2008 University of Arkansas Combined Research and Extension Annual Report of Accomplishments and Results

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I. Report Overview

1. Executive Summary

The Division of Agriculture is one of 13 major units of the University of Arkansas System. This past year the Division of Agriculture officially marked the 50th anniversary of its founding by the University of Arkansas. The goal of the University of Arkansas, Division of Agriculture is to improve the quality of life for all Arkansans. The University of Arkansas Division of Agriculture works to ensure that the producers who work the land remain firmly connected to the latest in research and technology. That's no small job in a state where agricultural sales total nearly $16 billion and where growers rank in the top 10 nationally in nine plant or livestock crops. Division faculty — located on five campuses, at five research centers and in extension offices in all 75 counties — also help to improve the health and nutrition of Arkansans; conserve and sustain natural resources; and expand horizons for youth, families and communities. Through research, we discover exciting new innovations and technologies. Through education, we bring that information to Arkansans from all walks of life.

The yearlong Arkansas 4-H Centennial celebration in 2008 recognized 100 years of Arkansas 4-H youth development efforts. The Centennial brought in more than $250,000 in donations for 4-H, thanks to sponsorships, a Centennial Circle club fundraiser and the Arkansas 4-H Centennial gala, the year's crowning event. Net proceeds are being applied toward a scholarship endowment. Leadership gifts given during the Centennial year from AgHeritage Farm Credit Services, Arkansas Farm Bureau, Tyson Foods and Bank of America enhanced the ability of 4-H and the 4-H Foundation to provide services and scholarships to Arkansas 4-H members. Each year the 4-H Foundation provides $60,000 in scholarships to Arkansas youth.

Arkansas consumers have experienced sticker shock at the gas pump and grocery store this past year. Division consumer science state and county faculty launched the Arkansas Saves campaign and educational program to help individuals and families build wealth and increase financial security. The Arkansas Saves program provided easy to use tools, tips and resources to help participants achieve their financial goals, including paying down debt, home ownership, and/or retirement planning.

Tremendous growth in Hispanic immigration during the last decade has driven a dramatic shift in the ethnic landscape of Arkansas. The Hispanic population has risen more than 500 percent since 1990. Division of Agriculture family and consumer science programs have been adapted and translated to meet the emerging needs of this evolving and growing clientele. The Expanded Food and Nutrition and Eating and Moving for Life programs have both been adapted to serve the ethnic needs of Hispanic families. EFNEP teaches families on a limited income how to provide a healthy, nutritious diet. All of the EFNEP literature and lessons have been translated into Spanish. More Extension programs are on the drawing board or starting up for this target audience, including youth development and entrepreneurship programs.

Adding "energy" to food and fiber as farm commodities has helped energize the agricultural sector of the Arkansas economy. For the past two years Arkansas row-crop farmers have been riveted to the Chicago Board of Trade box scores for the futures markets. They tell a fascinating story. Demand for corn to produce ethanol and for soybeans and animal fat for biodiesel have contributed to the high commodity prices, which are monitored and analyzed by Division agricultural economists. In just two years, corn and wheat prices tripled, while rice and soybeans more than doubled. On the flip side, the 2008 crops were the most expensive ever grown. Input costs have challenged Arkansas producers to improve efficiency in every way possible. The Division's Global Rice Marketing and Policy Program provides analysis and leadership for the multi-state Food and Agricultural Policy Research Institute (FAPRI).

While farmers experienced a large increase in commodity crop values, livestock producers felt the most significant effect in prices paid for feed. On May 14, 2008 a new Division of Agriculture research and demonstration facility was dedicated for byproducts feeds research with a targeted outcome to reduce cattle feeding costs. High feed and fuel prices likewise hit Arkansas catfish farmers at a time when market prices were depressed due to imports from China and Vietnam. The pond acreage in Arkansas declined about 2,000 acres to 28,000 and is expected to be much lower this next year. The housing slump and rising fuel prices have likewise suppressed the timber industry, which is one of the leading Arkansas employers. Hundreds of thousands of Arkansans work in jobs generated by Arkansas agriculture. It's a cycle that powers Arkansas's economy. At 16 percent of the state's total labor income, it represents a significant part of Arkansas's payroll.

Severe weather added another layer of difficulty to the lives of Arkansans as waves of tornadoes and flooding afflicted the state starting in January 2008. Between January and May, 17 Arkansans died from multiple tornadoes and windstorms. Division of Agriculture Extension agents provided immediate service, dodging fallen trees and power lines to help clients assess damage

and clean up. 4-H club members around the state delivered food, water and comfort kits to neighbors whose homes were damaged or destroyed. Agricultural economists and statisticians worked to determine the acreage of row crops, poultry and livestock destroyed from spring flooding. Later, community development faculty met with leaders in various communities to help rebuild and prepare for the next disaster, through a Triumph over Tragedy outreach program. The Arkansas Procurement Assistance Center (APAC) also worked with clientele identifying government contractors for debris removal, hazardous material remediation and disposal of animal carcasses. APAC also steered storm victims toward the appropriate emergency management and Federal Surplus Property offices for assistance.

Agriculture provides approximately 18 percent of all value-added in Arkansas or $15.9 billion, which represents a substantial component of Arkansas's economy. Value added includes payments to workers plus indirect taxes and other property-type income such as payments for rents, royalties and dividends.

The total economic impact of the Arkansas agricultural sector includes three areas of wealth and job generation.

- Direct Impacts are generated by farm production and processing of crops, poultry, livestock, and forest products.

- Indirect Impacts result when agricultural firms purchase materials and services from other Arkansas businesses — a very important part of the economy in many communities.

- Induced Impacts result when employees of agricultural firms and their suppliers spend a portion of their income within Arkansas.

With 46,500 farms on 14,300,000 acres, Arkansas ranks 11th nationally in total farm receipts. It ranks 4th in timber production, with about 18,000,000 acres of forest land representing approximately 56 percent of the total land base. Arkansas is the largest producer of rice in the nation and ranks 21st or higher for the production of 19 different commodities.

Arkansas agriculture contributes a larger share to the state's Gross Domestic Product than does agriculture in neighboring states and the U.S. economy. Agricultural production, processing and retail account for 11.6 percent of the Gross Domestic Product by state. This compares to about 7 percent for the southeast U.S., and 5.2 percent nationwide. Agriculture is vital to the diverse, interactive economy of Arkansas as well as to our very identity as "The Natural State." (Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Accounts Data, 2008)

With our statewide infrastructure, we are well positioned for our mission. Research and extension facilities, faculty and staff are located on five university campuses, five regional centers, eight branch stations and four specialized units. We also have extension faculty and staff in all 75 Arkansas counties. The UA Division of Agriculture reaches more than 2.72 million Arkansans through research, teaching and educational programs. In FY2008, 1,474.816 direct educational contacts were made by Cooperative Extension faculty with Arkansas citizens. Total financial value of volunteer hours (managed through Extension) to Arkansas communities for 2008 was $7,532,583.20.

This executive summary provides examples of a range of impacts from the integrated Division of Agriculture efforts in our ten planned program areas.

1. Agricultural & Food Biosecurity

Crop biosecurity strengthened - Plant disease diagnostic research and monitoring systems developed by the Division of Agriculture in cooperation with other agencies have led to earlier detection of crop disease threats. The system includes an upgraded diagnostic clinic, grower education, training of first detectors and biosecurity action planning.

Avian influenza vaccine tests under way - Division of Agriculture scientists, in collaboration with the USDA/ARS Southeastern Poultry Research Laboratory in Georgia, have developed candidate bacterial-vectored vaccine strains to protect poultry flocks from infection by various strains of avian influenza (AI) virus including the H5N1 strain that has infected humans in Asia, Africa, Europe and the Near East. The candidate vaccine strains are more stable than current influenza vaccines, which must be updated to match strains of virus in circulation. New candidates are currently undergoing testing for the Asian H5N1 virus, and a presently evaluated candidate provides protective immunity against current and future low pathogenicity AI virus strains.

2. Agricultural Systems

Restoring quail habitat - Bobwhite quail habitat and populations have been shrinking, but the Division of Agriculture is aiming to change that through quail habitat demonstration projects. The projects demonstrated ways for private and public landowners to improve bobwhite quail habitat on their property. Projects are under way at the Division's Savoy Unit in northwest Arkansas, the Newport Research Station in Jackson County, the Southwest Research and Extension Center at Hope and at the Winthrop Rockefeller Institute on Petit Jean Mountain. The projects demonstrate such practices as eradicating undesirable vegetation, converting fescue and Bermuda pasture to native warm-season grasses, strip disking, shrub establishment and pine/bluestem ecosystem management.

3. Animals & Animal Products

Poultry production - Extension state faculty member Susan Watkins has focused on assisting the broiler, turkey and layer industry with live production issues. She has become a nationally and internationally recognized authority on optimizing drinking water. Watkins also works with the industry on environmental issues, energy savings, equipment evaluations and sanitation. As a national leader, she has served as the director of the National Egg Quality School for four years and was the chair of the 2006 National Poultry Waste Symposium. In 2007, she was named as one of the Top Gun Poultry Industry Problem Solvers by WATT Poultry USA.

Helping cattle producers meet economic challenges - Livestock producers have suffered and will continue to suffer from increasing costs of production. Never before have feed, fertilizer and fuel costs increased so dramatically over a short period of time. To help producers, the Division of Agriculture has developed the 300 Day Grazing Program. The goal is to use farm demonstration practices to increase the number of grazing days, reduce the need for nitrogen fertilizer and improve storage and hay feeding efficiency. The program is aimed at producers of beef and dairy cattle and sheep, goat and horse owners. Ongoing support from Farm Credit Services of Western Arkansas provided funding for the Animal Science faculty to build and present additional programs that positively impact beef cattle producers, such as Beef IQ, and equine enthusiasts. Farm Credit Services of Western Arkansas has supported the Beef Cattle and Forage Management Program since 2003 and sponsors the River Valley Beef Cattle Conference and the North Central Beef Cattle Conference.

Immortal cell lines yield better vaccines - Division scientists are developing an alternative process for producing vaccines against diseases that impact poultry. The new technology includes development of immortal chicken cell lines as substrates for the vaccines. It's a more reliable, safer and lower cost alternative to using egg and primary cell cultures, which can be highly variable and can become contaminated.

Stress in chickens similar to humans - Division scientists found that release of a stress hormone over time can be explained at the cellular level in birds. This finding is useful for research on the response of poultry flocks to various kinds of stress. It also supports the use of the chicken as a biomedical model for studying the stress response in humans and other animals at the cellular and intercellular levels.

Poultry feed additive reduces Campylobacter - Division scientists have found that caprylic acid, a natural compound found in breast milk and coconut oil, when added to poultry feed reduces Campylobacter populations in the birds. This treatment could help reduce the incidence of this pathogenic bacteria on poultry products. However, meat and poultry must always be cooked to a temperature that will kill any pathogenic organisms.

Equine ambassadors for agriculture - The Division of Agriculture's Dorothy E. King Equine Program conducted public education for horse owners and equine support businesses in 2008. The program also produced three major annual events: the Razorback Roundup Horse and Livestock Auction, the Royal Lipizzan Stallion Show and the U of A Horse Festival. These events involved University of Arkansas students and are attended by several thousand guests each year. These and other special events are a point of contact for many urban residents with the Division of Agriculture and the animal science program at the University of Arkansas. They also generate revenue and gifts for support of the equine program.

4. Economics & Commerce

Understanding the new farm bill - In 2008, the United States enacted into law a new farm bill to govern federal farm and food policy through September 2012. It provides support for commodity crops, horticulture and livestock, conservation, nutrition, trade and food aid, agricultural research, farm credit, rural development, energy, forestry and other related programs. The Division of Agriculture has been interpreting this complex new law for farmers through a series of radio scripts, podcasts and videos at www.uaex.edu. The Division also has online publications and information that can help explain farm bill provisions. Division economists also conducted a series of meetings with the USA Rice Federation and participated with a number of partners to conduct five public meetings on the farm bill around the state.

Youth financial literacy - Many young people are unskilled in managing their personal finances, yet this crucial life skill will

greatly affect their future economic wellbeing. The aim of the Division of Agriculture's youth financial literacy effort is to help youth understand the basics of money management and develop sound financial habits to expand their opportunities for the rest of their lives. Agents and specialists delivered 237 programs to 1,325 students in 2007-08. Responses to post-program surveys indicated that 92 percent of the participants increased their knowledge of recommended financial management practices; 97 percent increased knowledge of recommended savings practices; 99 percent learned wise use of resources and 71 percent reported an increase in savings.

5. Families, Youth & Communities

The University of Arkansas Division of Agriculture is about more than growing crops. It's also about the life cycles that strengthen families, develop children and bind us to healthy, productive communities. Through Community Development, Family and Consumer Sciences programs and 4-H Youth Development, the Division helps keep Arkansans healthy and strong from youth to maturity.

Child care professionals reveal needs - A survey of child care professionals provided a wealth of data on the extent to which they felt competent in various aspects of their work with children. This data set is being used to study factors such as educational levels, training in child development, years in child care, job benefits needed and degree of competency. Results will help inform policymakers of ways to improve child care services.

Best Care - Division specialists, technicians and support staff developed 10 hours of multi-disciplinary child care provider training with a new research-based curriculum written in 2008. The curriculum addressed topics in key subject-matter areas, including resource management, nutrition, health and safety and child development. The program was offered free of charge through extension county agents. The training is designed for parents, early childhood professionals who need verified hours to maintain licensure and others working with young children. During the past fiscal year, more than 3,500 participants went through the Best Care program, with 2,000 of these participants being new registrants.

Best Care Connected is an online course providing five hours of free verified training to child care providers. The course was offered two times during FY2008. Participants studied the lessons and completed quizzes online. Five one-hour lessons were developed in the areas of child development, health and safety, and food and nutrition. Participants must receive a passing score on every quiz in order to complete the five hours of training. The Best Care Connected Web site received just under 14,200 hits during the past fiscal year. Best Care Connected passed 283 participants during the Fall 2007 course and 638 participants in the Spring 2008 course.

Navigating the Financial Journey - The objective of Navigating the Financial Journey is to equip adults with the knowledge and skills needed to practice effective consumer behavior in money management, budget development, use of credit and consumer protection. The four-hour seminar is approved as certified financial management education for Arkansas bankruptcy filers. Navigating the Financial Journey is a basic financial management program that covers four main topic areas: financial planning, budget development, credit and consumer protection. Division of Agriculture extension agents conducted this program to 1,374 participants during FY2008. Workshops were conducted for both the general public and for bankruptcy filers. Upon completion of the workshops, 52 percent of participants reported intent to adopt one or more of the recommended financial management practices, and 20 percent reported an actual behavior change by adopting one or more of the recommended practices.

ATV safety - Arkansas averages more than 15 ATV- related deaths every year and has one of the nation's highest rates of injury for youth 16 years and younger. In Arkansas, we ride ATVs for work and recreation, so knowing the safe way to ride can save a life or a trip to the emergency room. The Division's 4-H youth development program offers the ATV Safety Institute's (ASI) RiderCourse to help youth and adults learn to safely and properly ride ATVs. The 4-H program trained 16 Division faculty and staff in the ASI RiderCourse so that they may then administer the program to the youth and adults in their counties. In addition to this training, approximately 300 4-H youth participated in the program during various 4-H workshops throughout the summer 0f 2008.

Fathers Count - Many faith and community leaders in Arkansas are called upon by the people they serve to provide parenting/fatherhood advice and counsel. Many of these leaders, though, have no formal training in parent education. In an effort to provide better fatherhood education throughout the state of Arkansas, the Division provided five two-day train-the-trainer sessions for the Fathers Count program in different locations around the state. During the five trainings, 120 faith and community leaders were trained on effective parenting and fatherhood techniques. These leaders then went out into their communities and subsequently taught the techniques to more than 2,700 Arkansans.

Family dynamics of elder support - Division researchers are using data from a national survey to study the dynamics of family members providing care for older members of the family. The study sheds light on the attitudes and behaviors of family

members who are in a position to provide support and family members who receive support. It also examines the impacts on both the givers and recipients of support. Such information will help inform policymakers and support agencies as they address issues related to the worldwide phenomenon of a population with a growing proportion of persons age 65 and older.

ExCEL Leadership and Teambuilding - (ExCEL) is an outdoor adventure and leadership program. It uses dynamic outdoor activities to translate leadership skills immediately into real-life situations. Participants are guided through the program by Division of Agriculture educators experienced in working with youths and adults. The ExCEL program is the state's largest and most experiences challenge course. More than 3,300 youth and adults completed the ExCEL program during the past fiscal year. In addition to increasing participation in the program, ExCEL was voted "Best Teambuilding in Arkansas" by the readers of Arkansas Business as part of the publication's annual Best in Business survey.

SEEK and RES-Q - During the 2007-08 school year, Arkansas students were on a quest to learn responsible environmental stewardship. The Division's Responsible Environmental Stewardship-Quest (RES-Q) and Science Enrichment Education for Kids (SEEK) programs taught more than 6,300 students about conservation. Students participated in environmental education programs incorporating science, math, social studies, communication, art, music and health. They worked in groups with hands-on activities while participating in water ecology, adventure games and other environmental education classes. SEEK was established to help meet the science and socialization needs of homeschooled students and their parents.

6. Food, Nutrition, & Health

In the University of Arkansas Division of Agriculture, research and education are the basis of a cycle that helps Arkansans maintain a healthy lifestyle. Whether it's examining food safety issues, the nutritional benefits of a food or helping manage weight and other lifestyle factors, the Division of Agriculture works to strengthen connections to healthy living.

