are offered throughout the state in group settings.

Results
55 counties offered the Strong Women & Men program in FY 2012. 363 of the 496 (73%) individuals who completed a pre- and post- physical assessment increased lower body strength.

With the average hospital cost for a fall injury being $17,500, that is an estimated $1,397,550 hospital cost reduction due to the Extension Program. We can assume the results as similar for the nearly 500 people who participated in the program who did not have a completed pre- and post-test, which would double the cost savings from fall reduction.

4. Associated Knowledge Areas

KA Code	Knowledge Area
723	Hazards to Human Health and Safety
724	Healthy Lifestyle
802	Human Development and Family Well-Being

Outcome #21

1. Outcome Measures

Family Economics - Number of participants who adopted recommended financial management practices

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1819

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #22

1. Outcome Measures

Family Economics- Number of participants who increased savings or decreased debt

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	433

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #23

1. Outcome Measures

Number of youth reporting increasing learning life skills as a result of participating in leadership development and citizenship activities and programs.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The lack of leadership and citizenship skills is showing up throughout all aspects of society. Employers are unable to find qualified workers to fill key leadership positions in their companies. Also, there is a general apathy toward community involvement which has resulted in a lack of active participation in all levels of government and community engagement.

What has been done
Arkansas 4-H has been delivering citizenship and leadership training for many years. Each year 2 capstone type educational programs are conducted on the state level. Teen Leader Conference has been conducted annually for 34 years. 180 plus teens gather to learn leadership skills they can use in their county 4-H programs. Arkansas 4-H'ers participated in the Citizenship Washington Focus program in Washington, D.C. for immersion in learning about the federal government and how local engagement creates and appreciation and awareness of the world. In 2012 four Arkansas 4-H'ers participated in an excellent leadership/citizenship program tagged "National 4-H Conference" which was held in Washington, DC.

A new multi-session Citizenship curriculum was introduced in 2012 for integration into the county outreach efforts. Community Engagement, citizenship and youth adult partnerships empowered young people to become well-informed and involved citizens within their communities. On October 6, 2012, 1700 members of 4-H, 500 adult volunteers and 900 other youth convened for a "One Day of Service" event. This was a statewide activity to reinforce lessons on citizenship, service learning and community engagement.

Results
In the past 3 years alone over 675 individuals have been exposed to leadership/citizenship training through statewide programmatic efforts. Participants have sharpened their leadership and citizenship skills by participating in experiential learning programs. In 2012, over 12,500 volunteer hours and $272,375.00 in volunteer time was realized by engaging youth and adults in activities focused on helping their neighbors and communities. Local 4-H clubs reached 103,000 people through such efforts as: collecting 15,000 pounds of food; making 2,400 care packages with a total value of $50,000; cleaning 10,000 pounds of trash from 1200 miles of roadway; teaching 1,600 people through educational events and raising $8,600.00 in monetary support.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

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
- Populations changes (immigration, new cultural groupings, etc.)
- Other (Fuel prices & loss of personnel)

Brief Explanation

Clientele availability is a constant factor affecting programs in the Increasing Opportunities for Families and Youth area. We are competing against other priorities for our target audience's time, which has led the Marriage, Parenting and Family Life area to shift the direction of its educational programming. Yet, the economy has actually positively affected our Family Economics area in that more families are finding it important to learn how to budget, save, etc.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Child Care Provider Education:

Participants had statistically significant increases ($p < .001$) in their levels of understanding of all lesson topics after participating in the training.

98% indicated their knowledge of effective child care practices increased, 98% planned to do something new to be a better child care professional, and 93% actually made the change they planned on making at one month follow-up as a result of their program participation.

Navigating Life's Journey:

A random sample of email subscribers were chosen to provide feedback. Of those who responded, 99% say that the emails are valuable and 91% say that their lives and relationships are better as a result of the messages. Here is what some subscribers are saying about the impact of the NLJ emails:

"Reading the emails from NLJ helps remind me of what is important in life and helps me make course corrections in my behavior to better my relationships. It is easy to get caught up in life and forget to work on the most important relationships we have."

Daily things get overwhelming and there's so much to remember to do to be better. I find these short, sweet and to the point messages really helpful and easier to remember than other "self-improvement" suggestions. The truth is I don't have time to read lengthy things from emails! These are just right and oh so applicable! I forward my emails to a few loved ones who also appreciate their value."

Marriage and Couple Relationships:

In 2012, 1,072 people participated in our Marriage and couple relationship program. Among those who were surveyed, 382 participants indicated their knowledge of healthy

marriage and couple relationships had increased, 321 participants intended to change at least one marriage/couple relationship strengthening behavior or practice, and 234 participants actually changed a marriage/couple relationship strengthening behavior or practice.

Strong Women/Men:

Data indicate the program had 28,053 participants in FY12. Of the 496 participants with pre- and post-data from the Senior Fitness Test:

73% increased lower body strength; 76% increased upper body strength;64% increased aerobic endurance;75% increased lower body flexibility;73% increased upper body flexibility.

Arthritis Education

1,411 participants-100% increased knowledge;87% adopted a new practice;4% reported improved health

Personal Finance:

More than 5,000 individuals indicated that they increased their knowledge of personal financial management. Nearly 1,300 program participants reported making at least one positive change in their money management practices.

4-H Science

ACTAP test scores for the 5th graders at the Sheridan Intermediate School has raised 13 percentage points to 67% proficient or advanced in science from 2011 school year to 2012 school year.