Secure Connections through Nanotechnology - Ensuring safe and secure food, fiber and fuel are part of the University of Arkansas Division of Agriculture's mission of service to Arkansans. Our researchers are always at work to make sure our connections to the food, fuel and fiber supplies we need the most are firmly secured. Rapid pathogen tests use nanotechnology. Nanotechnology is providing new methods for rapid and accurate detection of pathogens on food products. Division scientists have developed and are testing a prototype biosensor system for detection of Listeria, Salmonella and E. coli 0157:H7. The system uses magnetic nanobeads that flow through bundles of nanotubes and nanowires. Changes in dielectric properties of nanofibers caused by captured bacteria can be measured and correlated to bacteria cell numbers.

Antimicrobials enhance beef safety and color - Meat and poultry must always be cooked to a temperature that will kill any pathogenic organisms. However, consumer confidence can be increased by antimicrobial treatments. Division scientists discovered that steaks treated with food-grade antimicrobials had lower microbial populations and maintained their red color longer than untreated steaks.

Irradiation could reduce beef prices - Color has been shown to be the single most important consideration to consumers purchasing ground beef. After about two days in a display case, ground beef loses the red color that consumers prefer. Researchers found that electron beam irradiation of ground beef extended the red color shelf life of ground beef in a display case to nine days, which could reduce waste for retailers and beef prices for consumers.

Underlying obesity issues studied - The Division of Agriculture is collecting data to analyze underlying issues of obesity. The data includes measurements of body mass and other parameters along with a questionnaire on body image perception, eating behavior and lifestyle in ethnically diverse populations. The results will be used to inform efforts to change eating behaviors and lifestyle choices in various populations.

Dietary supplement safety - Division scientists are conducting laboratory research, human clinical trials and consumer education on dietary supplement safety. Chamomile and echinacea, herbal supplements used by HIV positive patients and whey protein products that are popular with athletes have been evaluated. Results on potential for contamination orinterference with standard pharmaceuticals and medical procedures have been published and presented in professional forums.

Processing reduces antioxidants in berries - Division research has documented significant reduction of health-promoting polyphenolic (antioxidant) compounds in fresh blackberries, blueberries and raspberries when they are juiced, canned or pureed and stored for various periods of time. Research is continuing to learn how to reduce such losses and to recover and use polyphenolics that are extracted during processing.

Strong Women - An important part of losing weight and staying healthy is increasing physical activity. By adding weight-resistant training to a fitness program, women can enjoy health benefits in addition to losing weight. The Strong Women program is a comprehensive fitness program helping participants improve bone density, balance and strength through exercising.

During the past fiscal year, more than 1,300 men and women participated in the Strong Women program in counties across the state. When it came time to measure success, more than 83 percent of participants increased their strength and more than 80 percent increased their flexibility.

Expanded Food and Nutrition Education Program - The Expanded Food and Nutrition Education Program of the Division of Agriculture is an eight-session program focusing on healthy lifestyle changes by low income families. Its mission is to help families with limited incomes acquire knowledge, skills, attitudes and behavior changes necessary to maintain nutritionally sound diets and enhance personal development. Thirteen counties conducted EFNEP and enrolled 3,992 participants that included 13,232 family members. At the end of the program, more than 2,300 participants graduated from the program. One graduate reported her husband was overweight and had high blood pressure before she started the program. When she started using methods and low fat recipes taught in the program, her husband lost 50 pounds.

Right Bite Cooking School - The Right Bite Cooking School teaches participants to plan healthy meals that meet their individual needs. Sessions focus on cutting fat and sodium, increasing fruit, vegetable and whole grain intake and reducing sugar. Health improvements as a result of program participation could have considerable impact on the participants' risk for heart disease, stroke and diabetes. County agents from 12 counties reached more than 440 Arkansans through the Right Bite Cooking School. As a result of participation in the program, 77 percent of participants said they increased their fruit intake, 71 percent decreased their sodium intake and 88 percent reported altering their behavior to follow standard serving sizes.

Reshape Yourself - It's estimated that 61 percent of adult Arkansans are overweight or obese. To help correct the problem, the Division of Agriculture provided a 15-week program, Reshape Yourself, teaching adults that even small changes in usual practices can lead to big results. The program emphasizes a three-part approach to weight management: sensible, balanced diet; regular physical activity; and making long-term behavior changes. Reshape Yourself was conducted in 21 counties during the 2008 fiscal year. Of the counties reporting program outcomes, 298 Arkansans participated in the program. A total of 2,342 pounds were lost by graduates, and they logged more than 22,400 miles walking. Participants saw a reduction in their blood pressure, cholesterol and glucose, and 18 percent of participants on medication before beginning the program reported their doctor reduced or eliminated prescribed medication as a result of lifestyle changes made during the program.

Body Walk - The Body Walk is a 30-feet by 36-feet walk-through exhibit of the human body. It teaches healthy behaviors to children from kindergarten through the fourth grade. The purpose is to help reduce the incidence of obesity and chronic disease caused by poor eating habits, substance abuse and lack of exercise. The program is a proven and effective educational tool and reached more than 15,400 Arkansas youth in 57 schools during the 2007-08 school year. Teachers received classroom activities for use prior to and following the travel through the body. Students received a take-home activity book to read with their families.

Aging in Place - Many frustrations can accompany aging, disabilities or recovering from surgery or illness. It can be aggravating and scary when previously routine activities become challenges. Simple home modifications utilizing Universal Design principles and the use of assistive devices can provide individuals the opportunity to function independently. The Division of Agriculture offered a series of lessons titled Aging in Place to help Arkansans make the necessary modifications so they may live independently. During the past fiscal year, family and consumer sciences specialists and county agents made 778 contacts through its Aging in Place programming. Because of the information learned in the program, 47 participants reported that they did not have to move, and 50 percent of participants sought additional services or products they didn't know existed prior to attending the program.

7. Natural Resources & Environment

Our lives are intimately connected with the world around us. The University of Arkansas Division of Agriculture continually performs research that helps us better understand that connection and brings that research to our producers, lawmakers and the public, enabling us to be better stewards of our environment.

The Division of Agriculture has dedicated 235 acres of the Arkansas Agricultural Research and Extension Center at Fayetteville to environmental research, demonstration and education. Division of Agriculture scientists are conducting a number of multi-disciplinary projects in Arkansas watersheds as well, to develop a better understanding of the soilwater-nutrient interactions, fluvial channel processes and internal lake or reservoir mechanisms that can influence water quality. In 2008 these projects included evaluation of the changes in physical, chemical and biological conditions of streams draining catchments with a variety of uses such as forest, pasture and urban.

Farmers could have carbon credits to sell - Arkansas rice farmers could benefit from efforts to establish a market for "carbon credits" through the new Chicago Carbon Exchange. Companies that release carbon into the atmosphere would purchase credits sold by firms that remove carbon from the atmosphere as a way to encourage what is called carbon sequestration. Division of Agriculture scientists are documenting that a significant amount of carbon is removed from the

atmosphere and sequestered in the soil by no-till rice production. No-till also greatly reduces fuel, equipment and labor costs compared to conventional tillage practices.

Water quality dynamics - Division scientists are using remote sensing technology to study the effects of urbanization, agriculture and natural processes on water quality. Research that combines remote sensing techniques with transport models provides insight into the dynamic processes and interactions that affect water quality. A better understanding of the processes will lead to more effective measures to mitigate causes of water pollution.

Teaching the foresters of tomorrow - The foresters of tomorrow may well have been members of one of the nearly 900 4-H clubs in Arkansas. The Division of Agriculture encourages forestry education in 4-H by sponsoring a forestry contest that culminates with the winning state team participating in the National 4-H Forestry Invitational Contest. County extension agents and state personnel have developed a forestry CD that makes it easier than ever for young people to study for the contest. User friendly and interactive, the CD makes study more interesting and encourages increased participation. The CD includes everything that a team needs to prepare for the contest, all in one convenient tool. Although this comprehensive CD was developed for the forestry contest, it can be a useful tool to teach general forestry education.

Wildfire risk assessment - When the Alotian Golf Club was concerned about the danger from wildfires on forestland surrounding the club, it turned to the Division of Agriculture for help. Personnel created a series of maps showing fire risks and a list of recommendations for future activities. The Division combined measurements of vegetation — possible fuel for a fire — in the area with remote sensing techniques to develop fire risk ratings for property. The project has generated wider interest, and the Division will continue to further develop the fire risk model.

8. Pest Management

The ability of plant breeders to enhance natural genetic resistance of crop varieties to disease and pest organisms has greatly reduced reliance on chemical plant protection products. Division of Agriculture scientists are studying changes in plant molecules caused by insect feeding to stimulate natural defenses. The goal is to understand how genes involved in natural defenses of plants might be used to produce plant varieties that are more resistant to insect pests.

Entomologists develop Bt resistance data set - Cotton and corn hybrids that contain the Bt gene for resistance to major insect pests are widely planted in Arkansas. Since 2002, the Division of Agriculture has conducted bioassays to track Bt resistance levels in selected pest species collected from 250 populations across the United States. This data set is the largest of its kind in the world and is being used by entomologists nationwide to study the many factors associated with insect populations developing tolerance to the pest-resistance properties of crop plants that contain the Bt gene.

Roundup-resistant weed control - Division scientists have developed recommendations, which are widely followed, for farmers to control weed populations that develop resistance to the popular glyphosate (Roundup) herbicide. They are also studying the biology and heritability of the genetic trait for glyphosate resistance.

Hormone triggers antioxidant production in tomatoes - Division entomologists have found that the plant hormone jasmonic acid (JA) plays a role in accumulation of lycopene and other antioxidants in tomatoes. Tomato products are the primary source of lycopene in the human diet. Insect damage and other stresses increase jasmonic acid, which also plays a role in plant defenses. The results suggest that manipulating the JA signaling pathway at the molecular level could enhance nutritional quality of tomatoes and other fruits.

New robber fly species found - Along with butterflies, tiger beetles and dragonflies, robber flies are receiving increased attention as indicators of environmental health. Robber flies are predators of other insects, including pest species such as white grubs. Division entomologists are conducting a survey to document robber fly species in Arkansas. They have identified 131 species in the state, which is 66 more than when the survey started. This project will provide an essential database for future research on robber flies in Arkansas.

Veterinarians contribute to tick database - Ticks collected from dogs by cooperating veterinarians throughout Arkansas and one county in Missouri are being analyzed to identify the pathogenic organisms they contain. The results will provide insight into tick-canine-pathogen interactions and the potential start of a database on tick diversity, colonization and biological information.

Bed bugs can help solve crimes - A resurgence of bed bug infestations could help crime scene investigators who take advantage of Division of Agriculture research findings. Division entomologists are the first to report successful isolation, amplification and sequencing of human DNA obtained from adult bed bugs. Human DNA in bed bugs was stable for up to 60 days, which could make such data useful in a forensic investigation. This research is also being used to identify the host range of bed bugs.

9. Plants & Plant Products

In 2008, the weather threw everything it had at Arkansas farmers, but they still survived through their own skills and help from the Division of Agriculture. Heavy spring rains, flooding and tornadoes were some of the problems that forced many farmers to plant crops late, a situation that often results in lower yields and profits. Division specialists and county agents provided farmers with much-needed advice, which helped many

roducers make the most of a bad situation. Farmers didn't get rich in 2008, but many of them stayed in business, thanks, in part, to a helping hand from the Division.

Development of an Arkansas canola variety – The Division of Agriculture has released an Arkansas adapted canola variety, AR 377, that is being grown in test plots by a seed company and by farmers affiliated with biodiesel companies. AR 377 is early maturing and has produced consistently high yields and high oil content in tests in Arkansas and other states. Canola is grown mainly in Canada and northern states but can be grown successfully as a winter crop in Arkansas. Its seeds provide a higher percentage of oil and less meal compared to soybeans, which makes it a potential alternative biodiesel feedstock crop.

Drought tolerant soybeans – Arkansas led a multi-state project to develop and release two soybean breeding lines that perform better than current varieties under drought conditions. The breeding lines can be used by plant breeders to develop improved varieties. The drought tolerance trait is based on nitrogen fixation, by which plants convert atmospheric nitrogen to a form plants can use. Nitrogen fixation decreases very early under drought conditions in most varieties compared to these new lines, which continue to fix nitrogen under moderate drought stress.

Cotton breeding lines - The Division of Agriculture has made three new cotton breeding lines available to other public and private breeding programs. They have desirable genetic traits for fiber length and strength, host plant resistance to insect damage and smooth leaf, which reduces gin trash. The breeding lines had high yields on some soils but were not widely enough adapted for release as commercial varieties.

Molecular structure of starch holds key to better rice - Division of Agriculture food scientists are analyzing the molecular structure of starch in products such as rice. The results provide insight into the mechanisms of starch swelling and leaching and other functional properties. This research will ultimately help plant breeders develop improved rice varieties and will help processors deliver better products to consumers.

Resistant rice saves cost of fungicide - Many rice farmers apply fungicides to fields when not needed, research has revealed. In Arkansas, sheath blight is the only disease that consistently requires fungicide treatment, and recent studies have documented that the cost of the treatment can be saved by planting a rice variety that is genetically resistant to sheath blight.

Heat impacts cotton yields - Researchers have shown that temperatures over 95°F reduce cotton yields, and they have developed techniques that can be used to rate cotton varieties for tolerance to high temperature. The techniques also are being used in research on ways to reduce the negative impacts of high temperatures.

Bermudagrass seeding guidelines - New guidelines for establishing bermudagrass turf by seeding as an economical alternative to sprigging or sodding have been developed by Division scientists. Division faculty also participated in the 2008 National Turfgrass Evaluation Program, which provided objective ratings of grass varieties under Arkansas conditions.

Helping farmers fill the void - Makers of various products to control weeds in commercial agriculture are operating on less inventory than ever before. They'll have a limited amount of products next year, yet no one knows how many acres of various crops farmers will want to plant. If farmers plant a larger amount of a particular crop than is projected, there may be some spot shortages next year. The Division of Agriculture is working with the EPA and the Arkansas State Plant Board to get approval of alternative products and let suppliers know about products advising farmers in producer meetings to pre-order or buy products they know they'll need well in advance.

Byproduct feeds can reduce costs - The high cost of corn and other poultry and livestock feed ingredients is being addressed by Division of Agriculture research on agricultural byproducts as feed ingredients. Scientists are developing recommendations for materials such as cottonseed cake, glycerin, wheat middlings, distiller's grain, corn gluten, rice bran, soybean hulls and hominy from corn milling. Other research has documented savings in broiler breeder feed costs and increased production efficiency from changes in feed formulations and feeding systems.

10. Technology & Engineering

Converting waste into the fuels of tomorrow - The Division of Agriculture has established two biofuel and bioenergy

research and extension laboratories at the Rice Research and Extension Center. Six research and extension projects focusing on converting agricultural waste to gaseous and liquid fuels are currently under way. The projects will convert such wastes as vegetable oil, cotton gin waste, animal manure and other agricultural wastes into a usable energy source for tomorrow. Since Arkansas is an agricultural state with a large amount of agricultural wastes, this research could benefit the environment and provide farmers with additional income.

Biosensing technology - Yanbin Li, University of Arkansas professor of biological and agricultural engineering, is one of the world's leading scientists in the development of biosensing technology. He has developed a biosensing system for rapid, in-field detection of the highly pathogenic H5N1 avian influenza virus. He is also recognized as a leading scholar in detection of pathogenic bacteria in food products. Other 2007-2008 accomplishments include development of models for microbial prediction and quantitative risk assessment.

Using GPS to promote agritourism - Geographic Positioning System (GPS) technology is not only revolutionizing surveying worldwide, it's also changing the face of agritourism in Arkansas. The Division of Agriculture promotes agritourism for generating extra business for farmers, while promoting education and entertainment about agriculture. GPS is an important technology in promoting these activities for clients. In one case, Division personnel helped a family-owned farm near Piggott quickly create complicated corn maze designs in a field. The farm had been creating corn mazes since 1995 to provide family fun activities for visitors of all ages. Meanwhile, Division personnel in 2008 conducted hands-on training for agricultural pilots to show them how to use free Google maps in their work and avoid costly mistakes.

MEMS/NEMS - Division research is on the forefront of multidisciplinary collaboration, linking the sciences of biology, medicine, nano-materials and Microelectromechanical Systems/Nanoelectromechanical Systems (MEMS/NEMS). In one project, methods have been developed to produce large libraries of DNA oligonucleotides. These libraries are being used to self-assemble complex nanostructures for molecular electronic, medical and sensor applications. Other projects are developing a series of nano hybrid devices through stable and controllable interfaces between biological and non-biological materials at the nanoscale. A Division of Agriculture biological engineer has developed a carbon nonotube coated with gold nano particles that offers new non-invasive diagnosis and therapeutic tools for fighting cancer.

The Division of Agriculture is providing leadership for a sustainable food and agricultural project, which is funded by a $1.5 million gift from the Wal-Mart Foundation, Inc. The Division of Agriculture's Center for Agricultural and Rural Sustainability (CARS) links research and extension programs to provide leadership in balancing the demands of community, agriculture and ecosystems to meet the needs of current and future generations.

The poorest in Arkansas live in rural communities. For this reason, CARS efforts are explicitly aimed at meeting the challenges of rural prosperity. The mission of the center is to enhance and sustain prosperity in rural Arkansas through community development; analyzing policy impacts; and linking communities, businesses, organizations, academic and public agencies and policy leaders in efforts to develop and implement best management practices. The project includes integrated research and extension projects to identify and help implement key sustainability factors in agriculture and the food industry. Local production and consumption to reduce transport of food products is being stressed. We understand that prosperity is the ability to make a profit off of small parcels of land. Our guiding idea is to regrow small-scale agriculture that is profitable. To do this, producers must be linked to markets.

The Division of Agriculture faculty working with CARS are leading this effort nationally as well. They are leading the technical analysis of sustainability for the Colorado-based Keystone Center's "Field to Market: The Alliance for Sustainable Agricultural Outcomes," providing coordination and leadership for the Sustainable Value Network for Wal-Mart, and serving on the ANSI Standard Development Committee for Sustainable Agriculture. In partnership with the Sam M. Walton College of Business, the center is enabling the University of Arkansas to likewise support the corporate community in its efforts to become more sustainable.

The 2007-2008 CSREES Report of Accomplishments provides a comprehensive accounting of the University of Arkansas Division of Agricultures annual accomplishments. For the purpose of this report, the accomplishments of the University of Arkansas Division of Agriculture have been summarized through ten planned program areas which include: Agricultural and Food Biosecurity; Agricultural Systems; Animals and Animal Products; Economic and Commerce; Families, Youth and Communities; Food, Nutrition and Health; Natural Resources and Environment; Pest Management; Plant and Plant Products; and Technology and Engineering.

The Division's administration and faculty have committed time and resources from federal, state, county, city, and private sources and volunteers to address these many issues. Division of Agriculture faculty and staff work to support and address the emerging needs related to Arkansas' crops, livestock, natural resources, families, youth and communities. We serve 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,

Milo J. Shult, Vice-President for Agriculture
University of Arkansas

Dr. Ivory W. Lyles, Associate Vice President
for Agriculture - Extension

Dr. Mark J. Cochran, Associate Vice President
for Agriculture –
Research

Total Actual Amount of professional FTEs/SYs for this State

Year:2008	**Extension**		**Research**	
	1862	**1890**	**1862**	**1890**
Plan	384.0	0.0	112.0	0.0
Actual	436.7	0.0	126.3	0.0

II. Merit Review Process

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

- Combined External and Internal University External Non-University Panel

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 were 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 2007 (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 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 need of stakeholders. Following the outside review teams' written evaluation, the department or program prepared a response to the review. The Division of Agriculture and University administration then met with the department or program faculty one more time to develop a plan for implementing changes. Thereafter, annual progress was reported to Division and University administration. The Community and Economic Development department completed their external review in 2008..

III. Stakeholder Input

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

- Use of media to announce public meetings and listening sessions
- Targeted invitation to traditional stakeholder groups
- Targeted invitation to non-traditional stakeholder groups
- Targeted invitation to traditional stakeholder individuals
- Targeted invitation to non-traditional stakeholder individuals
- Targeted invitation to selected individuals from general public
- Survey of traditional stakeholder groups
- Survey of traditional stakeholder individuals
- Survey of the general public
- Survey specifically with non-traditional groups
- Survey specifically with non-traditional individuals
- Survey of selected individuals from the general public

Brief Explanation

The University of Arkansas Division of Agriculture has utilized both formal and informal mechanisms for ensuring the planned program areas address areas of strategic importance to the state. Each planned program was identified based on the needs identified in a series of regional and statewide listening sessions of current and potential stakeholders representing the diversity of the population in the regions and state. Stakeholders of specific programs such as Community Health, 4-H and Youth, and commodity groups, research and extension faculty and staff identified needed programs and in some cases provided partial funding support. Single issue meetings were held as needed to address emerging issues to craft additional program responses if needed to promptly address the problem.

Needs assessment surveys were also strategically utilized, both for emerging issues and new targeted audiences. These surveys ranged from key informant interviews to regional and state-wide print and web-based surveys. Convenience surveys were likewise conducted with the general public, to access input from non-traditional individuals and groups. In some cases incentives were provided for participation, but in most cases this was not required.

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

1. Method to identify individuals and groups

- Use Advisory Committees
- Use Internal Focus Groups
- Use External Focus Groups
- Open Listening Sessions
- Needs Assessments
- Use Surveys

Brief Explanation

In 2008 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 staffs 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
- Survey of traditional Stakeholder groups
- Meeting with traditional Stakeholder individuals
- Survey of traditional Stakeholder individuals
- Meeting with the general public (open meeting advertised to all)
- Survey of the general public
- Meeting specifically with non-traditional groups
- Survey specifically with non-traditional groups
- Meeting specifically with non-traditional individuals
- Survey specifically with non-traditional individuals
- Meeting with invited selected individuals from the general public
- Survey of selected individuals from the general public

Brief Explanation

During the summer of 2008, 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 a diversity of needs and to understand the changing demographics within each county. Stakeholder-developed materials, such as the Farm Bureau policy development process were used to identify research needs. Several priority-setting activities were scheduled during 2008 with specific commodity and stakeholder groups to seek input on the research and extension planning process.

3. A statement of how the input was considered

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

Brief Explanation

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 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 likwise involved in identification of research needs and priorities. Engagement and collaboration with individuals, foundations and businesses reinforce the connections between University of Arkansas Division of Agriculture research and education programs and the people the Division serves.

The Arkansas Division of Agriculture has a longstanding relationship with stakeholders, build on the repect for and use of local and statewide stakeholder input. This mutual repect is evidenced by active stakeholder engagement in and support of the Division's response to emerging issues in our state.

A donation by an Indiana company has helped the University of Arkansas Division of Agriculture preserve valuable research data in eastern Arkansas. Stewart Seeds has provided two research plot combines (valued at $250,000 each). The Northeast Research and Extension Center and the Lon Mann Cotton Research Station each harvests about 20,000 acres of research plots. With only one combine each, but with an increasing number of plots, researchers were running the risk of losing plots and research data if the harvest were delayed by weather or mechanical problems. Steve Gunn, Stewart Seeds vice president of production, said, "We realized we could help the seed industry by donating the combines for use in research and development. When the University of Arkansas called to obtain a price to purchase the equipment, we decided that would be a great home for them. We are just glad to be in a position to help a program that is doing so much to help our industry," Gunn added.

Arkansas Natural Resources Commission provided 4-H Center $250K for water treatment help - The C.A. Vines Arkansas 4-H Center got a big boost from the Arkansas Natural Resources Commission. The Center has three wastewater treatment plants, and one has outperformed its expected lifespan. The Arkansas Natural Resources Commission awarded the 4-H Foundation a $50,000 grant and a loan of more than $200,000 to support replacement of one of the treatment plants.

Arkansas Energy Office supports Public Policy Center - The Public Policy Center received a $39,000 grant from the Arkansas Energy Office (AEO) for a renewable energy education and outreach project. The Center and the Communications Department will collaborate with the AEO to produce a quarterly newsletter and podcast. The goal is to provide lawmakers and stakeholders with information on the development of energy efficiency, renewable energy and energy policy in Arkansas. The newsletter — "Energizing Arkansas" — will explore new research and technology in the bioenergy sector, examine the economic, environmental and policy impacts of bioenergy and spotlight people and organizations leading the pack in renewable energy in the state.

By talking with stakeholders and listening to their thoughts and suggestions for the direction of the Division, we were able to update our plan of work for the next five years. Stakeholders helped identify the five goal areas on which to focus. These areas include making Arkansas agriculture competitive in a global economy, ensuring the safety and security of Arkansas food and fiber, improving the health and nutrition of Arkansans, conserving and sustaining Arkansas' natural resources, and increasing opportunities for families, youth and communities.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
5305275	0	3520221	0

2. Totaled Actual dollars from Planned Programs Inputs

	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	7013251	0	3520220	0
Actual Matching	5305275	0	3575206	0
Actual All Other	41181539	0	56214005	0
Total Actual Expended	53500065	0	63309431	0

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

Carryover	4885432	0	0	0

V. Planned Program Table of Content

S. NO.	PROGRAM NAME
1	Families, Youth, & Communities
2	Agricultural & Food Biosecurity
3	Agricultural Systems
4	Animals & Animal Products
5	Economics & Commerce
6	Food, Nutrition & Health
7	Natural Resources & Environment
8	Pest Management
9	Plants & Plant Products
10	Technology & Engineering

Program #1

V(A). Planned Program (Summary)

1. Name of the Planned Program

Families, Youth, & Communities

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
602	Business Management, Finance, and Taxation	5%		5%	
608	Community Resource Planning and Development	10%		10%	
610	Domestic Policy Analysis	8%		8%	
801	Individual and Family Resource Management	5%		5%	
802	Human Development and Family Well-Being	15%		15%	
803	Sociological and Technological Change Affecting Individuals, Families and Communities	5%		5%	
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures	5%		5%	
805	Community Institutions, Health, and Social Services	5%		5%	
806	Youth Development	42%		42%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	145.0	0.0	8.0	0.0
Actual	163.2	0.0	3.1	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
2620525	0	1855	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
1982334	0	1884	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
15385423	0	730464	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Division of Agriculture research programs address quality of life and community development issues, which focus on specific needs of communities and families in close collaboration with state and federal agencies and policy makers.

Family, Youth, & Communities educational programs within the University of Arkansas - Divisions of Agriculture include events and activities in the areas of Agriculture, Family & Consumer Science, 4-H Youth Development, and Community & Economic Development.

Agricultural programs provide information on conservation, safety, marketing, and other topics to help Arkansans improve their economic well being and quality of life.

Family & Consumer Science programs provide educational topics that help Arkansans get the most for their money; eat well and stay healthy; raise caring, responsible children; and have strong families and safe communities.

4-H Youth Development programs provide opportunities for youth to acquire knowledge, develop life skills, form attitudes, and practice behavior that will enable them to become self directing, productive, and contributing members of society.Arkansas Extension addresses the professional development needs of school age care providers through the Arkansas 4-H Afterschool training program. School-age providers receive five hours of training in the areas of experiential learning, staff management, 4-H youth development, guidance and discipline, environmental stewardship, and service learning. The training materials are selected from existing 4-H curriculum and are adapted to fit the needs of providers working in after school settings.

Community & Economic Development programs provide educational opportunities in the area of leadership, economic development, public policy issues, government contracting seminars, and more, in order to enhance citizen knowledge, awareness, and skills so that they may make informed decisions that will positively impact their communities.

Methods for providing programs entail:
Workshops
Training Sessions
One-to-one counseling
Develop curriculum
Presentations
School enrichment programs
Organize 4-H clubs
Train-the-Trainer
Committee Meetings
Hard-copy fact sheets
Newsletters
Video and compressed video
Radio, television and print media

2. Brief description of the target audience

Adolescents and adults
Adolescents and adults who expect to become parents
Parents
Grandparents
Caring for the elderly
Step parents
Foster parents
4-H members
4-H youth participants
4-H volunteers
4-H parents
Non-4-H adults
School teachers
County Extension faculty
County FCS Agents
Extension Homemakers Council members and trainers
All married couples or those couples considering marriage
Child care providers
Local, state, and community leaders
Elected officials
Entrepreneurs

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	173650	144750	284000	50900
2008	163403	124480	243073	102128

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

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	0	12	12

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of Parenting Journey maps circulated

Year	Target	Actual
2008	11000	12485

Output #2

Output Measure

- Number of parenting programs held

Year	Target	Actual
2008	37	172

Output #3

Output Measure

- Number of parenting participants

Year	Target	Actual
2008	2250	4644

Output #4

Output Measure

- Number of parenting program hours of video training

Year	Target	Actual
2008	122	382

Output #5

Output Measure

- Number of hits on website

Year	Target	Actual
2008	90000	83593

Output #6

Output Measure

- Number of marriage resources available in print or on www.arfamilies.org website

Year	Target	Actual
2008	12	80

Output #7

Output Measure

- Number of hits on www.arfamilies.org website marriage resources

Year	Target	Actual
2008	1000	30561

Output #8

Output Measure

- Number of marriage programs/trainings held

Year	Target	Actual
2008	5	10

Output #9

Output Measure

- Number of participants in marriage programs/trainings

Year	Target	Actual
2008	300	576

Output #10

Output Measure

- Number non-duplicated 4-H Youth Development Science programs delivered

Year	Target	Actual
2008	250	326

Output #11

Output Measure

- Number non-duplicated participants in 4-H Youth Development Science programs

Year	Target	Actual
2008	4500	10496

Output #12

Output Measure

- Number of organized 4-H Clubs

Year	Target	Actual
2008	550	884

Output #13

Output Measure

- Number non-duplicated 4-H Youth Development Healthy Lifestyles programs delivered

Year	Target	Actual
2008	225	125

Output #14

Output Measure

- Number non-duplicated participants in 4-H Youth Development Healthy Lifestyles programs

Year	Target	Actual
2008	50000	5386

Output #15

Output Measure

- Number non-duplicated programs delivered in 4-H Youth Development Citizenship/Leadership

Year	Target	Actual
2008	150	151

Output #16

Output Measure

- Number non-duplicated technology and engineering programs delivered

Year	Target	Actual
2008	100	66

Output #17

Output Measure

- Number non-duplicated participants in technology and engineering programs

Year	Target	Actual
2008	1200	728

Output #18

Output Measure

- Number of Child Care educational trainings held

Year	Target	Actual
2008	90	74

Output #19

Output Measure

- Number of Child Care online courses offered

Year	Target	Actual
2008	2	6

Output #20

Output Measure

- Number of hours of Child Care in-service training offered

Year	Target	Actual
2008	15	20

Output #21

Output Measure

- Number of hours of Child Care video/DVD training provided

Year	Target	Actual
2008	1800	3446

Output #22

Output Measure

- Number of direct adult contacts reported related to community and economic development

Year	Target	Actual
2008	4500	35978

Output #23

Output Measure

- Number of indirect adult contacts reported related to community and economic development

Year	Target	Actual
2008	6750	68035

Output #24

Output Measure

- Number of direct youth contacts reported related to community and economic development

Year	Target	Actual
2008	200	21884

Output #25

Output Measure

- Number of indirect youth contacts reported related to community and economic development

Year	Target	Actual
2008	225	259

Output #26

Output Measure

- Number of events reported related to community and economic development

Year	Target	Actual
2008	55	6638

Output #27

Output Measure

- Number of Arkansas Commodity Grants

Year	Target	Actual
2008	4	0

Output #28

Output Measure

- Number of federal grants and contracts

Year	Target	Actual
2008	5	0

Output #29

Output Measure

- Number of Families, Youth & Communities clientele contacts from education classes, workshops, group discussions, one-on-one interventions, demonstrations, and other educational methods

Year	Target	Actual
2008	173650	400994

Output #30

Output Measure

- Number of Families, Youth & Communities education classes, workshops, group discussions, one-on-one interventions, demonstrations, and other educational events conducted

Year	Target	Actual
2008	857	41035

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Number of 4-H participants who learned accepting differences life skill
2	Number of 4-H participants who learned healthy lifestyles choices life skill
3	Number of 4-H participants who learned self-responsibility life skill
4	Number of 4-H participants who learned leadership life skill
5	Number of 4-H participants who learned marketable skills life skill
6	Number of 4-H participants who learned wise use of resources life skill
7	Number of child care providers who report an increase in knowledge related to specific child care issues after participating in an Extension program
8	Number of participants that increased knowledge of community and economic development issues
9	Number of participants adopting an effective parenting behavior/practice
10	Number of participants adopting a targeted relationship-enhancing behavior
11	Number of participants adopting a targeted personal development behavior
12	Number of 4-H Journals completed in 4-H Youth Development Science areas
13	Number of projects completed in 4-H Youth Development Science areas
14	Number of 4-H Journals completed in 4-H Youth Development Healthy Lifestyles areas
15	Number of projects completed in 4-H Youth Development Healthy Lifestyles areas
16	Number of 4-H Journals completed in 4-H Youth Development Citizenship/Leadership areas
17	Number of projects completed in 4-H Youth Development Citizenship/Leadership areas
18	Number of 4-H Journals completed in 4-H Youth Development technology and engineering areas
19	Number of projects completed in 4-H Youth Development technology and engineering
20	Number of child care providers adopting a recommended practice after participating in an Extension program
21	Number of participants who report an improved relationship with a child as a result of using a targeted parenting behavior
22	Number of participants who report an improved relationship with a partner as a result of using a targeted parenting behavior
23	Number of participants who report an improved quality of life as a result of using a targeted personal development behavior
24	Number of 4-H members receiving scholarships and grants for post secondary education
25	Number of youth and adults who practice good citizenship and provide community based leadership throughout Arkansas as evidenced by volunteer hours contributed through the 4-H program
26	Percent of long term (three years or more) 4-H members graduating High School
27	Number of licensed child care facilities achieving quality approval status
28	Number of community and economic development projects initiated
29	Number of county residents and lay leaders conducting programs or adopting new skills as a result of community and economic educational efforts
30	Number of youth conducting community service projects as a result of community and economic development educational efforts
31	Number of contracts and subcontracts reported
32	Number of Refereed Journal Publications
33	Number of participants who indicate that they have gained knowledge on a targeted parenting behavior
34	Number of participants who indicate that they have gained knowledge on a targeted relationship-enhancing behavior
35	Number of participants who indicate that they have gained knowledge on a targeted personal development behavior
36	Number of 4-H participants who learned decision making life skill
37	Number of 4-H participants who learned communications life skill

Outcome #1

1. Outcome Measures

Number of 4-H participants who learned accepting differences life skill

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	225	187

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
801	Individual and Family Resource Management
805	Community Institutions, Health, and Social Services
806	Youth Development
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
803	Sociological and Technological Change Affecting Individuals, Families and Communities

Outcome #2

1. Outcome Measures

Number of 4-H participants who learned healthy lifestyles choices life skill

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	350	2803

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
805	Community Institutions, Health, and Social Services
802	Human Development and Family Well-Being
801	Individual and Family Resource Management
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
803	Sociological and Technological Change Affecting Individuals, Families and Communities
806	Youth Development

Outcome #3

1. Outcome Measures

Number of 4-H participants who learned self-responsibility life skill

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	250	1017

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
806	Youth Development
801	Individual and Family Resource Management
802	Human Development and Family Well-Being
803	Sociological and Technological Change Affecting Individuals, Families and Communities
805	Community Institutions, Health, and Social Services

Outcome #4

1. Outcome Measures

Number of 4-H participants who learned leadership life skill

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	350	711

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Youth involvement in leadership roles in community activities has been in a general decline for several years. The youth voice has not been appreciated or respected. This has led to a general disengagement of youth in community activities. Young adults being less involved in community activities has been attributed to this disengagement.