Key Items of Evaluation

Child Care Provider Education:

Studies suggest savings up to $7.00 for every dollar invested. That means the return on investment within the state of Arkansas for our child care training programs is between $860,000 - $2.4 million dollars .....mm..

Walk Across Arkansas:

2,986 participants
3,407,314 minutes walked
$974,444 healthcare dollars saved due to the program
27% of the participants were not exercising at all until they started this program
20% of the participants increased their normal amount of exercise due to the program
82% of the participants reported the reached their exercise goals

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Economics & Community 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
601	Economics of Agricultural Production and Farm Management	5%		10%	
602	Business Management, Finance, and Taxation	10%		0%	
603	Market Economics	10%		15%	
604	Marketing and Distribution Practices	10%		0%	
605	Natural Resource and Environmental Economics	10%		0%	
606	International Trade and Development	5%		0%	
608	Community Resource Planning and Development	10%		0%	
610	Domestic Policy Analysis	10%		75%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	10%		0%	
805	Community Institutions, Health, and Social Services	10%		0%	
806	Youth Development	10%		0%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	32.1	0.0	9.0	0.0
Actual Paid Professional	20.2	0.0	32.0	0.0
Actual Volunteer	15.0	0.0	1.0	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**
345469	0	253462	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
444616	0	2945196	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
3211472	0	1119081	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Economic Viability and Sustainability:

Many Arkansas communities and regions are facing severe economic conditions. Jobs are limited in many communities. People are migrating to urban areas, reducing revenue needed to maintain basic rural services. Small business owners and entrepreneurs are critical forthe viability of Arkansas communities and regions. At a household level, earnings per job recently increased in most Arkansas counties, median household incomes have declined and today's consumer averages 13 credit obligations on record at a credit bureau. Research shows financial literacy is low.

THE U OF A DIVISION OF AGRICULTURE WILL:

- Identify trends affecting Arkansas communities and regions.
- Help Arkansas communities and regions identify and implement innovative economic development strategies.
- Provide education and technical assistance to Arkansas businesses and entrepreneurs.
- Provide personal financial management education for youth and adults.
- Help local governments explore innovative solutions and optimize resources.

Rural Infrastructure:

Due to limited resources in many communities, it is increasingly difficult to maintain or expand infrastructure capacity. Roads, public utilities and other facilities are needed to maintain community viability and long -term quality of life. An area of particular concern is access to advanced telecom-munications. Communities, schools and businesses without access to high--speed Internet are at a distinct disadvantage.

Broadband connectivity is critical to Arkansas's efforts to create and attract knowledge--based industries.The Division is poised to provide tools to help communi-ties and regions assess and address their infrastructure needs.

THE U OF A DIVISION OF AGRICULTURE WILL:

- Provide tools for communities to assess infrastructure needs.
- Assist in identifying local, state and federal resources to address infrastructure challenges.
- Support communities' efforts to obtain and use infor-mation technologies, including broadband connectivity.

Leadership and Community Involvement:

Effective and inclusive leaders are vital to sustainable and economically viable communities. Community planning is often based on the decisions of a select few. Some residents and youth may be

excluded from local decision making and strategic planning processes, even when these decisions affect them.

Diversity of populations and ideas is increasingly important to community planning, public support and effective implementation of plans. Engaging the public, expanding the local knowledge base on public issues, and creating a local environmentthat encourages collab-oration and innovation are critical for community leadersto be successful in today's economy and in maintaining a high quality of life.

THE U OF A DIVISION OF AGRICULTURE WILL:

- Provide leadership education for youth and adults.
- Assist local coalitions to develop and implement strategic plans.
- Work with communities and leaders to create environments that encourage innovation.
- Teach citizen involvement to enhance the vitality of Arkansas communities and regions.
- Engage diverse and under-served populations in civic involvement.
- Provide science--based information and education about public issues.

Quality of Life:

In an era of increasing mobility, quality of life is a key factor in attracting and retaining families, retirees, workers and businesses. Arkansas has an abundanceof attractive natural resources and amenities. Communities often fail to take advantage of these assets.

Arkansas communities and regions can take a proactive approach to create a high quality of place and life. Quality of life includes basic services, education, health care, recreational opportunities, and financial and retail services. Successful communities build a sense of identity and leverage their unique assets, such as historical, cultural, natural or other features.

THE U OF A DIVISION OF AGRICULTURE WILL:

- Provide tools to help communities evaluate and enhance their quality--of--life assets and opportunities.
- Assist communities in quality-of-life marketing to targeted audiences.

Population Composition and Change:

The social and cultural landscape of Arkansas is being reshaped by an aging population, ethnic diversification and shifts at the rural/urban interface. Arkansas is experiencing the social and economic impact of retirement--age Baby Boomers. The rapid migration of ethnic minorities into rural areas highlights important cultural differences and needs. Challenges exist where urban and rural meet.

Changes within the agricultural community are driven by an aging farm population and a lack of farmers to succeed them, as well as an increase in women- and minority--owned farms. The Division of Agriculture is assisting individuals and communities in addressing challenges and maximizing opportunities created as populations change.

THE U OF A DIVISION OF AGRICULTURE WILL:

- Inform policymakers and community leaders of pertinent population trends.
- Deliver programs that help leaders anticipate impacts of population changes.
- Develop and deliver programs for specific population groups based on demographic changes.
- Help Arkansans understand and address opportunities and challenges of the rural/urban interface.

2. Brief description of the target audience

- Farmers Market and Agritourism
- Producers - Small, large, limited resource, retirement, and other

- Non-Farm Private Landowners
- Businesses - Industry, small, large, rural, urban, consultants, and other
- Consumers - Limited resource, families, retired, youth, middle age, and other
- Elected Officials - city, county, state, and federal
- Organizations - Civic, community, producer, consumer, nonprofit and other
- Government Personnel - Public agencies and administrators, and other
- Voters
- Research, Extension and teaching professionals
- General Public

3. How was eXtension used?

eXtension was used the EDEN program to inform our disaster preparedness efforts, as well as disaster response and recovery. Also used to inform alternative energy educational efforts.

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	42974	82916	5916	2598

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	23	2	25

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of educational products and materials developed or updated for print, electronic media, radio, podcasts, or display

Year	Actual
2012	780

Output #2

Output Measure

- Number of educational activities conducted related to economics and commerce

Year	Actual
2012	7014

Output #3

Output Measure

- Number of clientele attending educational activities related to economics and commerce

Year	Actual
2012	48890

Output #4

Output Measure

- Number of participants in individual and family resource management programs
  Not reporting on this Output for this Annual Report

Output #5

Output Measure

- Communities - Number of federal grants and contracts submitted

Year	Actual
2012	6

Output #6

Output Measure

- Communities - Dollar amounts awarded in 1,000's of federal grants and contracts

Year	Actual
2012	550483

Output #7

Output Measure

- Communities - Number of non-federal grants and contracts submitted

Year	Actual
2012	10

Output #8

Output Measure

- Communities - Dollar amounts awarded in 1,000's of non-federal grants and contracts

Year	Actual
2012	111750

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of participants who increase knowledge of Community and Economic Development
2	Number of participants who indicate a change in behavior based on what they've learned about Community and Economic Development
3	Number of jobs created or retained through educational programs (APAC)
4	Dollars of revenue generated by businesses as a result of educational programs (APAC)
5	Number of participants who increase their knowledge of individual and family resource management
6	Number of participants who increase knowledge of Agricultural Economics and Agribusiness
7	Sustainable, vibrant and globally competitive agricultural sector for Arkansas as indicated by Arkansas Cash Farm Receipts (in thousand dollars) (NASS)
8	Sustainable, vibrant and globally competitive agricultural sector for Arkansas as indicated by Arkansas Net Farm Incomes (in thousand dollars) (ERS)
9	Leadership - Number of participants who increased knowledge through leadership development programs
10	Leadership - Number of participants (youth and adults) who reported conducting programs, community service projects, adopting new skills or accepting new leadership roles as a result of leadership development educational efforts
11	Number of participants who increase knowledge of Public Policy
12	Number of Public Policy participants who indicated a change in behavior

Outcome #1

1. Outcome Measures

Number of participants who increase knowledge of Community and Economic Development

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	10962

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
According to its website, the Internal Revenue Service (IRS) "believes that all tax return preparers have an obligation to stay current on the tax laws and continuing education serves to help individuals remain current and to expand their knowledge within their field of expertise." All certified public accountants (CPAs) are required to obtain continuing education (CE) in order to keep their license up-to-date. The IRS is currently working on imposing CE requirements for Registered Tax Return Preparers. The new proposal would also include that all non-exempt paid tax return preparers must, among other requirements, pass the one-time open-book test by Dec. 31, 2013. Totals reported recently reveal that an average of less than 1 percent of paid tax preparers who need to take the Registered Tax Return Preparer test have passed it so far. There are currently almost 5,800 registered preparers in Arkansas.

What has been done
Ten Income Tax Schools were held annual at various locations around Arkansas: Harrison, Fayetteville, Fort Smith, Jonesboro, West Memphis, Texarkana, Monticello, Batesville, Hot Springs and Little Rock. Unlike other commonly offered CE, the courses are held in a classroom setting allowing for face-to-face interaction with the instructors. The courses are taught by highly qualified individuals with 90 years of combined experience. In October-December 2011, just over 350 preparers were trained. Topics included: Agricultural Issues, Ethics, Long-term Care, Estate, Individual Taxpayer's Topics, IRS Update, Arkansas update, New Legislation, Retirement, Depreciation, International Tax Issues, Partnerships, Alternative Minimum Tax, Rulings and Cases, and Small Business Tax Issues.

Results
A study by the United States General Accounting Office showed that as a result of trained tax professionals, most taxpayers believe they benefit by using a paid tax preparer. Because this is a

fee-based program, the Arkansas Cooperative Extension Service is able to provide this valuable service to tax preparers and taxpayers while at the same time covering our costs. The schools enable preparers to meet CE requirements from an approved provider, renew their license, and stay gainfully employed providing more dollars into the Arkansas economy. Satisfaction with the schools is evident, with ninety percent of participants indicating they plan to attend to course again next year. When asked, "What new information did you learn?" participants most commonly cited knowledge related to depreciation; alternative minimum tax (AMT); new laws, rules and regulations; 1099K; and preparer tax identification number (PTIN).

4. Associated Knowledge Areas

KA Code	Knowledge Area
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
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
805	Community Institutions, Health, and Social Services

Outcome #2

1. Outcome Measures

Number of participants who indicate a change in behavior based on what they've learned about Community and Economic Development

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	562

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
In many rural communities access to fresh food is limited. In addition, agricultural producers are seeking way to expand their markets and boost their bottom line. As a result, there is increasing

interest farmers' markets as a strategy to benefit farmers, consumers, and the community as a whole. For example, the need for an organized farmers' market has been a discussion in Fulton County for some time. Salem, historically, had vendors selling produce around the courthouse square but without much organization, set times, or other promotion. Fulton County's classification as a "food desert" created an opportunity to provide families access to fresh food.