What has been done

The Engaging Youth Serving Communities Project was conducted in 5 selected communities (Conway, Newton, Sevier, White and Yell counties) across the state. The goal of the project was to engage youth in selecting a community issue and working to address it in partnership with adults. The projects ranged from ATV safety, to breaking down racial barriers, to providing safe places for children to play. Each community conducted a community forum to involve the community in providing input into solving the issue.

Results

This project has provided the young people in 5 counties to learn valuable leadership skills. Data from the leadership skills evaluation indicate that participants had statistically significant increases in their leadership skills (pretest mean = 1.71, posttest mean = 2.35). In addition, youth had the opportunity to participate in projects that have positively impacted their communities. Also, adult decision makers have been impressed with young people's dedication to seeing the projects from inception to completion.

4. Associated Knowledge Areas

KA Code	Knowledge Area
805	Community Institutions, Health, and Social Services
806	Youth Development
803	Sociological and Technological Change Affecting Individuals, Families and Communities
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
802	Human Development and Family Well-Being
801	Individual and Family Resource Management

Outcome #5

1. Outcome Measures
Number of 4-H participants who learned marketable skills life skill

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	250	371

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

A 2005 Gallup poll found that 69 percent of high school students wanted to start their own business, but 84 percent felt unprepared to do so. The Consortium for Entrepreneurship Education suggests that entrepreneurship education provides youth with the opportunity to exercise creative freedoms, higher self esteem and a greater sense of control over their life and future. Similarly, the Corporation for Enterprise Development (CFED) suggests that '[e]ntrepreneurship education allows youth in rural America to reexamine their hometowns from a new perspective, discovering bright niches of opportunity in what before appeared bleak.'

What has been done

In response, the 'Entre-WHAT? Business Basics for Arkansas Youth' program, which includes a statewide entrepreneurship camp, was established. Entrepreneur camp is a statewide two-day camp held at the C.A. Vines Arkansas 4-H Center. Modeled after the Entre-WHAT? introductory program, the camp combines entrepreneurship education with the camp experience. Other life skills taught include communication, decision-making, teamwork, learning, relationships, management and understanding self. Target age for this program is youth, ages 9-12. Seventy youth from 24 counties attended entrepreneurship camp on a rainy weekend in February 2008.

Results

Evaluation results have been positive. Pre- and post-tests demonstrate increased knowledge of concepts related to entrepreneurship and business development. Eighty-six percent of youth participants surveyed indicate that they would consider being an entrepreneur based on what they learned at camp. Eighty-five percent expressed an interest in learning more about entrepreneurship. The early success of the Entre-WHAT? program has resulted in increased interest in entrepreneurship education by youth, county agents, and community leaders.

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being
801	Individual and Family Resource Management
806	Youth Development
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
803	Sociological and Technological Change Affecting Individuals, Families and Communities
805	Community Institutions, Health, and Social Services

Outcome #6

1. Outcome Measures

Number of 4-H participants who learned wise use of resources life skill

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	250	1896

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
803	Sociological and Technological Change Affecting Individuals, Families and Communities

801	Individual and Family Resource Management
805	Community Institutions, Health, and Social Services
802	Human Development and Family Well-Being
806	Youth Development

Outcome #7

1. Outcome Measures

Number of child care providers who report an increase in knowledge related to specific child care issues after participating in an Extension program

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2700	8855

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
602	Business Management, Finance, and Taxation
803	Sociological and Technological Change Affecting Individuals, Families and Communities
805	Community Institutions, Health, and Social Services
608	Community Resource Planning and Development
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
801	Individual and Family Resource Management
802	Human Development and Family Well-Being
610	Domestic Policy Analysis

Outcome #8

1. Outcome Measures

Number of participants that increased knowledge of community and economic development issues

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2500	5228

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
610	Domestic Policy Analysis
602	Business Management, Finance, and Taxation
608	Community Resource Planning and Development

Outcome #9

1. Outcome Measures
Number of participants adopting an effective parenting behavior/practice

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	600	2285

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
802	Human Development and Family Well-Being
801	Individual and Family Resource Management
805	Community Institutions, Health, and Social Services
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
806	Youth Development

Outcome #10

1. Outcome Measures

Number of participants adopting a targeted relationship-enhancing behavior

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	600	705

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
805	Community Institutions, Health, and Social Services
806	Youth Development
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
802	Human Development and Family Well-Being
803	Sociological and Technological Change Affecting Individuals, Families and Communities
801	Individual and Family Resource Management

Outcome #11

1. Outcome Measures

Number of participants adopting a targeted personal development behavior

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	600	48

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
805	Community Institutions, Health, and Social Services
802	Human Development and Family Well-Being
803	Sociological and Technological Change Affecting Individuals, Families and Communities
801	Individual and Family Resource Management
806	Youth Development
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

Outcome #12

1. Outcome Measures

Number of 4-H Journals completed in 4-H Youth Development Science areas

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	410	673

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 #13

1. Outcome Measures

Number of projects completed in 4-H Youth Development Science areas

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	500	3097

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 #14

1. Outcome Measures
Number of 4-H Journals completed in 4-H Youth Development Healthy Lifestyles areas

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	140	170

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 #15

1. Outcome Measures
Number of projects completed in 4-H Youth Development Healthy Lifestyles areas

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	225	1436

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Serious ATV injuries affect more than 100,000 people each year in the United States. The state of 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 and in 2007 76 patients were admitted to Arkansas Children's Hospital with serious ATV-related injuries. Recent research demonstrates that children under the age of 16 continue to suffer a disproportionate share of injuries, do not wear helmets and fail to receive formal ATV training.

What has been done

We have partnered with Arkansas Children's Hospital and the University of Arkansas for Medical Sciences as well as the Arkansas Farm Bureau and the Arkansas Game and Fish Commission who are included in our state-wide 4-H ATV Safety Team, secured a 7'x16' enclosed trailer to haul ATV's, equipment and educational displays, worked with local ATV dealerships to secure 27 ATV units to use in the trainings, developed two 4-H ATV Safety Rider Course Training sites at the C. A. Vines Arkansas 4 H Center, and held a statewide 4-H ATV Safety Media day involving four television network affiliates, statewide radio and statewide print media.

Results

We're still early in the impact phase, but our training base is growing. Sixteen members of our staff trained and licensed as ASI Instructors for the 4-H ATV RiderCourse program. Twenty-four county agents attended a two-day in-service training. 240 additional youth and adults (including 4-H Extension agents) completed the five hour 4-H ATV Safety Institute RiderCourse program. Training was also provided for 12 4-H Ambassadors (teen leaders) who delivered the program to 230 teens at the state level and then committed to delivering workshops in their home counties to a minimum of 15 people.

Over 1400 4th through 5th grade youth in Saline and White counties participated in 4-H ATV Safety Education provided by community grants from the National 4-H Council. Students going through the safety program admitted that they ride machines that are too big for their age and approximate 90% of them did not ride with helmets.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #16

1. Outcome Measures

Number of 4-H Journals completed in 4-H Youth Development Citizenship/Leadership areas

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	100	90

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 #17

1. Outcome Measures
Number of projects completed in 4-H Youth Development Citizenship/Leadership areas

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	350	853

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 #18

1. Outcome Measures
Number of 4-H Journals completed in 4-H Youth Development technology and engineering areas

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	105	452

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 #19

1. Outcome Measures

Number of projects completed in 4-H Youth Development technology and engineering

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	425	7712

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 #20

1. Outcome Measures

Number of child care providers adopting a recommended practice after participating in an Extension program

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	1200	1337

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

In Arkansas, approximately 23,000 children are served in more than 3200 licensed child care programs. While there is a significant amount of training for child care professionals who work with children age birth to 4 years, there is very little training available for child care professionals who work in afterschool settings with children aged 5 to 12 years. Making effective research-based training available at times, locations, and formats convenient to providers is essential to improving the quality of Arkansas child care and afterschool programs.

What has been done

189 school-age-care professionals participated in the 2008 Arkansas 4-H Afterschool training and received five hours of specialized training in the following competency areas: staff management, experiential learning, personal & family wellness, environmental stewardship, 4-H youth development, and service learning.

Results

As a result of the training, school-age-care professionals were able to provide direct instruction to 526 youth using research-based methods and curriculum.

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
602	Business Management, Finance, and Taxation
806	Youth Development
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
610	Domestic Policy Analysis
805	Community Institutions, Health, and Social Services
608	Community Resource Planning and Development
801	Individual and Family Resource Management

Outcome #21

1. Outcome Measures

Number of participants who report an improved relationship with a child as a result of using a targeted parenting behavior

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	600	606

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
801	Individual and Family Resource Management
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
802	Human Development and Family Well-Being
805	Community Institutions, Health, and Social Services
803	Sociological and Technological Change Affecting Individuals, Families and Communities

Outcome #22

1. Outcome Measures
Number of participants who report an improved relationship with a partner as a result of using a targeted parenting behavior

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	600	551

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
801	Individual and Family Resource Management
805	Community Institutions, Health, and Social Services

803	Sociological and Technological Change Affecting Individuals, Families and Communities
802	Human Development and Family Well-Being
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

Outcome #23

1. Outcome Measures

Number of participants who report an improved quality of life as a result of using a targeted personal development behavior

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	600	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
806	Youth Development
805	Community Institutions, Health, and Social Services
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
803	Sociological and Technological Change Affecting Individuals, Families and Communities
802	Human Development and Family Well-Being
801	Individual and Family Resource Management

Outcome #24

1. Outcome Measures

Number of 4-H members receiving scholarships and grants for post secondary education

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	50	45

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
806	Youth Development
801	Individual and Family Resource Management
805	Community Institutions, Health, and Social Services
803	Sociological and Technological Change Affecting Individuals, Families and Communities
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

Outcome #25

1. Outcome Measures

Number of youth and adults who practice good citizenship and provide community based leadership throughout Arkansas as evidenced by volunteer hours contributed through the 4-H program

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	3500	991620

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Arkansas citizens benefit greatly from the services provided by volunteers. The Arkansas 4-H program especially benefits from the hours of service donated by trained adults. Young people are far more likely to engage in positive behaviors when under the guidance of caring adults. There are 133,000 young people enrolled in the Arkansas 4-H youth development program and only 26 full time 4-H agents in the state. Without the thousands of volunteers, the program would be impossible to deliver. The impact of volunteer service is felt throughout the state in terms of monetary value and the availability of services to the young people of the state. In this present ear of diminishing funding to public agencies, volunteers are giving t heir time to assist the 4-H youth development program meet the needs of the young people in Arkansas.

What has been done

All 75 counties in the state actively recruit and train adult and youth volunteers to serve the 4-H program. Volunteers serve the program in four major ways: direct service, indirect service, advocacy and by serving on boards and advisory councils. During FY08, counties conducted training in topics relating to organizing, managing, and teaching youth in an informal educational setting as well as in learning needs of children and youth.

Results

The 11,805 Arkansas 4-H direct volunteers contributed over 991,620 hours valued at $18.77 (figure used by the Arkansas Department of Volunteerism) for an economic impact to the program of $221,579.85. Using the Arkansas Department of Volunteerism figure of $100.00 per hour for volunteer hours contributed by board members, volunteers to the Arkansas 4-H program would have contributed and estimated dollar value of an additional $240,000 (480 volunteers donating five hours per volunteer) for a total of $451,579.85. By incorporating volunteers, the delivery and quality of the 4-H program is maximized.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development
803	Sociological and Technological Change Affecting Individuals, Families and Communities
805	Community Institutions, Health, and Social Services
801	Individual and Family Resource Management
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
802	Human Development and Family Well-Being

Outcome #26

1. Outcome Measures

Percent of long term (three years or more) 4-H members graduating High School

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	87	819

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 #27

1. Outcome Measures

Number of licensed child care facilities achieving quality approval status

Not reporting on this Outcome for this Annual Report

Outcome #28

1. Outcome Measures

Number of community and economic development projects initiated

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	35	27

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Facing a population decline from 2000-2006, community and county leaders in Hope and Hempstead County (pop. 23,347) have been working to improve the local economy, especially with the recent loss of 420 jobs. Part of the industrial park in Hope did not have access to high speed telecommunications, and there was a realization that the county needed to embrace and fully utilize high speed telecommunications across all sectors to be successful in the 21st century economy. That is when they learned about Connected Communities, a pilot program of Breakthrough Solutions, University of Arkansas Cooperative Extension Service.

What has been done

The Connected Communities Program was designed to equip a community with the tools, skills, contacts, and information they need to take full advantage of high speed telecommunications. Accomplishments include: Media coverage of broadband opportunities, assistance in finding funding (rural health group telemedicine grant, broadband deployment grants, e-rate funding for six counties in southwest Arkansas, telecommunications services for the developmentally disabled, and a grant to develop e-government services for Hempstead County), work on community website development, virtual tourism of a state park, wireless cameras in parks as crime deterrent, evening lab facilities, and plans for broadband infrastructure.

Results

Connected Communities: 1) attracted commitment and involvement of key organizations, institutions, and resources within Hope and Hempstead County from its inception, 2) leveraged these outside resources through the process, and 3) attracted a great deal of attention in Arkansas with interest in learning from, and transferring this model into other settings. The program facilitated interaction with community leaders in other communities and counties in southwest Arkansas, leading to the formation of Connected Communities Southwest Arkansas as a vehicle to further the deployment and utilization of broadband in those counties. Overall this program has mobilized the community to fully embrace technology and broadband, has begun to involve other counties in southwest Arkansas, and serve as a model for other community economic development initiatives across the state.

4. Associated Knowledge Areas

KA Code	Knowledge Area
610	Domestic Policy Analysis
608	Community Resource Planning and Development
602	Business Management, Finance, and Taxation

Outcome #29

1. Outcome Measures

Number of county residents and lay leaders conducting programs or adopting new skills as a result of community and economic educational efforts

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	35	2623

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
610	Domestic Policy Analysis
608	Community Resource Planning and Development
602	Business Management, Finance, and Taxation

Outcome #30

1. Outcome Measures

Number of youth conducting community service projects as a result of community and economic development educational efforts

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	25	37

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
610	Domestic Policy Analysis
608	Community Resource Planning and Development
806	Youth Development
602	Business Management, Finance, and Taxation

Outcome #31

1. Outcome Measures

Number of contracts and subcontracts reported

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	800	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
608	Community Resource Planning and Development
602	Business Management, Finance, and Taxation
802	Human Development and Family Well-Being
803	Sociological and Technological Change Affecting Individuals, Families and Communities
801	Individual and Family Resource Management
806	Youth Development
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
805	Community Institutions, Health, and Social Services

Outcome #32

1. Outcome Measures
Number of Refereed Journal Publications

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	15	41

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
805	Community Institutions, Health, and Social Services

610	Domestic Policy Analysis
806	Youth Development
802	Human Development and Family Well-Being
801	Individual and Family Resource Management
608	Community Resource Planning and Development
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
602	Business Management, Finance, and Taxation
803	Sociological and Technological Change Affecting Individuals, Families and Communities

Outcome #33

1. Outcome Measures

Number of participants who indicate that they have gained knowledge on a targeted parenting behavior

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	1200	4636

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
802	Human Development and Family Well-Being
803	Sociological and Technological Change Affecting Individuals, Families and Communities
805	Community Institutions, Health, and Social Services
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
806	Youth Development

Outcome #34

1. Outcome Measures

Number of participants who indicate that they have gained knowledge on a targeted relationship-enhancing behavior

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	1200	1387

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Many faith and community leaders who have never received formal training as marriage educators are called upon to provide marital counseling and advice. Research shows that quality, research-based marriage education helps prepare couples for marriage, strengthen existing marriages, and prevent divorce in troubled marriages.

What has been done

The Marriage Garden curriculum and training was provided free of charge to faith and community leaders state-wide, made possible by a contract from the AR Dept. of Workforce Services. It was offered in five locations throughout Arkansas and was open to all faith and community leaders. 126 leaders participated.