What has been done
As a result of this need, the Fulton County Extension Office and their volunteer organization, Master Gardeners, sought to form a farmers' market. Extension agents and faculty met with a group of 34 potential vendors, consumers, and other interested individuals to discuss basic market start-up and potential obstacles. The Fulton County Extension Office formed a committee from those in attendance and assisted the committee in establishing a set of by-laws, obtaining a market location, seeking approval from city and county officials, and organizing a formal farmers' market.

Results
As a result of Extension's efforts, the Salem Farmers' Market was up and running within 3 months of that initial meeting. The market has since been open every Saturday morning throughout the summer, providing Fulton County vegetable and flower vendors a better market to sell their products. Additionally, it has created an opportunity for Fulton County residents to buy locally grown produce and flowers, and the market has resulted in a greater sense of community on Saturday mornings around the courthouse square and boosted the local economy during these challenging financial times. This is just one example of the results of similar efforts around the state where Arkansas Extension's educational programs have resulted in real change within our communities.

4. Associated Knowledge Areas

KA Code	Knowledge Area
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
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
805	Community Institutions, Health, and Social Services

Outcome #3

1. Outcome Measures

Number of jobs created or retained through educational programs (APAC)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	890

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

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
608	Community Resource Planning and Development

Outcome #4

1. Outcome Measures

Dollars of revenue generated by businesses as a result of educational programs (APAC)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	44512139

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Government entities need qualified companies from which to purchase goods and services. Arkansas ranks near the bottom in many economic indicators, including 45th in per capital income (Bureau of Business & Economic Research, UNM, 2012). The Arkansas Procurement Assistance Center (APAC) is funded in part through a cooperative agreement from the Department of Defense (DOD) through a program administered by the Defense Logistics Agency (DLA). The purpose of the program is to generate employment and to improve the economy of Arkansas by assisting business firms in obtaining and performing under federal, state and local government contracts.

What has been done
APAC provides training and technical assistance to businesses on topics such as how to research and bid on contracts, registration requirements, and pre- and post-contracting issues. This is accomplished primarily through training workshops, individual consultations, and a regular newsletter. APAC also provides an automatic bid-match notification service to help alert businesses of potential contracting opportunities. In July 2012, APAC completed a consolidation of resources from two offices to one to leverage Arkansas Cooperative Extension Service resources more efficiently and better serve clientele statewide. In addition, staff have made a concerted effort to re-connect with inactive clients.

Results
In Program Year 2011 - 2012, APAC clients were awarded over $44.5 million in government contracts. For every dollar that it cost to provide APAC services under the Cooperative Agreement there was $103 in revenue generated in the state of Arkansas as a result of clients being awarded government contracts. APAC clients are finding value in the services bring provided. According to one client who was recently awarded a Food and Drug Administration Contract to conduct team building, coaching and mentoring training, "this is my first Federal Government Contract - all our other work has been either private or as a subcontractor to a prime. This has opened some doors - we have been asked to partner with a group in Washington, D.C. and they asked us for past performance evaluations. For the first time I have an evaluation from a federal agency - Hoo Ray!" APAC helped her with her bid preparation and when she was asked for best and final proposal, she won the award by less than $100.

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

608 Community Resource Planning and Development

Outcome #5

1. **Outcome Measures**

Number of participants who increase their knowledge of individual and family resource management

Not Reporting on this Outcome Measure

Outcome #6

1. **Outcome Measures**

Number of participants who increase knowledge of Agricultural Economics and Agribusiness

Not Reporting on this Outcome Measure

Outcome #7

1. **Outcome Measures**

Sustainable, vibrant and globally competitive agricultural sector for Arkansas as indicated by Arkansas Cash Farm Receipts (in thousand dollars) (NASS)

Not Reporting on this Outcome Measure

Outcome #8

1. **Outcome Measures**

Sustainable, vibrant and globally competitive agricultural sector for Arkansas as indicated by Arkansas Net Farm Incomes (in thousand dollars) (ERS)

Not Reporting on this Outcome Measure

Outcome #9

1. **Outcome Measures**

Leadership - Number of participants who increased knowledge through leadership development programs

2. **Associated Institution Types**

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	3266

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
This single county case study represents the potential found in local leadership development across Arkansas:

Youth of today are our leaders of tomorrow, but for teens in Bradley County, leadership opportunities can be limited due to the lack of youth organizations. Bradley County has a potential youth audience of approximately 660 between the ages of 14-19. Many of these youth live in rural areas with little or no leadership opportunities outside of 4-H.

What has been done
Bradley County provides youth with many opportunities to develop their leadership skills. There are several clubs such as Teen Leader, Shooting Sports, Livestock, Horse, and Forestry Clubs that provide these opportunities as well as judging teams. An increased number of youth attended camps and national meetings. There was also an increase in participation in competitive activities at the county, district, state, and national levels. Because the county program depends solely on club fundraising, several fundraisers were conducted, as well as community service projects.

Results
- Funding secured (grants, fund raising, premium earnings, scholarships): $16,842.00
- 74 youth learned how to wisely budget the secured funding
- 74 youth learned to organize and implement community service projects
- 74 youth learned how to conduct business meetings using parliamentary procedures
- 8 community service projects were completed
- 16 youth learned how to make effective presentations

4. Associated Knowledge Areas

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

Outcome #10

1. Outcome Measures

Leadership - Number of participants (youth and adults) who reported conducting programs, community service projects, adopting new skills or accepting new leadership roles as a result of leadership development educational efforts

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	2004

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
This single county case study represents the potential found in local leadership development across Arkansas:
Leadership is a life skill that is hard for everyone to learn in school. Many young people do not see themselves capable of being a leader due to shyness, lack of self confidence, or just by not being in the "right crowd." Tufts University Research Study shows that 4-H youth are two times more likely to actively contribute to their communities.

What has been done
Benton County Teen Leader Club's strive to teach leadership life skills including goal setting, accepting responsibility, teamwork and cooperation, communication, character, and marketable skills. During the year, members plan, conduct and evaluate summer county camps; teach workshops; preside at county 4-H functions; and attend leadership training. Twenty Teen Leader meetings were conducted to teach leadership skills. Teen Leaders planned, conducted, and evaluated three camps for 155 youth. Thirty-five Teen Leaders taught project workshops to 109 youth.

Results
Three Teen Leaders served as 2011-12 State Officers, including State President. One was elected as a 2012-13 State Officer. Ten Teen Leaders volunteered to be State Camp Counselors. Out of the seven graduating senior Teen Leaders, all seven received scholarships and attended college. Of these, all were involved in school sponsored organizations during their freshman year of college and six of those were holding at least one leadership role in student organizations and/or student government their very first semester.

4. Associated Knowledge Areas

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

Outcome #11

1. Outcome Measures

Number of participants who increase knowledge of Public Policy

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	4433

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Ballot issues are full of legal terms unknown to many of Arkansas' 1.6 million voters. The Center simplifies the language in a non partisan way and trains county agents to share potential impacts of ballot issues with voters so they can be more confident in their decisions.

What has been done
More than 20,000 copies of three ballot issue fact sheets were distributed in 2012, and versions in English and Spanish were posted online and shared on Facebook. The Center started a newsletter, which is sent to county agents and another 150 subscribers who want to be updated on ballot issues. We reached more than 500 people with presentations based on the fact sheets. We also trained 49 county agents to give similar presentations, especially in low voter turnout counties, or to answer voter questions.

Results
Thousands of Arkansans had access to research-based information on the ballot issues, something that is not readily provided elsewhere in the state.

The Secretary of State's Office referred voters to our website for ballot issue education. Newspapers with a combined circulation of more than 200,000 subscribers printed election news stories citing our fact sheets and AETN aired our ballot program four times to an estimated 40,000 viewers. County agents reported positive feedback from residents, who indicated they better understood the ballot issues.

4. Associated Knowledge Areas

KA Code	Knowledge Area
602	Business Management, Finance, and Taxation
610	Domestic Policy Analysis

Outcome #12

1. Outcome Measures

Number of Public Policy participants who indicated a change in behavior

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1677

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
602	Business Management, Finance, and Taxation
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
- Populations changes (immigration, new cultural groupings, etc.)
- Other (Interstate Policy Issues)

Brief Explanation

While external factors in some instances delayed outcomes, all were met.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

One of the systematic measures that we use to determine program impacts and the needs of the communities we serve is the data that informs individual county profiles. The state "Rural Profile" and economic trend data (available in ten year increments) are also valuable for community assessment. The data is used to interpret the economic circumstance of individual counties and communities. Trend data informs local leadership with regard to factors influencing the economic health of local government. It also informs Extension efforts to provide public policy guidance and choice in alternative policy tools.

Key Items of Evaluation

Drought and Disaster Economic Impact Assessment
Jobs Created and Contract Dollars Produced (related to government contracting)
Individual Goals Achieved by Leadership Development Participants

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Pest Management

☐ Reporting on this Program

Reason for not reporting

The University of Arkansas Division of Agriculture chose to align our Planned Programs to our Strategic Plan program areas. This decision will allow Arkansas to better communicate our efforts back to NIFA.
The data and information that would have been reported to Pest Management is now located under Agricultural Production & Processing.

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	30.6	0.0	2.2	0.0
Actual Paid Professional	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
Actual Volunteer	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

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

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

V(D). Planned Program (Activity)

1. Brief description of the Activity

Moved.

2. Brief description of the target audience

Moved.

3. How was eXtension used?

Moved.

V(E). Planned Program (Outputs)

1. Standard output measures

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

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

Patent Applications Submitted

Year: 2012

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- # of farm tours related to pest management

Year	Actual
2012	0

Output #2

Output Measure

- # of farm visits made related to pest management

Year	Actual
2012	0

Output #3

Output Measure

- # of pesticide applicator education classes

Year	Actual
2012	0

Output #4

Output Measure

- # of homeowner education classes related to pest management

Year	Actual
2012	0

Output #5

Output Measure

- # of research field days related to pest management

Year	Actual
2012	0

Output #6

Output Measure

- # of workshops related to pest management

Year	Actual
2012	0

Output #7

Output Measure

- # of newsletter articles related to pest management

Year	Actual
2012	0

Output #8

Output Measure

- # of Arkansas Commodity Board grants received

Year	Actual
2012	0

Output #9

Output Measure

- # of federal grants and contracts

Year	Actual
2012	0

Output #10

Output Measure

- # of educational classes related to pest management

Year	Actual
2012	0

Output #11

Output Measure

- # of Pest Management clientele contacts from education classes, workshops, group discussions, one-on-one interventions, demonstrations, and other educational methods