Results

Data from the 118 Marriage Garden participants who completed surveys indicate statistically significant increases in their levels of understanding of the following relationship issues/skills (Commitment, Growth, Nurturing, Understanding, Problem Solving, and Serving) after the training. Eighty-eight to ninety-six percent agreed or strongly agreed with statements such as 'My knowledge of healthy marriage relationships has increased', 'My skills as a spouse/partner are likely to increase', or 'I will change (improve on) at least one relationship strengthening behavior or practice.' Data from a 6-month follow-up survey conducted with 62 of the leaders indicates that they have shared the program curriculum with approximately 4,608 Arkansans. Seventy-one percent of them also agreed that their own marriages were significantly better as a result of participating in the Marriage Garden training.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management
806	Youth Development
803	Sociological and Technological Change Affecting Individuals, Families and Communities
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
805	Community Institutions, Health, and Social Services
802	Human Development and Family Well-Being

Outcome #35

1. Outcome Measures

Number of participants who indicate that they have gained knowledge on a targeted personal development behavior

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	1200	329

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
801	Individual and Family Resource Management
802	Human Development and Family Well-Being
805	Community Institutions, Health, and Social Services
806	Youth Development
803	Sociological and Technological Change Affecting Individuals, Families and Communities

Outcome #36

1. Outcome Measures

Number of 4-H participants who learned decision making life skill

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	250	3614

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
805	Community Institutions, Health, and Social Services
806	Youth Development
801	Individual and Family Resource Management
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
803	Sociological and Technological Change Affecting Individuals, Families and Communities

Outcome #37

1. Outcome Measures

Number of 4-H participants who learned communications life skill

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	400	289

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
806	Youth Development
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
805	Community Institutions, Health, and Social Services
803	Sociological and Technological Change Affecting Individuals, Families and Communities
802	Human Development and Family Well-Being

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 (Fuel Prices)

Brief Explanation

The spike in fuel prices and dismal economic environment created barriers for program participation.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- Retrospective (post program)
- Before-After (before and after program)
- During (during program)
- Time series (multiple points before and after program)

Evaluation Results

Outputs # 13, 14, 16, 17 - Numbers for these outputs appear to be under reported as to the actual programs conducted in the state. Not all counties are reporting. This situation presents an opportunity for additional exploration and perhaps additional training.

Output # 18 - We had a reduction in funding for our child care provider programs in 2008 so we offered fewer trainings.

Output # 27 - This output indicator has been determined to be inappropriate for this planned program, therefore data was not collected for this measure.

Outcome # 1 – Our 4-H program has implemented a state-wide life skill evaluation web-based program. Agents have the discretion to select the life skills indicator they will use to evaluate their county programs. As a result, some life skills targets were not met, while others exceeded our projections. This new state-wide evaluation system has expanded our evaluation capacity and has likewise increased our overall evaluation data.

Outcome #16 - We were short by 10 of the target data, but greatly exceeded our target in the Science, Technology, Engineering and Math area. This is due to a shift in program focus.

Outcomes # 11, 23, 35 - Numbers for these outcomes are lower than anticipated because we have not been able to secure funding to promote programming in this area.We are in the process of developing the program and hope to create an onine component that will more easily allow us to reach the target audience (adolescents and adults) and gather program data.

Key Items of Evaluation

2008 Fathers Count: A Parenting Journey

Many faith and community leaders in Arkansas are called upon by the people they serve to provide parenting/fatherhood advice and counsel. However, many of these leaders have no formal training in parent education.The University of Arkansas Cooperative Extension Service provided five two-day parent education train-the-trainer sessions in different locations around the state, made possible by a grant provided by the Arkansas Department of Workforce Services.One-hundred twenty faith and community leaders were trained statewide in the principles of effective parenting using the Parenting Journey curriculum.

Data from 113 of the "Fathers Count: A Parenting Journey" participants who completed surveys indicate participants had statistically significant increases in their levels of understanding of the following parenting/fatherhood issues and skills (Caring for self, Understanding children, Guiding children, Nurturing children, Motivating Children, and Advocating for children) from Time 1 (before participation in Parenting Journey training) to Time 2 (after participating in Parenting Journey training). The 113 "Fathers Count: A Parenting Journey" participants surveyed indicated that they agree or strongly agree with the following statements: 1. My parenting knowledge has increased: 96% 2. My skills as a parent are likely to increase: 93% 3. I have a desire to be a better parent: 96% 4. I will change (improve on) at least one parenting behavior or practice: 89% 5. I think my relationship with child is likely to improve: 86% 6. I would recommend this program to family and friends: 97%

In a six-month follow-up survey with 73 of the trainees it was found that they had shared the "Fathers Count: A Parenting Journey" with approximately 2,716 other Arkansans.

Fathers Count: A Parenting Journey participants commented that with their training and curriculum, they were able to positively influence many people. For example, one counselor who started using "Fathers Count: A Parenting Journey" in his practice said, "They [parents] have welcomed the new concepts and ideas. They are encouraged by the materials and are working on a better relationship with their children." Another trainee said, "Fathers Count: A Parenting Journey curriculum has been shared with her church (200 people) and she has seen more compassion." Still another trainee said, "He works in the prison system and when we introduced the [Fathers Count: A Parenting Journey] materials to the inmates it started a big discussion, with many of the inmates talking about what they are going to do differently in the future." Seventy-one percent of the trainees surveyed at the 6-month follow-up indicated their own parenting was better as a result of participating in the "Fathers Count: A Parenting Journey" training. Many of the trainees reported that they listen better and are more compassionate with their children. They also indicated a greater willingness to see the world through their children's eyes.

Program #2

V(A). Planned Program (Summary)

1. Name of the Planned Program

Agricultural & Food Biosecurity

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
211	Insects, Mites, and Other Arthropods Affecting Plants	10%		10%	
212	Pathogens and Nematodes Affecting Plants	15%		15%	
213	Weeds Affecting Plants	10%		10%	
214	Vertebrates, Mollusks, and Other Pests Affecting Plants	5%		5%	
311	Animal Diseases	20%		20%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.	5%		5%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	20%		20%	
722	Zoonotic Diseases and Parasites Affecting Humans	15%		15%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	2.0	0.0	0.0	0.0
Actual	4.0	0.0	3.5	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
63497	0	102905	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
48033	0	104512	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
374752	0	1608262	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Individual consultations
Workshops/Conferences/Trainings
Farm visits
Field Days
Surveillance and Monitoring
Interviews
Education materials
Mass Media (print, radio, TV)
Newsletters & Direct Mailing
Collaboration with state/federal agencies and regulatory officials

2. Brief description of the target audience

Row crop producers
Crop consultants
Dealer personnel
Pesticide applicators
Poultry Company Personnel
Livestock and Poultry Producers
Local/State/Federal Personal
First Responders
Food Handling and stroage
Agribusiness
Division of Agriculture personnel

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	**Target**	**Target**	**Target**	**Target**
Plan	4500	9500	0	0
2008	9601	19491	117	0

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

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	5

Patents listed
1. Improved live attenuated Salmonella vaccine vectors.
2. Flow-through label free impedance biosensor for rapid detection of bacteria.
3. Universal vaccine for Paratyphoid (non-host adapted) Salmonella serovars, and Eimeria species (protozoal agents) for animals and man.
4. Effective and defined therapeutic and prophylactic competitive exclusion cultures for foodborne pathogens.
5. In-vivo test system to measure immune response.

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	0	16	16

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- # of clientele trained on Agricultural and Food Biosecurity

Year	Target	Actual
2008	800	9717

Output #2

Output Measure

- # of educational materials developed on Agricultural and Food Biosecurity

Year	Target	Actual
2008	10	21

Output #3

Output Measure

- # of newsletters & fact sheets disseminated to clientele regarding Agricultural and Food Biosecurity

Year	Target	Actual
2008	3600	8000

Output #4

Output Measure

- # of clientele interviewed/surveyed on Agricultural and Food Biosecurity

Year	Target	Actual
2008	100	129

Output #5

Output Measure

- # of requested consultations related to exotic animal disease concerns

Year	Target	Actual
2008	140	161

Output #6

Output Measure

- # of Agricultural & Food Biosecurity clientele contacts from education classes, workshops, group discussions, one-on-one interventions, demonstrations, and other educational methods

Year	Target	Actual
2008	9500	9718

Output #7

Output Measure

- # of Agricultural & Food Biosecurity education classes, workshops, group discussions, one-on-one interventions, demonstrations, and other educational events

Year	Target	Actual
2008	10	452

Output #8

Output Measure

- # of hits to CES website regarding avian biosecurity

Year	Target	Actual
2008	500	13817

Output #9

Output Measure

- # of hits to CES website regarding livestock biosecurity

Year	Target	Actual
2008	250	20724

Output #10

Output Measure

- # of plant sites surveyed monitored

Year	Target	Actual
2008	30	37

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	# of growers/producers reporting knowledge gained or increased awareness of need for biosecurity
2	# of growers/producers reporting intent to adopt new biosecurity practices for animal production facilities
3	# of growers/producers adopting new practices outlined in educational programs to improve biosecurity through proper methods of sanitation, disease prevention, recognition, and control
4	# of diagnostic invasive plant disease samples
5	# of diagnostic invasive nematode samples
6	# of avian grower referrals to diagnostic labs for exotic animal disease testing
7	# of Section 18 fungicides approved
8	# of Asian Soybean Rust positive samples
9	# of SOD positive samples
10	# of Bakanae positive samples
11	# of pathogens/nematodes (other) positive samples
12	# of reported Avian LT disease outbreaks
13	# of reported Avian MG disease outbreaks
14	# of reported Avian MS disease outbreaks

Outcome #1

1. Outcome Measures

# of growers/producers reporting knowledge gained or increased awareness of need for biosecurity

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	350	5400

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Soybean rust entered the southern U.S. by Hurricane Ivan in 2004, and is considered a model introduced crop biosecurity threat. Knowledge among southern soybean producers, University personnel and the industry is still limited, and improving knowledge among stakeholders to deal with soybean rust year to year, and other biosecurity threats, remains a challenge.

What has been done

University of Arkansas Division of Agriculture Extension specialists organized a first time soybean rust forum in March 2008, with an objective to change the level of knowledge about this model biosecurity disease threat among soybean stakeholders. The Forum was included expert crop biosecurity speakers from Arkansas and Louisiana Land Grant University systems. Attendees were surveyed for knowledge change and other data using an instrument developed in consultation with assessment specialists with the University of Arkansas Cooperative Extension Service.

Results

The Post/Pre survey instrument focused on knowledge change in 6 areas: 2007 Soybean Rust late epidemic in AR; the Soybean Rust Lab; Soybean Rust in Louisiana and its impact northward; Forecasting soybean rust each year; expectations of soybean rust in 2008; and fungicides. The instrument was delivered to all 113 attendees and 77% were completed. Before the presentations, participants indicated 30% had low knowledge of the topics above, with 46% indicating medium knowledge and 24% high. After the presentations, only 5% indicated low knowledge; 44% indicated medium; and 51% indicated high. The greatest change in knowledge was among farmers and consultants, with these groups indicating 44-54% low knowledge of the above areas before the presentations, and only 2-10% indicating low knowledge afterwards.

4. Associated Knowledge Areas

KA Code	Knowledge Area
722	Zoonotic Diseases and Parasites Affecting Humans
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
211	Insects, Mites, and Other Arthropods Affecting Plants
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.
213	Weeds Affecting Plants
214	Vertebrates, Mollusks, and Other Pests Affecting Plants
311	Animal Diseases
212	Pathogens and Nematodes Affecting Plants

Outcome #2

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 Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	350	284

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The total farm value of poultry and crops in Arkansas is over 5 billion dollars with poultry a major agricultural product. Exotic disease outbreaks in Arkansas or in the United States could result in a quarantine of poultry and poultry products severely impacting the economy of the state and individual growers/producers in particular.

What has been done

Biosecurity and early disease recognition continue to be the mainstay for prevention and control of disease. Biosecurity enhancement measures have been communicated to growers/producers through formal presentations and publications. The continued improvement of Biosecurity protocols allows for better disease protection of a flock by reducing the exposure risk.

Results

Prevention and/or reduction in the incidence of disease can result in savings of millions of dollars. This vigilance and implementation of Biosecurity protocols by growers/producers further enhances the efforts to prevent diseases such as 'bird flu' which are of great concern not only because of the economic consequences of an outbreak but because of the potential adverse human health problems associated with the disease.

4. Associated Knowledge Areas

KA Code	Knowledge Area
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
311	Animal Diseases
722	Zoonotic Diseases and Parasites Affecting Humans

Outcome #3

1. Outcome Measures

# of growers/producers 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	Quantitative Target	Actual
2008	300	5226

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Poultry is a major agricultural product in Arkansas and is valued at close to 3 billion dollars. Mortality figures associated with broilers, turkeys, and layers, are 4%, 8%, and 16% respectively over the life of the flock with infectious diseases a major cause of the mortality and responsible for an additional 1+% loss in condemnations. Exotic disease outbreaks in Arkansas or in the United States could result in a quarantine of poultry and poultry products severely impacting the economy of the state.

What has been done

The continued threat of Agroterrorism against the United States animal population is such that vigilance is needed to prevent the use of infectious diseases as a weapon against the United States food supply. The impact of an Agroterrorism attack against the US food supply would cause a devastating effect on product exportation and losses of markets which could be irreparable.

Results

The loss of confidence in the safety of the US food supply could be incalculable. Informal surveys indicate that growers/producers in Arkansas have implemented procedures and practices to increase Biosecurity to decrease the risk of disease introduction or spread. The discovery of Low Pathogenic Avian Influenza serologically and subsequent virus isolation in a broiler breeder flock in Arkansas reinforced the continued need for Biosecurity practices to prevent disease. The control of diseases is greatly enhanced as growers/producers continue to improve their Biosecurity practices.

4. Associated Knowledge Areas

KA Code	Knowledge Area
214	Vertebrates, Mollusks, and Other Pests Affecting Plants
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
722	Zoonotic Diseases and Parasites Affecting Humans
213	Weeds Affecting Plants
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.
311	Animal Diseases
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants

Outcome #4

1. Outcome Measures

# of diagnostic invasive plant disease samples

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2000	2719

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Monitoring of crops in Arkansas for routine as well as biosecurity disease remains an ongoing challenge. Recent improvements in online reporting and networking of the two main diagnostic clinics in the state have improved this effort.

What has been done

The University of Arkansas Division of Agriculture Cooperative Extension Service implemented on-line sample record keeping and distance diagnosis in 2008. This system, supplied by the DDDI coalition created by the University of Georgia, supports networking between clinics, clientele sample entry and submission, permanent on-line records, and archiving of reports and images. The system includes support for biosecurity samples, regional information exchange, and data submission to the Southern Pest Detection Network.

Results

The modified DDDI system was fully used by the Plant Health Clinic. Samples were submitted by county extension agents in 67 of 75 counties. A total of 2719 suspected plant disease samples were received with 65% from the crop areas of the Delta region in eastern Arkansas; 20% from the SW part of the state that includes crop areas in the Red River Valley; and 15% from the northwest part of the state where most of the fruit crops are grown. This innovation should allow Arkansas to stay in the forefront of early detection and early warning of crop biosecurity threats.

4. Associated Knowledge Areas

KA Code	Knowledge Area
213	Weeds Affecting Plants
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.
212	Pathogens and Nematodes Affecting Plants
211	Insects, Mites, and Other Arthropods Affecting Plants
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
214	Vertebrates, Mollusks, and Other Pests Affecting Plants

Outcome #5

1. Outcome Measures

# of diagnostic invasive nematode samples

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	3500	1048

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Monitoring of crops in Arkansas for routine as well as biosecurity nematode threats remains an ongoing challenge. Recent improvements in online reporting and networking of the two main diagnostic clinics in the state have improved this effort.

What has been done

The University of Arkansas Division of Agriculture Cooperative Extension Service implemented on-line sample record keeping and distance diagnosis in 2008. This system, supplied by the DDDI coalition created by the University of Georgia, supports networking between clinics, clientele sample entry and submission, permanent on-line records, and archiving of reports and images. The system includes support for biosecurity samples, regional information exchange, and data submission to the Southern Pest Detection Network.

Results

The modified DDDI system was fully used by the Nematology Diagnostic Laboratory. More than one-half of the samples were from cotton farms; while corn, soybean and golf course samples were also large sample source crops. A total of 43 rice samples were examined for the phytosanitary pest, white tip nematode, at the request of the rice export industry and the State Plant Board. The system permitted more comprehensive and timely sample diagnostic record keeping and sharing in real time among stakeholders and biosecurity networks like SPDN. This innovation should allow Arkansas to stay in the forefront of early detection and early warning of crop biosecurity threats.

4. Associated Knowledge Areas

KA Code	Knowledge Area
212	Pathogens and Nematodes Affecting Plants
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #6

1. Outcome Measures

# of avian grower referrals to diagnostic labs for exotic animal disease testing

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	250	98

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The value of the United States animal agriculture production is approximately 14% of the gross domestic product and represents approximately 18% of all employment with almost 1 million jobs. Exports represent roughly 20% of all animal production and over 140 billion dollars. Poultry, a major agricultural product in Arkansas, is valued at close to 3 billion dollars and represents a significant part of the state economy.

What has been done

New and continued foreign animal disease threats, the continued threat of Agroterrorism, and the concern over a possible pandemic Influenza outbreak have necessitated increased awareness of diseases and the efforts to monitor for and prevent them. Poultry integrators continue routine Avian Influenza serological monitoring/surveillance efforts on all flocks of poultry as part of the National Poultry Improvement Plan.

Results

Commercial poultry growers and backyard hobby flock owners, due to increased awareness as a result of educational efforts, are more aware of testing programs and diagnostic laboratory assistance for disease determination and control. They recognize that the surveillance testing and diagnostic assistance are an integral part of the Biosecurity effort to reduce the risk of disease introduction and/or spread and protect the US food supply.

4. Associated Knowledge Areas

KA Code	Knowledge Area
722	Zoonotic Diseases and Parasites Affecting Humans
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.
311	Animal Diseases

Outcome #7

1. Outcome Measures

# of Section 18 fungicides approved

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:
Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	1	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

No Section 18 fungicides were approved.

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
211	Insects, Mites, and Other Arthropods Affecting Plants
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.
212	Pathogens and Nematodes Affecting Plants

Outcome #8

1. Outcome Measures
# of Asian Soybean Rust positive samples

2. Associated Institution Types

•1862 Extension
•1862 Research

3a. Outcome Type:
Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	20	198

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Since 2004, Soybean Rust has remained one of the most feared diseases in soybeans in the United States. This is largely due to the impact of the disease on soybean production in other countries like Brazil. To date, soybean rust has not caused significant yield loss in the United States. Unfortunately, the potential threat of the disease and wide-spread pressure from media and the fungicide companies has caused an increase in unnecessary use of fungicides in the southern United States.