Year	Actual
2012	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	# of participants gaining knowledge of proper pesticide application practices
2	# of participants passing commercial pesticide certification exams
3	# of submissions to diagnostic clinic
4	# of clients using scouting programs
5	# of pest monitoring traps utilized
6	Annual soybean yield - bushels per acre
7	Annual value of soybean production (1,000 Dollars)
8	Annual rice (all) yield -- pounds per acre
9	Annual value of rice (all) production (1,000 dollars)
10	Annual cotton (all) yield -- pounds per acre
11	% of soybean acreage receiving herbicide applications
12	Pounds (1,000) of herbicides applied to planted soybean acreage
13	% of soybean acreage receiving insecticide applications
14	Pounds (1,000) of insecticides applied to planted soybean acreage
15	% of soybean acreage receiving fungicide applications
16	Pounds (1,000) of fungicides applied to planted soybean acreage

Outcome #1

1. Outcome Measures

# of participants gaining knowledge of proper pesticide application practices

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)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #2

1. Outcome Measures

# of participants passing commercial pesticide certification exams

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #3

1. Outcome Measures

# of submissions to diagnostic clinic

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual

2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #4

1. Outcome Measures

# of clients using scouting programs

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #5

1. Outcome Measures

# of pest monitoring traps utilized

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #6

1. Outcome Measures

Annual soybean yield - bushels per acre

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #7

1. Outcome Measures

Annual value of soybean production (1,000 Dollars)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #8

1. Outcome Measures

Annual rice (all) yield -- pounds per acre

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #9

1. Outcome Measures

Annual value of rice (all) production (1,000 dollars)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #10

1. Outcome Measures

Annual cotton (all) yield -- pounds per acre

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #11

1. Outcome Measures

% of soybean acreage receiving herbicide applications

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #12

1. Outcome Measures

Pounds (1,000) of herbicides applied to planted soybean acreage

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #13

1. Outcome Measures

% of soybean acreage receiving insecticide applications

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #14

1. Outcome Measures

Pounds (1,000) of insecticides applied to planted soybean acreage

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #15

1. Outcome Measures

% of soybean acreage receiving fungicide applications

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #16

1. Outcome Measures

Pounds (1,000) of fungicides applied to planted soybean acreage

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 7

1. Name of the Planned Program

Plants & Plant Products

☐ Reporting on this Program

Reason for not reporting

The University of Arkansas Division of Agriculture chose to align our Planned Programs to our Strategic Plan program areas. This decision will allow Arkansas to better communicate our efforts back to NIFA.
The data and information that would have been reported to Plant & Plant Products is now located under Agricultural Production & Processing.

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	17.4	0.0	8.9	0.0
Actual Paid Professional	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
Actual Volunteer	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

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

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

V(D). Planned Program (Activity)

1. Brief description of the Activity

Moved.

2. Brief description of the target audience

Moved.

3. How was eXtension used?

Moved.

V(E). Planned Program (Outputs)

1. Standard output measures

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

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

Patent Applications Submitted

Year: 2012

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- # of production education meetings related to production of agronomic non-food crops

Year	Actual
2012	0

Output #2

Output Measure

- # of demonstrations/on-farm research related to production of non-food crops

Year	Actual
2012	0

Output #3

Output Measure

- # of farm visits related to production of non-food crops

Year	Actual
2012	0

Output #4

Output Measure

- # of row crop field days related to production of non-food crops

Year	Actual
2012	0

Output #5

Output Measure

- # of educational meetings, demonstrations, field days, site visits, and other group events held to educate commercial and consumer clientele in horticulture

Year	Actual
2012	0

Output #6

Output Measure

- # of educational meetings, demonstrations, farm visits and/or field days held to educate clientele on forage production and grazing management

Year	Actual
2012	0

Output #7

Output Measure

- # of clientele participating in educational events related to non-food crop production

Year	Actual

2012	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	# of forage producers who gained knowledge, changed or adapted new management practices or technology
2	# of new Master Gardeners trained and certified
3	# of forage producers who changed or adopted a new forage and/or grazing management practice or technology
4	# of Master Gardeners who recertified
5	# of new horticultural businesses and new farmers markets
6	Total production (bales) of harvested cotton (all)
7	Total production (tons) harvested of hay (all)
8	# of clientele who make plant management decisions based on COTMAN

Outcome #1

1. Outcome Measures

# of forage producers who gained knowledge, changed or adapted new management practices or technology

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)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #2

1. Outcome Measures

# of new Master Gardeners trained and certified

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)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #3

1. Outcome Measures

# of forage producers who changed or adopted a new forage and/or grazing management practice or technology

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #4

1. Outcome Measures

# of Master Gardeners who recertified

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #5

1. Outcome Measures

# of new horticultural businesses and new farmers markets

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #6

1. Outcome Measures

Total production (bales) of harvested cotton (all)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #7

1. Outcome Measures

Total production (tons) harvested of hay (all)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #8

1. Outcome Measures

# of clientele who make plant management decisions based on COTMAN

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 8

1. Name of the Planned Program

Childhood Obesity

☐ Reporting on this Program

Reason for not reporting

The University of Arkansas Division of Agriculture chose to align our Planned Programs to our Strategic Plan program areas. This decision will allow Arkansas to better communicate our efforts back to NIFA.
The data and information that would have been reported to Childhood Obesity is now located under Access to Safe & Nutritious Food.

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	25.0	0.0	4.0	0.0
Actual Paid Professional	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
Actual Volunteer	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

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

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

V(D). Planned Program (Activity)

1. Brief description of the Activity

Moved.

2. Brief description of the target audience

Moved.