What has been done

Arkansas formed a Soybean Rust Task Force to monitor the development and spread of soybean rust, train and educate county agents, producers, and consultants on how to identify and control soybean rust, and to provide timely and accurate information to the state clientele regarding how best to manage soybean rust outbreaks in the state. The task force has trained more than 1000 agricultural clientele and developed scenarios for agricultural clientele to utilize in making management decisions if soybean rust impacted the state in 2008 which was presented at a state-wide soybean rust forum.

Results

In 2008, soybean rust was not confirmed in soybean sentinel plots and grower fields in southeast Arkansas until September. Through monitoring the development of soybean rust after initial infection indicated the disease was less aggressive than in previous years likely due to light spore deposition and unfavorable environmental conditions. Fortunately, the monitoring program aided in providing the timely information needed for growers to make effective management decisions. It is estimated that Arkansas producers only applied fungicides to control soybean rust on 30,000 acres (<1% of total acres) as a result of the monitoring program.

4. Associated Knowledge Areas

KA Code	Knowledge Area
211	Insects, Mites, and Other Arthropods Affecting Plants
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.
214	Vertebrates, Mollusks, and Other Pests Affecting Plants
212	Pathogens and Nematodes Affecting Plants
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #9

1. Outcome Measures

# of SOD positive samples

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	5	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

There were no SOD positive samples in 2008

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
214	Vertebrates, Mollusks, and Other Pests Affecting Plants

Outcome #10

1. Outcome Measures

# of Bakanae positive samples

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:
Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	0	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

There were no Bakanae positive samples in 2008.

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
214	Vertebrates, Mollusks, and Other Pests Affecting Plants
211	Insects, Mites, and Other Arthropods Affecting Plants
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.
212	Pathogens and Nematodes Affecting Plants

Outcome #11

1. Outcome Measures
# of pathogens/nematodes (other) positive samples

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:
Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2000	2

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
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
214	Vertebrates, Mollusks, and Other Pests Affecting Plants

Outcome #12

1. Outcome Measures

# of reported Avian LT disease outbreaks

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	200	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

There were no Avian LT disease outbreaks in 2008

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #13

1. Outcome Measures

# of reported Avian MG disease outbreaks

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	5	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

There were no Avain MG disease outbreaks in 2008

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 reported Avian MS disease outbreaks

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	10	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

There were no Avain MS disease outbreaks in 2008.

What has been done

Results

4. Associated Knowledge Areas

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

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 (See explanation)

Brief Explanation

Excellent awarness and monitoring reduced any impact from soybean rust sample outcomes. High input costs (feed, fuel and fertilizer) could have caused a compromise of biosecurity practices. Reduced confidence regarding the economy may have impacted consumer food biosecurity concerns. We had limited effectiveness because of static or non-increasing resources. Growing number of backyard hobby flocks due to cultural changes have increased.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- Retrospective (post program)
- Before-After (before and after program)
- During (during program)
- Case Study
- Other (Use of Secondary Data)

Evaluation Results

Arkansas' plant and animal biosecurity efforts were largely successful as reflected in number of pathogens/nematodes positive samples, low number of grower referrals to diagnostic labs for disease testing, no reported avian LT disease outbreaks, no Avian MG disease outbreaks, Avian MS disease outbreaks, and no Bakanae positive samples.

Key Items of Evaluation

Secondary evidence based data collected through diagnostic labs.

Program #3

V(A). Planned Program (Summary)

1. Name of the Planned Program

Agricultural Systems

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	10%		10%	
112	Watershed Protection and Management	5%		5%	
131	Alternative Uses of Land	5%		5%	
133	Pollution Prevention and Mitigation	5%		5%	
134	Outdoor Recreation	10%		10%	
204	Plant Product Quality and Utility (Preharvest)	5%		5%	
205	Plant Management Systems	5%		5%	
216	Integrated Pest Management Systems	10%		10%	
307	Animal Management Systems	5%		5%	
401	Structures, Facilities, and General Purpose Farm Supplies	5%		5%	
403	Waste Disposal, Recycling, and Reuse	5%		5%	
601	Economics of Agricultural Production and Farm Management	5%		5%	
602	Business Management, Finance, and Taxation	5%		5%	
604	Marketing and Distribution Practices	10%		10%	
605	Natural Resource and Environmental Economics	5%		5%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.	5%		5%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	8.0	0.0	0.0	0.0
Actual	2.9	0.0	2.0	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**
46311	0	53642	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
35033	0	54480	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
271798	0	825854	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

A broad range of direct and indirect methods will be used to provide information to both groups and individuals:
Educational meetings
Tours
Field days
Workshops
One-on-one consultations including farm visits and telephone responses.
Articles and media interviews in publications targeting agricultural producers and private landowners

2. Brief description of the target audience

Agricultural producers
Consultants/certifiers
Non-farm private landowners
Governmental Agency Personnel
Sales & service providers
General public

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	**Target**	**Target**	**Target**	**Target**
Plan	3700	5000	0	0
2008	8026	1933	162	1

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

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	2	2	4

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

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

Year	Target	Actual
2008	500	8188

Output #2

Output Measure

- # Of Agricultural Systems education classes, workshops, group discussions, one-on-one interventions, demonstrations, and other educational events

Year	Target	Actual
2008	25	896

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	# of clientele who reported knowledge gained
2	Value of agricultural products sold ($1000): Other animals and other animal products
3	Acres of crops planted: "Field & Miscellaneous Crops."
4	# of clientele who make an informed decision about initiating an alternative enterprise
5	# of farmer markets

Outcome #1

1. Outcome Measures

# of clientele who reported knowledge gained

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	250	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
601	Economics of Agricultural Production and Farm Management
102	Soil, Plant, Water, Nutrient Relationships
602	Business Management, Finance, and Taxation
605	Natural Resource and Environmental Economics
131	Alternative Uses of Land
205	Plant Management Systems
133	Pollution Prevention and Mitigation
307	Animal Management Systems
112	Watershed Protection and Management
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.
216	Integrated Pest Management Systems
403	Waste Disposal, Recycling, and Reuse
401	Structures, Facilities, and General Purpose Farm Supplies
604	Marketing and Distribution Practices
134	Outdoor Recreation

Outcome #2

1. Outcome Measures

Value of agricultural products sold ($1000): Other animals and other animal products

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:
Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	6196	240331

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #3

1. Outcome Measures
Acres of crops planted: "Field & Miscellaneous Crops."

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:
Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	7496000	1000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The number of acres in production is a good measure of most crops. However, for other products including those not necessarily tied to the land, number of acres can be misleading or simply inaccurate.

What has been done

The number of acres reported was drawn from our internal reporting system, a self-reporting system and augmented with USDA Census of Agriculture data pertinent to the issue.

Results

The 1,000 acres reported in FY 2008 was a result of either an unrealistic target set in FY 2007 or a data entry error. In addition, certain alternative agriculture systems products cannot be measured in acres. Backyard poultry, honey, and shiitake mushroom production are each difficult to measure in terms of acreage. The actual target was also most likely a data entry error: for example, only 14,300,000 acres of farmland were reported in the Census of Agriculture (USDA, 2007). That Ã‚Â½ of these acres would be in alternative agricultural products in doubtful to say the least. Therefore, the reported number of acres(1,000)is correct: the target is not.

4. Associated Knowledge Areas

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

Outcome #4

1. Outcome Measures

# of clientele who make an informed decision about initiating an alternative enterprise

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	25	8

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Private landowners account for approximately 80% of the landholdings in Arkansas. Their actions on the landscape directly affect wildlife populations. Those who adopt wildlife management practices will help not only high visibility species such as white-tailed deer and wild turkey, but also species of concern such as Northern bobwhite, spotted skunk, and other species. We provide research-based information about managing wildlife species including game species.

What has been done

Extension agents in 75 county offices and professional wildlife and forestry faculty have conducted workshops, co-coordinated conferences, answered public inquiries, prepared and distributed fact sheets, newsletters, and educational seed packets, and posted information on websites. In one workshop alone, 90 landowners received training and resources about white-tailed deer management with an emphasis on using native plants to manage the landscape.

Results

The reported actual quantitative outcome (8) is conservative given numerous public contacts through a variety of methods, many of which are difficult to document changes in behavior. The actual outcome represents those clients with whom county agents followed up and reported adoption of a practice to improve wildlife habitat or initiate an alternative enterprise. County agents also collected evaluations from meeting participants and asked their intention to adopt practices which improve wildlife or prevent wildlife damage. In short, unless the county agent or faculty member specifically asked questions concerning a participant's intentions, there is no way to ascertain their behavior or final decision.

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management
131	Alternative Uses of Land
403	Waste Disposal, Recycling, and Reuse
401	Structures, Facilities, and General Purpose Farm Supplies
602	Business Management, Finance, and Taxation
134	Outdoor Recreation
205	Plant Management Systems
307	Animal Management Systems
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.
102	Soil, Plant, Water, Nutrient Relationships

112	Watershed Protection and Management
216	Integrated Pest Management Systems
604	Marketing and Distribution Practices
133	Pollution Prevention and Mitigation
605	Natural Resource and Environmental Economics

Outcome #5

1. Outcome Measures

# of farmer markets

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	1	50

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The number of farmers' markets has increased dramatically across the US: according to the USDA, the number of farmers' markets in the increased 111 percent between 1994 and 2004. Arkansas has almost 50 markets located throughout the State. In some counties, members sell their honey, goat cheese, milk for animal consumption, and other non-traditional agricultural products. For some producers, the markets are a temporary source of income in which they sell extra produce. For other producers, the markets are their primary outlet for marketing their goods.

What has been done

County Extension personnel work closely with their local stakeholders to create famer market organizations. Each local organization recruits members, establishes policy, and operates under their own guidelines. Extension personnel help facilitate this process.

Results

Although Arkansas has 50 farmers' markets, some of these exist on-line, some allow sale of non-Arkansas products, some sell traditional products, and most sell a combination of several different kinds of products. One small market, for example, sells homemade bread, homemade toys, house plants, honey, vegetables, and birdhouses. Gathering data as to which of these 'products' can be classified a 'alernative agriculture' is virtually impossible. Obtaining data from on-markets is also quite difficult. the outcome measure, therefore, will be changed to allow a more accurate data collection.

4. Associated Knowledge Areas

KA Code	Knowledge Area
604	Marketing and Distribution Practices
605	Natural Resource and Environmental Economics
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.)

Brief Explanation

During 2008, several natural disasters created difficult conditions for all producers including individuals engaged in alternative enterprises.Beginning in February, many areas of state experienced floods and resulting excessive moisture,as well as storm damage from ice and wind.Many vegetable crops were planted late in the season because of flooded fields and gardens. Production in some crops was severely affected.

Soaring fuel prices, the deepening recession, and economic downtown also affect producers' operations and consequent profits.Consumer spending habits were also curtailed as well decreasing demand for some products.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- Retrospective (post program)
- Before-After (before and after program)
- During (during program)
- Case Study

Evaluation Results

Field days, workshops, and other educational events are evaluated for content and future direction during or immediately after the program.Evaluations are usually administered by the program coordinators including county agents, Extension faculty, and other program coordinators.Information gathered from evaluations is used to plan future programs, collect information about program effectiveness, and gage participants' interest in other topics.Much of this data is then entered into an Extension database and then aggregated across individuals and programs.The reports generated provide information important for determining future educational programs.

Many educational meetings and workshops are developed collaboratively with industry, agency, and other stakeholders.These groups meet periodically to assess and evaluate programs resulting in either new and/or modified programs. Individual faculty members are also evaluated to determine program direction and modification.

Process Evaluation: Adjustments to the targets, definitions of outputs and outcomes, and changes in the the outputs and outcomes gathered are made each year based on the data we gather and changes in our understanding of the program.The Agricultural Systems program as defined here in Arkansas, tries to plan and report on programs that do not readily "fit" under the more traditional planned programs.An example of needed changes in outcomes is the outcome labeled "number of farmers markets".As our understanding of what type of data is available and what types of programs are actually on the ground, we've changed this outcome tto read: the number of producers sellilng alternative agriculture products to farmers' markets.

Key Items of Evaluation

Program #4

V(A). Planned Program (Summary)

1. Name of the Planned Program

Animals & Animal Products

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
135	Aquatic and Terrestrial Wildlife	6%		6%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	6%		6%	
204	Plant Product Quality and Utility (Preharvest)	6%		6%	
205	Plant Management Systems	6%		6%	
206	Basic Plant Biology	6%		6%	
301	Reproductive Performance of Animals	6%		6%	
302	Nutrient Utilization in Animals	6%		6%	
303	Genetic Improvement of Animals	6%		6%	
304	Animal Genome	6%		6%	
305	Animal Physiological Processes	6%		6%	
306	Environmental Stress in Animals	6%		6%	
307	Animal Management Systems	6%		6%	
308	Improved Animal Products (Before Harvest)	6%		6%	
311	Animal Diseases	6%		6%	
315	Animal Welfare/Well-Being and Protection	6%		6%	
601	Economics of Agricultural Production and Farm Management	10%		10%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	**1890**	**1862**	**1890**
Plan	26.0	0.0	25.0	0.0
Actual	16.2	0.0	19.7	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**
260518	0	715937	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
197073	0	727120	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
1527835	0	10357210	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Conduct educational meetings, workshops, farm visits to educate agricultural producers.
Conduct tours, field days and demonstrations
Conduct one-on-one consultations
Publish educational materials
Conduct mass media efforts (radio, TV, etc.)
Conduct train-the-trainer education
Partner with industry (when appropriate)
Design and conduct practical and applied research to improve the efficiency of growth, reproduction, health and management of livestock, forages, aquaculture, and poultry

2. Brief description of the target audience

Agricultural producers
Non-farm private landowners
Aquaculture producers
Small pond owners
Agricultural businesses/Allied industry personnel
Consultants
Breeder managers
Hatchery Managers
Commercial poultry producers
Commercial poultry companies
Research funding personnel and agencies
Policy and decision makers
Public

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	**Target**	**Target**	**Target**	**Target**
Plan	44700	89500	0	0
2008	33960	44328	2243	2777

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

Patent Applications Submitted

Year **Target**
Plan: 0

2008 : 1

Patents listed

Genetic markers for the identification of cattle productivity.

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	4	109	113

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of educational programs, workshops, educational meeting and/or field days

Year	Target	Actual
2008	4730	6831

Output #2

Output Measure

- Number of clientele attending educational programs (field days, workshops, etc.)

Year	Target	Actual
2008	44700	36242

Output #3

Output Measure

- Number of producers receiving educational material (newsletters, fact sheets, etc)

Year	Target	Actual
2008	5500	47978

Output #4

Output Measure

- Number of producers conducting on farm demonstrations

Year	Target	Actual
2008	41	25

Output #5

Output Measure

- Number of farm visits or one-on-one consultations with producers

Year	Target	Actual
2008	4175	5994

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Arkansas cash receipts from farm marketing ($1,000) related to livestock, dairy and poultry Enterprises
2	Arkansas cash receipts from farm marketing ($1,000) related to aquaculture enterprises
3	Business Start Ups
4	Number of livestock producers who increased knowledge or gained awareness related to livestock production management practices
5	Number of industry personnel who gained knowledge or increased awareness related to livestock & poultry production information/practices
6	Number of clientele who reported knowledge gained related to aquaculture
7	Number of livestock producers who adopted a new practice
8	Number of livestock producers who initiated or improved their record keeping
9	Number of practices or technology adoptions by poultry producers
10	Number of clientele who adopted new aquaculture practices
11	Number of practices or technology adoptions by allied poultry industry personnel
12	Number of livestock producers who changed a management practice

Outcome #1

1. Outcome Measures

Arkansas cash receipts from farm marketing ($1,000) related to livestock, dairy and poultry Enterprises

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	4712000	4294967295

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Livestock and Poultry, including poultry processing, are significant sources of income for Arkansas. Especially considering that many participants in the livestock and poultry industry are older and lower income citizens, animal and animal products provide a substantial portion of income for many Arkansans, who may not have other options.

What has been done

All available means of communications ranging from traditional county meetings, county newsletters and communications in local media to multi-county events and cooperative programs with state-wide commodity organization were used to introduce and encourage practices to increase income.

Results

Farm income changes from year to year due to many variables in addition to management and even marketing. The national economy, government policies such as biofuels mandates, weather in Arkansas and the world for that matter can all affect commodity prices. Our goal was to make Arkansans aware of factors that were, or could, affect prices of their livestock and poultry, and to offer alternatives where those existed.

4. Associated Knowledge Areas

KA Code	Knowledge Area
305	Animal Physiological Processes
303	Genetic Improvement of Animals
302	Nutrient Utilization in Animals
301	Reproductive Performance of Animals
308	Improved Animal Products (Before Harvest)
205	Plant Management Systems
306	Environmental Stress in Animals
307	Animal Management Systems
311	Animal Diseases

Outcome #2

1. Outcome Measures

Arkansas cash receipts from farm marketing ($1,000) related to aquaculture enterprises

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:
Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	107000	118744000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
135	Aquatic and Terrestrial Wildlife
311	Animal Diseases
307	Animal Management Systems

Outcome #3

1. Outcome Measures
Business Start Ups

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:
Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2	27

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
306	Environmental Stress in Animals
205	Plant Management Systems
601	Economics of Agricultural Production and Farm Management

Outcome #4

1. Outcome Measures

Number of livestock producers who increased knowledge or gained awareness 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	Quantitative Target	Actual
2008	550	3603

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Economic and environmental sustainability were two of the most critical issues to Arkansas livestock and poultry producers. Management at the production level is the most direct method of producer impact on these issues. During 2008, soaring costs of feed, fertilizer and fuel and challenging environmental regulations pertaining to use of poultry litter as fertilizer were foremost on the minds of livestock and poultry producers. Addressing these issues will determine the viability of animal agriculture in Arkansas.