3. How was eXtension used?

Moved.

V(E). Planned Program (Outputs)

1. Standard output measures

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

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

Patent Applications Submitted

Year: 2012

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- # grants/contracts funded in support of childhood obesity issues

Year	Actual
2012	0

Output #2

Output Measure

- # of 4-H/Youth Food, Nutrition and Physical activity programs delivered related to eating healthy and being active

Year	Actual
2012	0

Output #3

Output Measure

- # of participants in 4-H/ Youth Food, Nutrition, and Physical Activity programs related to eating healthy and being active

Year	Actual
2012	0

Output #4

Output Measure

- # of funded Federal grants and/or contracts

Year	Actual
2012	0

Output #5

Output Measure

- # of adult clientele contacts from educational events (educational classes, workshops, group discussions, one-on-one interventions, demonstrations and other educational activities) related to eating healthy and being active

Year	Actual
2012	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	# of children and youth who increased consumption of foods recommended by the U.S. Dietary Guidelines for Americans.
2	# of families/caregivers who increased consumption of foods recommended by the U.S. Dietary Guidelines for Americans.
3	# of Children/Youth who intend to adopt healthy eating patterns.
4	# of Families/Caregivers who intend to adopt healthy eating patterns.
5	# of Children/Youth who gained knowledge of foods to increase as recommended by the U.S. dietary Guidelines for Americans.
6	# of Families/Caregivers who gained knowledge of foods to increase as recommended by the U.S. dietary Guidelines for Americans.
7	# of Children/Youth who gained knowledge of foods to decrease as recommended by the U.S. dietary Guidelines for Americans.
8	# of Families/Caregivers who gained knowledge of foods to decrease as recommended by the U.S. dietary Guidelines for Americans.
9	# of Children/Youth who gained knowledge about healthy eating patterns.
10	Number and/or increased/improved technologies and processes that enhance the nutritional value and marketability of foods and food products.
11	Number increased as it relates to the generation, dissemination, and utilization of research to support dietary recommendations and their adoption.
12	# of environmental changes implemented to support healthy eating guidelines.
13	# of Children/Youth who increased their physical activity and/or reduced sedentary time.
14	# of Families/Caregivers who increased their physical activity and/or reduced sedentary time.
15	# of Children/Youth who increased physical activity to 60 minutes or more daily.
16	# of Families/Caregivers who plan time together for physical activity following an Extension program.
17	# of Children/Youth who understand the importance of balancing food intake and physical activity.

18	# of environmental changes implemented to support physical activity guidelines.
19	# of families with children who supplement their diets with healthy foods that they produce/preserve/obtain utilizing community/backyard gardens, fishing, hunting, etc.
20	# of stakeholders who made healthy foods more accessible in their communities in personally and socially acceptable ways.
21	# of families with children who access/produce/preserve healthy foods.
22	# of families with children who increased knowledge of how to access/produce/preserve healthy foods.

Outcome #1

1. Outcome Measures

# of children and youth who increased consumption of foods recommended by the U.S. Dietary Guidelines for Americans.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area

{No Data} null

Outcome #2

1. Outcome Measures

# of families/caregivers who increased consumption of foods recommended by the U.S. Dietary Guidelines for Americans.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #3

1. Outcome Measures

# of Children/Youth who intend to adopt healthy eating patterns.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #4

1. Outcome Measures

# of Families/Caregivers who intend to adopt healthy eating patterns.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual

2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #5

1. Outcome Measures

# of Children/Youth who gained knowledge of foods to increase as recommended by the U.S. dietary Guidelines for Americans.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #6

1. Outcome Measures

# of Families/Caregivers who gained knowledge of foods to increase as recommended by the U.S. dietary Guidelines for Americans.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #7

1. Outcome Measures

# of Children/Youth who gained knowledge of foods to decrease as recommended by the U.S. dietary Guidelines for Americans.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #8

1. Outcome Measures

# of Families/Caregivers who gained knowledge of foods to decrease as recommended by the U.S. dietary Guidelines for Americans.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #9

1. Outcome Measures

# of Children/Youth who gained knowledge about healthy eating patterns.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual

2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #10

1. Outcome Measures

Number and/or increased/improved technologies and processes that enhance the nutritional value and marketability of foods and food products.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #11

1. Outcome Measures

Number increased as it relates to the generation, dissemination, and utilization of research to support dietary recommendations and their adoption.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #12

1. Outcome Measures

# of environmental changes implemented to support healthy eating guidelines.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #13

1. Outcome Measures

# of Children/Youth who increased their physical activity and/or reduced sedentary time.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #14

1. Outcome Measures

# of Families/Caregivers who increased their physical activity and/or reduced sedentary time.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual

2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #15

1. Outcome Measures

# of Children/Youth who increased physical activity to 60 minutes or more daily.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #16

1. Outcome Measures

# of Families/Caregivers who plan time together for physical activity following an Extension program.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #17

1. Outcome Measures

# of Children/Youth who understand the importance of balancing food intake and physical activity.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #18

1. Outcome Measures

# of environmental changes implemented to support physical activity guidelines.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #19

1. Outcome Measures

# of families with children who supplement their diets with healthy foods that they produce/preserve/obtain utilizing community/backyard gardens, fishing, hunting, etc.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual

2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #20

1. Outcome Measures

# of stakeholders who made healthy foods more accessible in their communities in personally and socially acceptable ways.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #21

1. Outcome Measures

# of families with children who access/produce/preserve healthy foods.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #22

1. Outcome Measures

of families with children who increased knowledge of how to access/produce/preserve healthy foods.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 9

1. Name of the Planned Program

Food Safety

☐ Reporting on this Program

Reason for not reporting

The University of Arkansas Division of Agriculture chose to align our Planned Programs to our Strategic Plan program areas. This decision will allow Arkansas to better communicate our efforts back to NIFA.
The data and information that would have been reported to Food Safety is now located under Access to Safe & Nutritious Food.