What has been done

Extension personnel at all levels identified the most appropriate methods of dealing with the issues. A combination of traditional local extension programming, electronic newsletters, multi-county programming, cooperation with industry organizations, and all forms of mass media and personal consultations were used to provide the latest production information.

Results

By-product feeds from biofuels production have replaced much of traditional sources of feed for cattle. Practices long known to be important (ie. soil testing, forage testing, etc.) have been brought to the attention of producers who once again understood their importance. Management techniques like stockpiling forage rather than baling, using no-til or minimum til to reduce fuel use, planning grazing systems to maximize production and reduce input costs, addressing the issue of increased internal parasite resistance, understanding target points for marketing cattle, and developing BMP's for poultry litter use have helped Arkansas producers adapt to the challenges presented in 2008.

4. Associated Knowledge Areas

KA Code	Knowledge Area
311	Animal Diseases
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
303	Genetic Improvement of Animals
302	Nutrient Utilization in Animals
206	Basic Plant Biology
315	Animal Welfare/Well-Being and Protection
301	Reproductive Performance of Animals
307	Animal Management Systems

Outcome #5

1. Outcome Measures

Number of industry personnel who gained knowledge or increased awareness related to livestock & poultry production information/practices

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:
Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	55	3603

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Arkansas is home to 22 major poultry operations each of which process over 1.4 million birds per week and have an annual budget of about $84 million. The poultry industry contributed 88,480 jobs or 5.7% of all jobs in the state. Yet these poultry operations must remain competitive on the world market scene via the use of proven genetic strains of poultry, cutting edge nutrition, innovative feed processing programs and effective microbial control processes.

What has been done

Applied research and field evaluations of new genetic strains of broilers and turkeys, disinfectants and feed processing procedures were conducted to identify effective techniques. This information was supplied to poultry operations via trade publications, workshops, one-on-one consultations, newsletters and CES publications.

Results

Casual observations as well as informal procedure reviews suggest enhanced awareness of new genetic strains and disinfectants. Technology adoption rates were estimated at about 12%, with an estimated savings of $7.1 million as a result of technology improvements.

4. Associated Knowledge Areas

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

Outcome #6

1. Outcome Measures
Number of clientele who reported knowledge gained related to aquaculture

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:
Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	50	993

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
135	Aquatic and Terrestrial Wildlife

Outcome #7

1. Outcome Measures

Number of livestock producers who adopted a new practice

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	125	741

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Economic and environmental sustainability were two of the most critical issues to Arkansas livestock and poultry producers. There are practices that can help deal with these challenges. Oftentimes, small producers who make up a large percentage of Arkansas producers are not aware of new issues and the solutions that may be available.

What has been done

Extension personnel at all levels identified emerging issues of importance to their stakeholders. Using appropriate information delivery venues, a combination of traditional local extension programming, electronic newsletters, multi-county programming, cooperation with industry organization, and all forms of mass media and personal consultations were used to provide options.

Results

Because of heighten awareness that provided teachable moments, new practices ranging from more efficient grazing systems, stockpiling forage rather than expensive hay baling, well-designed fertilization programs, changed market inpoints for cattle to capture the increased value of forage brought on by high feedlot finishing costs, increased targeted us of by-products from biofuels production, better designed programs for efficient and environmentally sustainable use of poultry liter on pastures and other practices have been adapted. Numbers listed are direct contact and we recognize the other probably copied these practices.

4. Associated Knowledge Areas

KA Code	Knowledge Area
303	Genetic Improvement of Animals
302	Nutrient Utilization in Animals
307	Animal Management Systems
205	Plant Management Systems
301	Reproductive Performance of Animals

Outcome #8

1. Outcome Measures

Number 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	Quantitative Target	Actual
2008	100	69

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

In addition to the traditional reasons for record keeping, other issues are forcing greater requirements for record keeping, environmental regulations for poultry litter application on pasture, new traceability requirements by industry to document management practices, and the looming requirements by government to comply with county of origin labeling.

What has been done

Information was disseminated on all these subjects, including not only rules and requirements but information on modern technology to trace animals, record and store data and comply with existing and emerging requirements.

Results

Best management practices for utilization of poultry litter are being adopted and used. A number of cattle producers are utilizing electronic identification tags for their calves in order to receive bonus for age and source verified calves. Producer are aware that they are going to have to document age, source, management practices and other information to compete in a market place that increasingly is requiring proof of these factors. Data from records are being used to make selection decisions at the heard level and document the real value of cattle in the market place.

4. Associated Knowledge Areas

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

Outcome #9

1. Outcome Measures
Number of practices or technology adoptions by poultry producers

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:
Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	100	102

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The poultry industry in Arkansas is vertically integrated. Decisions about adoption of technology are made by the integrators who convey that information to their contract growers via their technical service personnel. However, growers must make decisions about environmental regulations, litter disposal, permitting and verification of practices.

What has been done

Research has been published and made available to management of vertically integrated companies. Information through meetings and other forms were disseminated to growers with particular emphasis on environmental regulations and proper use of disposal of litter.

Results

The industry continues to adopt technology that enhances production efficiency, product safety and sustainability. Growers are developing and implementing plans to comply with state and federal regulations for litter management, mortalities and other by-products of poultry productions.

4. Associated Knowledge Areas

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

Outcome #10

1. Outcome Measures

Number of clientele who adopted new aquaculture practices

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	20	109

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
135	Aquatic and Terrestrial Wildlife
601	Economics of Agricultural Production and Farm Management

Outcome #11

1. Outcome Measures

Number of practices or technology adoptions by allied poultry industry personnel

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:
Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	25	26

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Poultry related jobs accounted for nearly $3 billion in labor income in Arkansas or $1 out of every $4 in agricultural labor income. The over $3.3 billion in cash receipts from the poultry industry amounted to 46.2% of all agricultural cash receipts within the state. In addition, the poultry industry contributed over $2.6 billion in value added to the Arkansas economy. Yet owners of the 5640 poultry farms in Arkansas struggle to maintain competitive production efficiencies via new technology adoption.

What has been done

Applied research and field trials conducted by Extension Poultry Specialists have identified unsuitable energy technologies as well as problems with drinking water treatment, litter processing and feed delivery technologies. Information gained from applied research and field trials was shared with vertically integrated companies, allied industry representatives and production personnel via trade publications, workshop, one-on-one consultations, newsletters and CES publications.

Results

Informal observations indicate increased knowledge of drinking water treatment and litter processing technologies. In addition, technology adoption rates were estimated at about 15%, resulting savings of approximately $6.3 million as a result of improved production efficiencies.

4. Associated Knowledge Areas

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

Outcome #12

1. Outcome Measures
Number of livestock producers who changed a management practice

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:
Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	550	733

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Economic and environmental sustainability were two of the most critical issues to Arkansas livestock and poultry producers. There are practices that can help deal with these challenges. Oftentimes, small producers who make up a large percentage of Arkansas practices are not aware of new issues and the solutions that may be available.

What has been done

Extension personnel at all levels identified emerging issues of importance to their stakeholders. Using appropriate information deliver venues, a combination of traditional local extension programming, electronic newsletters, multi-county programming, cooperation with industry organizations, and all forms of mass media and personal consultations were used to provide options.

Results

Because of heighten awareness that provided teachable moments, new practices ranging from more efficient grazing systems, stockpiling forage rather than expensive hay bailing, well-designed fertilization programs, changed market inpoints for cattle to capture the increased value of forage brought on by high feedlot finishing costs, increased targeted use of by-products from biofuels production, better designed programs for efficient and environmentally sustainable use of poultry litter on pastures and other practices have been adapted. Number listed is direct contacts and we recognize other probably copied these practices.

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals
308	Improved Animal Products (Before Harvest)
307	Animal Management Systems
301	Reproductive Performance of Animals
205	Plant Management Systems
303	Genetic Improvement of Animals

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

Outcomes were impaired in 2008 by:

1. Soaring costs of feed for livestock and poultry. This was brought on by public policy mandating and subsidizing conversion of corn to ethanol. Impacts on poultry and swine were direct, namely increased costs of production. Cost of production also increased for Arkansas cattle producers, who produce calves for the feedlot. Producers felt the direct increased costs of supplemental feed for grazing cattle and also the reduced prices for their product – stocker and feeder calves. Ironically, greatly increased costs of feedlot production increased the value of weight gain on grass and created the opportunity for improved profits by growing calves to heavier market weights.

2. Extreme drought conditions occurred in the southeastern US but did not impact Arkansas to any great extent. Challenges were presented to Arkansas cattlemen because liquidation of hers in the Southeast depressed cattle prices to some extent. On the other hand, cheaper stocker calves were an opportunity to Arkansas stocker producers who had available forage and bought southeastern calves at favorable prices (for the buyers).

3. The nation's economy pressured demand for meat, especially at the restaurant level as consumer had less disposable income for luxury expenditures.

4. Diversion of grain to ethanol forced Arkansas cattlemen to utilize more by-product feeds instead of corn to supplement their cow herds.

5.Soaring costs for fuel and fertilizer had the obvious impact on product economics.

6.Internal parasites are becoming an increasing concern for livestock and poultry producers. No new products for control are being developed and organisms are becoming resistant to existing products.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- Retrospective (post program)
- Before-After (before and after program)
- During (during program)
- Case Study
- Other (Secondary Data)

Evaluation Results

The number of direct and indirect adult contacts was below target numbers but the number of direct and indirect youth contacts was above target numbers. This was caused by over estimating the target number of adult direct and indirect contacts and underestimating the target number of youth direct and indirect contact. This process will allow us to develop more realistic target number for adult and youth contacts.

Due to program emphasis change the number of farm demonstrations was less than target (output # 4)

The number of producers who actually initiated or improved record keeping was below target number (output #8). Due to the lack of expertise (livestock economist) educational emphasis was shifted toward production practices and away from recording keeping systems.

Key Items of Evaluation

Program #5

V(A). Planned Program (Summary)

1. Name of the Planned Program

Economics & Commerce

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	10%		10%	
602	Business Management, Finance, and Taxation	10%		10%	
603	Market Economics	10%		10%	
604	Marketing and Distribution Practices	10%		10%	
605	Natural Resource and Environmental Economics	10%		10%	
606	International Trade and Development	10%		10%	
608	Community Resource Planning and Development	10%		10%	
610	Domestic Policy Analysis	10%		10%	
611	Foreign Policy and Programs	10%		10%	
801	Individual and Family Resource Management	10%		10%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	13.0	0.0	10.0	0.0
Actual	43.9	0.0	9.5	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
705555	0	377949	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
533727	0	383853	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
4142863	0	2337471	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Facilitated the development and adoption of new technologies and products that will enhance global competitiveness
Conducted economic evaluations of selected new technologies that may increase production efficiencies
Created and distributed educational products and materials using print and electronic mediums
Developed and conducted educational meetings
Direct clientele contact, phone calls, personal visits, mail, and e-mail
Developed, evaluated, and disseminated education programs and curricula, incorporating new research
Developed county and economic profiles
Convened issue forums for both internal and external audiences

2. Brief description of the target audience

University of Arkansas, Division of Agriculture, Economics and Commerce faculty work across a broad target audience group. A list of the target group follows:

Farm, agriculture and other businesses
Consumers
Professional Associations
quot;Baby Boomers"
Limited resource families
Adults age 65 and older
Youth
Other researchers
Research, Extension, and Teaching faculty
Industry
Research funding personnel and agencies
Public agencies
Policy and decision makers
Community and civic organizations
Issue-based non-profit organizations
Registered voters

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	**Target**	**Target**	**Target**	**Target**
Plan	15300	99300	0	0
2008	25931	188170	1906	2148

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

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	1	14	
2008	0	27	27

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of family resource management educational programs/workshops conducted

Year	Target	Actual
2008	25	273

Output #2

Output Measure

- Number of Economics & Commerce education classes, workshops, group discussions, one-on-one interventions, demonstrations, and other educational events

Year	Target	Actual
2008	2125	3784

Output #3

Output Measure

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

Year	Target	Actual
2008	15300	28294

Output #4

Output Measure

- Number of contacts receiving economic and commerce information

Year	Target	Actual
2008	103000	190318

Output #5

Output Measure

- Number of educational events associated with economics and commerce

Year	Target	Actual
2008	190	167

Output #6

Output Measure

- Number of educational products and materials developed

Year	Target	Actual
2008	320	325

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Number of participants who increase knowledge about economics and commerce
2	Number of participants who indicate a change in behavior, practice or descisions about economics and commerce
3	Number of non-business bankruptcy filers in Arkansas
4	Number of County and local governments that use interlocal agreements as a mechanism to increase budget efficiency
5	Sustainable, vibrant and globally competitive agricultural sector for Arkansas as indicated by Arkansas Cash Farm Receipts (in thousand dollars) (NASS)
6	Sustainable, vibrant and globally competitive agricultural sector for Arkansas as indicated by Arkansas Net Farm Incomes (in thousand dollars) (ERS)
7	Number of jobs created or retained through government contracting assistance provided by Arkansas Procurement Assistance Center (APAC)
8	Dollars of revenue generated by businesses as a result of Arkansas Procurement Assistance Center (APAC) program
9	Number of participants who adopt one or more of the following practices: set financial goals, calculate net monthly income, develop a spending plan, keep financial records (including, but not limited to household account record and expense record)
10	Percent of participants reporting an increase in savings
11	Number of participants reporting a decrease in debt

Outcome #1

1. Outcome Measures

Number of participants who increase knowledge about economics and commerce

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	33990	234590

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Many Arkansans are struggling as economic opportunities throughout Arkansas have been negatively impacted by the global financial crisis. Research, education, and extension activities in economics and commerce were needed to help Arkansans develop and incorporate sound financial management strategies in their daily lives, discover new economic opportunities, develop successful agricultural and nonagricultural enterprises, take advantage of new and consumer-driven markets at both the local and international levels, and understand the implications of public policy on these and other activities, so they can weather the uncertainties associated with today's global economy.

What has been done

Our program engaged in research, education, and extension activities in the following knowledge areas: Economics of Agricultural Production and Farm Management; Business Management, Finance, and Taxation; Market Economics; Marketing and Distribution Practices; Natural Resource and Environmental Economics; International Trade and Development; Community Resource Planning and Development Domestic Policy Analysis; Foreign Policy and Programs; Individual and Family Resource Management; Sociological and Technical Change Affecting Individuals, Families, and Communities; Community Institutions, Health and Social Services. All for the purpose of accomplishing the issues described above.

Results

Research, education, and extension efforts and activities in the University of Arkansas' Division of Agriculture's Economics and Commerce program proved to have a broad impact on increasing our farm and nonfarm clientele's knowledge about economics and commerce in the associated knowledge areas. The quantitative outcome results showed 234,590 increased their knowledge from a broad array of delivery methods. Highlighting our community and economic development program - This shows one measure of the results our programs had in helping Arkansas residents take advantage of economic opportunities and improve social conditions in their communities through work in the areas of economic development, leadership, local government finance, public policy, and creating and implementing plans for sustainable development and use of information technologies to improve their economic conditions and quality of life.

4. Associated Knowledge Areas

KA Code	Knowledge Area
611	Foreign Policy and Programs
610	Domestic Policy Analysis
606	International Trade and Development
801	Individual and Family Resource Management
608	Community Resource Planning and Development
603	Market Economics
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation
605	Natural Resource and Environmental Economics
604	Marketing and Distribution Practices

Outcome #2

1. Outcome Measures

Number of participants who indicate a change in behavior, practice or descisions about economics and commerce

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	20600	55353

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Producers who want to market products directly to consumers must be aware of food safety concerns. In an effort to assist growers with the development and evaluation of food safety practices on their farms, the Arkansas Agriculture Department and the University of Arkansas, Cooperative Extension Service Division of Agriculture partnered to offer a workshop on food safety which addressed good agricultural production and handling practices.

What has been done

The one-day workshop featured presentations from United States Department of Agriculture's Fruit and Vegetable Section, Arkansas Agriculture Department, a produce grower, an industry (third party auditor, and experts working in produce retail/wholesale distribution businesses. Workshop presenters discussed the importance of evaluating food safety measures and the value for growers to assess their food safety business practices.

Results

As a result of the workshop, 30 growers indicated an increase in the understanding of their knowledge of Good Agricultural Practice (GAP) guidelines and recommendations, knowledge of resources in Arkansas to assist their business needs, knowledge of USDA audit progam and contacts, familiarity with industry trends and the importance of food safety. Follow-up with one grower (6 months after workshop) revealed that the workshop caused him to begin the process for a third party audit of production and processing for his tomato enterprise. He was currently undergoing an audit.

4. Associated Knowledge Areas

KA Code	Knowledge Area
605	Natural Resource and Environmental Economics
601	Economics of Agricultural Production and Farm Management
801	Individual and Family Resource Management
606	International Trade and Development
603	Market Economics
610	Domestic Policy Analysis
608	Community Resource Planning and Development
611	Foreign Policy and Programs
604	Marketing and Distribution Practices
602	Business Management, Finance, and Taxation

Outcome #3

1. Outcome Measures

Number of non-business bankruptcy filers in Arkansas

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:
Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	23164	12353

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 #4

1. Outcome Measures
Number of County and local governments that use interlocal agreements as a mechanism to increase budget efficiency

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:
Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	14	4

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

There has been a decline in economic activity and an increasing need to minimize environmental damage which is creating difficult fiscal conditions in many Arkansas counties. Several Arkansas counties requested help to identify their options to continue providing services and infrastructure with a declining tax base and new stormwater regulation demands.