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	3.5	0.0	6.0	0.0
Actual Paid Professional	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
Actual Volunteer	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

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

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

V(D). Planned Program (Activity)

1. Brief description of the Activity

Moved.

2. Brief description of the target audience

Moved.

3. How was eXtension used?

Moved.

V(E). Planned Program (Outputs)

1. Standard output measures

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

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

Patent Applications Submitted

Year: 2012

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of participants in educational programs leading to certification for food handlers (ServSafe and Better Process Control School)

Year	Actual
2012	0

Output #2

Output Measure

- Number of participants in quarterly HACCP roundtables

Year	Actual
2012	0

Output #3

Output Measure

- Number of ServSafe classes offered

Year	Actual
2012	0

Output #4

Output Measure

- Number of Food Safety clientele contacts from education classes, workshops, group discussions, one-on-one interventions, demonstrations, and other educational methods

Year	Actual
2012	0

Output #5

Output Measure

- Number of Food Safety education classes, workshops, group discussions, one-on-one interventions, demonstrations, and other educational events

Year	Actual
2012	0

Output #6

Output Measure

- Numbers of federal grants written and received in food safety.

Year	Actual
2012	0

Output #7

Output Measure

- Number of commodity grants written and received in food safety.

Year	Actual

2012	0

Output #8

Output Measure

- Number of Online Master of Agriculture (Food Safety Emphasis) students enrolled in courses.

Year	Actual
2012	0

Output #9

Output Measure

- Number of all other grants written and funded.

Year	Actual
2012	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of participants who indicated that they increased their knowledge related of Food Safety following an educational class, seminar or workshop.
2	Number of participants receiving certification in Better Process Control and ServSafe
3	Number of participants who adopted positive safe food handling practices.

Outcome #1

1. Outcome Measures

Number of participants who indicated that they increased their knowledge related of Food Safety following an educational class, seminar or workshop.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #2

1. Outcome Measures

Number of participants receiving certification in Better Process Control and ServSafe

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #3

1. Outcome Measures

Number of participants who adopted positive safe food handling practices.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual

2012 0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

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
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 10

1. Name of the Planned Program

Sustainable Energy

☐ Reporting on this Program

Reason for not reporting

The University of Arkansas Division of Agriculture chose to align our Planned Programs to our Strategic Plan program areas. This decision will allow Arkansas to better communicate our efforts back to NIFA.
The data and information that would have been reported to Sustainable Energy is now located under Environment, Energy, and Climate.

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	5.0	0.0	4.0	0.0
Actual Paid Professional	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
Actual Volunteer	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

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

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

V(D). Planned Program (Activity)

1. Brief description of the Activity

Moved.

2. Brief description of the target audience

Moved.

3. How was eXtension used?

Moved.

V(E). Planned Program (Outputs)

1. Standard output measures

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

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

Patent Applications Submitted

Year: 2012

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of educational programs and events held related to sustainable energy.

Year	Actual
2012	0

Output #2

Output Measure

- Number of field days related to sustainable energy

Year	Actual
2012	0

Output #3

Output Measure

- Number of educational materials & curriculum developed

Year	Actual
2012	0

Output #4

Output Measure

- Geo-referenced energy models developed

Year	Actual
2012	0

Output #5

Output Measure

- Number of locations for bioenergy crop demonstrations and research fields.

Year	Actual
2012	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Individuals adopting one practice from the recommended list of energy conserving practices.
2	Energy audits conducted.
3	# of livestock clientele who gained knowledge related to manure to energy issues (Short Term)

Outcome #1

1. Outcome Measures

Individuals adopting one practice from the recommended list of energy conserving practices.

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)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #2

1. Outcome Measures

Energy audits conducted.

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)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #3

1. Outcome Measures

# of livestock clientele who gained knowledge related to manure to energy issues (Short Term)

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)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 11

1. Name of the Planned Program

Climate Change

☐ Reporting on this Program

Reason for not reporting

The University of Arkansas Division of Agriculture chose to align our Planned Programs to our Strategic Plan program areas. This decision will allow Arkansas to better communicate our efforts back to NIFA.
The data and information that would have been reported to Climate Change is now located under Environment, Energy, and Climate.

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	1.6	0.0	1.5	0.0
Actual Paid Professional	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
Actual Volunteer	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

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

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

V(D). Planned Program (Activity)

1. Brief description of the Activity

Moved.

2. Brief description of the target audience

Moved.

3. How was eXtension used?

Moved.

V(E). Planned Program (Outputs)

1. Standard output measures

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

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

Patent Applications Submitted

Year: 2012

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Funded research amounts (in dollars).

Year	Actual
2012	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of metrics developed for greenhouse gas emissions in agriculture.
2	Life cycle inventory methodology and data for row crops for greenhouse gases.

Outcome #1

1. Outcome Measures

Number of metrics developed for greenhouse gas emissions in agriculture.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #2

1. Outcome Measures

Life cycle inventory methodology and data for row crops for greenhouse gases.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

V(H). Planned Program (External Factors)

External factors which affected outcomes
- Other (Global climate change)

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}