What has been done

We updated and used the county revenue and expenditure database and resource materials to assist county leaders identify trends that affect their ability to provide needed infrastructure, program support and services and recommended strategies to enable continued provision of infrastructure and services. This included working with county officials in the eight county NCARED region, Searcy County Quorum Court members, and local government officials in Benton, Washington, Jefferson, Saline, Pulaski, Faulkner, Lonoke, Pulaski and Garland counties.

Results

County officials in the NCARED region met several times to address common environmental, telecommunication, and fiscal concerns. They realized that by working together they could more effectively address these regional issues and provide a unified request for support from state and federal agencies. The Searcy County Judge and Quorum Court members used the information gleaned from our presentation and resource materials to reevaluate their FY 2009 budget. Counties in the three stormwater management zones meet monthly in their respective regions while also maintaining lines of communication statewide.

4. Associated Knowledge Areas

KA Code	Knowledge Area
602	Business Management, Finance, and Taxation
608	Community Resource Planning and Development
610	Domestic Policy Analysis

Outcome #5

1. Outcome Measures

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	Quantitative Target	Actual
2008	6065524	7138450

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Rice is a major crop in Arkansas and long-term profitability of the industry is important to the agricultural sector in the state. For many years, the University has invested in a rice breeding program to assist the industry.

What has been done

In 2008, we conducted research to quantify the benefits of the rice breeding program. This is important to both Arkansas rice producers who want to see returns from their check-off program dollars as well as UofA breeders who are now able to quantify the economic returns of their work.

Results

It was found that during the 1983-2007 period, on average the rice producers in Arkansas experienced additional gains of $61.4 million dollars per year through enhanced germplasm put forth by the UofA breeding program. To put this in perspective the UofA rice breeding budget for 2007 was $1.47 million and the estimated benefits were $93.1 million, resulting in a cost-benefit ratio of 1:81.

4. Associated Knowledge Areas

KA Code	Knowledge Area
606	International Trade and Development
610	Domestic Policy Analysis
604	Marketing and Distribution Practices
602	Business Management, Finance, and Taxation
611	Foreign Policy and Programs
601	Economics of Agricultural Production and Farm Management
605	Natural Resource and Environmental Economics
603	Market Economics

Outcome #6

1. Outcome Measures

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	Quantitative Target	Actual
2008	2101123	2161147

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The need for biomass feedstock for renewable energy from agriculture has intensified with the recent passage of the 2007 Energy bill. Many agricultural producers are inquisitive about what the impact of biomass crops for Arkansas agriculture may be. Where will these crops be grown? What crops are likely to suffer acreage losses? How profitable will these crops be?

What has been done

In 2008 research was conducted to: i) model Arkansas crop agriculture at the county level with and without the inclusion of alternative crops while maintaining hay and pasture resources for livestock production; ii) develop estimates of supply functions of biomass to determine at what biomass price levels acreage converts from traditional crops to biomass crops; iii) identify spatial land and water use patterns for policy development; and iv) conduct sensitivity analysis on input and output prices to determine how robust the land use decisions are.

Results

The analysis revealed that switchgrass production enters at the lower biomass price levels whereas the higher yielding forage sorghum takes over at prices levels between $45 and $50 per dry ton depending on input cost assumptions. This information proved useful in the sense that it highlights the need for research not only on switchgrass production but also potentially, higher-yield energy crops like forage sorghum. Future research will need to continue to focus on storage, harvest and logistics issues associated with biomass crops. Inclusion of crop residues for the model are also planned as research activities in 2009.

4. Associated Knowledge Areas

KA Code	Knowledge Area
605	Natural Resource and Environmental Economics
606	International Trade and Development
602	Business Management, Finance, and Taxation
604	Marketing and Distribution Practices
603	Market Economics
610	Domestic Policy Analysis
611	Foreign Policy and Programs
601	Economics of Agricultural Production and Farm Management

Outcome #7

1. Outcome Measures

Number of jobs created or retained through government contracting assistance provided by Arkansas Procurement Assistance Center (APAC)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:
Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	1200	1743

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development

Outcome #8

1. Outcome Measures
Dollars of revenue generated by businesses as a result of Arkansas Procurement Assistance Center (APAC) program

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	50000000	87126494

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development

Outcome #9

1. Outcome Measures

Number of participants who adopt one or more of the following practices: set financial goals, calculate net monthly income, develop a spending plan, keep financial records (including, but not limited to household account record and expense record)

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	650	398

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The United States economy is in recession. Consumers are feeling the pressure of job losses, cost increases, and overspending. Arkansas has a high poverty rate (17%) and the estimated poverty rates across the state have increased, especially in rural areas, since 2005. Pockets of extreme poverty remain throughout the state, with some counties having poverty rates of 30 percent or greater. Financial security can impact quality of life and relationships for individuals and families. Now, more than ever, financial management skills are critical for consumers. Extension is able to provide Arkansas consumers with the information and tools they need to practice good financial management skills. Extension programs are especially crucial in rural counties where resources are limited.

What has been done

Extension Family Resource Management materials and delivery methods are designed to target needs by helping Arkansas consumers gain knowledge, learn new skills, and be inspired to adopt recommended practices. Navigating the Financial Journey is a basic financial management program that covers four main topic areas: financial planning, budget development, credit, and consumer protection. Extension FCS agents conducted Navigating the Financial Journey for 1,374 participants. More than 170 personal finance workshops were conducted for both the general public and for bankruptcy filers.

Results

Evaluation surveys indicate that 53 % of participants increased understanding of recommended financial management practices; 52% of participants reported intention to adopt one or more recommended financial management practices; of those who increased understanding, 20% reported adopting one or more new financial management practices. One participant commented that if he had taken this course in high school, he would not have had to declare bankruptcy. Another family received personal finance education and it was reported by a third party that this family had not only greatly improved their own financial situation but were also teaching other families the financial management skills that they had learned from Extension.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #10

1. Outcome Measures

Percent of participants reporting an increase in savings

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	40	39

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Gas prices have taken an increasingly larger portion out of consumers' transportation budgets. Many senior citizens, often on limited incomes, have been particularly hard hit by high gas prices.

What has been done

A safe driver's course was offered for senior citizens. Those who complete the course save money on their car insurance.

Results

Twenty seven participants completed the course and received up to 20% off their car insurance premiums for the next three years. This savings will help offset the rising cost of gas for these senior citizens.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #11

1. Outcome Measures
Number of participants reporting a decrease in debt

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	50	15

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Too many individuals and families are experiencing financial crisis because of inadequate savings, too much debt, and poor planning for potential major life events. On average, U.S. households carry about $8,000 in credit card debt, up two-thirds compared to a decade ago. More than half of Americans report living paycheck to paycheck. Debt management can be especially crucial for consumers living in persistent poverty areas.

What has been done

A money management class was delivered every month to 10 community members in a persistent poverty county.

Results

Participants checked their credit reports for the first time. They learned about what determines a credit score and how to improve a credit report. All participants developed individual plans to improve their credit management.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

V(H). Planned Program (External Factors)

External factors which affected outcomes

- 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

The 2007/08 fiscal year was one of highs and lows for Arkansas farmers. Row crop prices reached record highs in the April to July period only to be followed by declining prices the remainder of the fiscal year. These record high farm prices had an array of consequences. For the row crop producer the high prices offered pricing opportunity. For the livestock producer and especially the animal confinement operator high feed prices reduced profitability. The vast majority of Arkansas' commercial elevators were on the wrong side of the market as farm market prices were going up and found themselves facing huge margin calls and many struggled to cash flow as they waited for prices to decline. As of February 2009 many of these elevators are still trying to unwind their positions. The row crop producer who benefited the most in the huge run-up in prices also experienced a huge run-up in their input prices.

Weather was problematic for Arkansas row crop producers. First, a wet spring added two to three weeks to the production season. Second, a lingering August tropical storm added another 1 to 2 weeks to the production season making the Arkansas row crop producer's fall harvest one of the latest on record with yield setbacks more common than yield success stories. The success story for the University of Arkansas Division of Agriculture was producer risk management strategies were highly successful given the production and business challenges.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- Retrospective (post program)
- Before-After (before and after program)
- Case Study
- Comparisons between program participants (individuals,group,organizations) and non-participants

Evaluation Results

Process Evaluation:

Educational events associated with economics and commerce (Output #5) was slightly below target due to a program focus on faculty development during the past fiscal year.

The projected non-business bankruptcy filers (Outcome #3) was below our projected target which reflects Arkansas' current less volitile economy.

The need for local governments to reduce costs by using interlocal governmental agreements (Outcome #4) was diminished and we reallocated resources to other priority programs. Local governments were under financial stress as predicated. However, the state provided additional funding to local governments to diminish their need to reduce costs.

Target was not met for financial management (Outcome #9 and #11) due to the fact that the statewide scope of the evaluation was smaller than the projected number.

Key Items of Evaluation

Producers, policy makers and scientists are increasingly concerned because water levels are starting to decrease in the Delta. Also, carbon use in agriculture is of growing concern within the industry as climate issues are being discussed by international and domestic policy makers and some sort of carbon trading regime moves closer to reality.

This year we developed a profit maximizing county level partial equilibrium model to measure carbon output, water and labor usage, and acreage of specific crops under different input and output prices. This model can quantify, in dollar terms, the impact of different water conservation scenarios (tax at the pump, cap and trade, etc.) on each county within Arkansas. This model has potential as a policy tool to compare the economic impact of different conservation projects in Arkansas. The model can also measure the carbon footprint of the agricultural sector within Arkansas. This model allows different carbon entitlement scenarios to be run and measures the impacts on each sector in the Arkansas agricultural industry. This model has the potential to have both a large and significant impact in policy making for both future carbon and irrigation restrictions.

Program #6

V(A). Planned Program (Summary)

1. Name of the Planned Program

Food, Nutrition & Health

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
502	New and Improved Food Products	2%		2%	
503	Quality Maintenance in Storing and Marketing Food Products	2%		2%	
504	Home and Commercial Food Service	1%		1%	
702	Requirements and Function of Nutrients and Other Food Components	10%		15%	
703	Nutrition Education and Behavior	30%		30%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	20%		25%	
724	Healthy Lifestyle	20%		25%	
806	Youth Development	15%		0%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	**Extension**		**Research**	
	1862	**1890**	**1862**	**1890**
Plan	73.0	0.0	12.0	0.0
Actual	73.2	0.0	23.9	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**
1175956	0	497283	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
889569	0	505051	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
6906144	0	10702835	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Division of Agriculture faculty will develop, evaluate, and disseminate education programs and curricula, incorporating new research and emphasizing healthy lifestyles. Programs Include:

Health & Aging:
Walk Across Arkansas (Adults and Youth)
Strong Women
Be MedWise Arkansas
Arthritis Education
ServSafe
Acknowledging Aging
Aging in Place
Adventures in Grandparenting

Nutrition Education:
Food Stamp Nutrition Education
Expanded Food and Nutrition Education Program
Eating and Moving for Life
Reshape Yourself Healthy Weight Program
Right Bite Cooking School
Living Well with Diabetes

Commercial Food Safety &Processing:
Improve food processing efficiency through an improved understanding of food chemistry .
Determine the impact of food processing systems on product quality and food safety attributes
Develop new food products that utilize Arkansas raw products
Increase the research base on improved food processing systems to minimize food pathogens
Improve detection systems for Listeria, Salmonella and other major food pathogens
Identify health related nutritional factors that will improve human health
Develop new food products that have improved nutritional content
Conduct monthly HACCP Round Table meeting.
Conduct food safety workshops.
Conduct Better Process Control School
Conduct Labeling workshop.
Conduct the ServSafe workshop.
Provide online distance education in food safety and manufacturing
Conduct new product development workshop
Provide assistance to small food companies and entrepreneurs in the form of services, nutritional labeling, and consulting.
Conduct culinology workshop
Conduct research

2. Brief description of the target audience

Food Companies
Entrepreneurs & Restaurants
Food Service Employees and/or Food Handlers
Limited Resource Adults & Youth
Minority Adults & Youth
Overweight Adults & Youth
Seniors
Employers & Employees
Child Care Providers
Homeowners
Schools
Other researchers
Students
Extension Faculty
Teaching Faculty
Research funding personnel and agencies
Public

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	56150	10563	60000	8000
2008	177824	260562	21190	1298

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

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	17	
2008	4	117	121

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- # of grants written and funded in support of Food, Nutrition and Health programming and research - Experiment station

Year	Target	Actual
2008	6	23

Output #2

Output Measure

- # of Food, Nutrition & Health educational sessions

Year	Target	Actual
2008	1737	4891

Output #3

Output Measure

- # of news articles, public service announcements, radio and TV media programs in support of Food, Nutrition and Health programs

Year	Target	Actual
2008	444	601

Output #4

Output Measure

- # of field demonstrations conducted to document the effectiveness of scientifically based production information - Experiment station

Year	Target	Actual
2008	5	12

Output #5

Output Measure

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

Year	Target	Actual
2008	675	976

Output #6

Output Measure

- # of participants in food, nutrition and health related educational classes, workshops, seminars and field demonstrations

Year	Target	Actual
2008	31038	114823

Output #7

Output Measure

- # of participants in monthly HACCP roundtable

Year	Target	Actual
2008	30	140

Output #8

Output Measure

- # of ServSafe classes offered

Year	Target	Actual
2008	20	74

Output #9

Output Measure

- # of hits on Food, Nutrition and Health websites

Year	Target	Actual
2008	800	442582

Output #10

Output Measure

- # of non-duplicated Food, Nutrition and Health 4-H Youth programs delivered

Year	Target	Actual
2008	400	135

Output #11

Output Measure

- # of non-duplicated participants in Food, Nutrition & Health 4-H Youth programs

Year	Target	Actual
2008	50000	5386

Output #12

Output Measure

- # of Food, Nutrition and Health in-service trainings conducted

Year	Target	Actual
2008	10	26

Output #13

Output Measure

- # of Arkansas Commodity Board Grants - Experiment station

Year	Target	Actual
2008	4	6

Output #14

Output Measure

- # of Federal grants and contracts - Experiment Station

Year	Target	Actual
2008	6	23

Output #15

Output Measure

- # of Food, Nutrition, & Health clientele contacts from education classes, workshops, group discussions, one-on-one interventions, demonstrations, and other educational methods

Year	Target	Actual
2008	116000	378320

Output #16

Output Measure

- # of Food, Nutrition, & Health education classes, workshops, group discussions, one-on-one interventions, demonstrations, and other educational events

Year	Target	Actual
2008	7800	26230

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	# of research projects conducted related to Food, Nutrition and Health - Experiment Station
2	# of participants who indicated that they increased their knowledge related to food, nutrition and health following an educational class, seminar or workshop
3	# of participants receiving certification in Better Process Control School, Culinary Scientists and ServSafe
4	% of participants who increased knowledge of chronic disease prevention
5	# of 4-H journals completed in Food, Nutrition and Health
6	% increase in knowledge of healthy food choices among nutrition program participants
7	# of food service managers who report improved food handling practices within a commercial establishment
8	# of growers, producers , distributors or retailers implementing one or more practices to minimize food safety hazards - Experiment Station
9	% of individuals that exchanged at least two unhealthy lifestyles for healthy ones as a result of completing an Extension program
10	% of individuals who increased strength training activities from less than 3 times per week to 3 or more times per week as a result of completing an Extension program
11	% of individuals who increased aerobic exercise from less than 3 times per week to 3 or more times per week as a result of completing an Extension program
12	% of individuals who reported they now get 30 minutes of moderate physical exercise on most days as a result of completing an Extension program
13	# of food processing and safety laboratory services provided and nutritional labels developed
14	# of Journal articles accepted - Experiment Station
15	% increase in adoption of healthy food practices among nutrition program participants
16	% increase in use of a variety of food resources to reduce costs among nutrition program participants
17	# of public and private representatives involved in discussions regarding public and organizational policies, regulations and industry practices that are barriers to dietary quality and physical activity
18	# of participants reporting reduction in body weight after completing a nutrition education program
19	# of participants reporting reduction in blood pressure after completing a nutrition education program
20	# of participants reporting a reduction in blood cholesterol after completing a nutrition education program
21	# of participants reporting a reduction in blood glucose after completing a nutrition education program
22	# of revised and or adoption of new public laws and organizational policies and practices that support sustained improvement of diet quality and physical activity for Arkansas citizens
23	# of new food businesses started
24	# of participants who indicate that they intend to adopt one or more healthy food/nutrition practices
25	# of individuals who increased walking activities from less then 3 times per week to 3 or more times per week as a result of completing an extension program
26	# of culinary participants sampled by survey that reported actual practice change as a result of the workshop within 2 years
27	# of small and very small meat and poultry plants that successfully completed an Action Plan developed in consultation with the University of Arkansas after a USDA-FSIS Notice of Intended Enforcement

Outcome #1

1. Outcome Measures

# of research projects conducted related to Food, Nutrition and Health - Experiment Station

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	17	80

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
702	Requirements and Function of Nutrients and Other Food Components
503	Quality Maintenance in Storing and Marketing Food Products

Outcome #2

1. Outcome Measures

# of participants who indicated that they increased their knowledge related to food, nutrition and 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	Quantitative Target	Actual
2008	18000	26589

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
724	Healthy Lifestyle
703	Nutrition Education and Behavior
504	Home and Commercial Food Service
702	Requirements and Function of Nutrients and Other Food Components
503	Quality Maintenance in Storing and Marketing Food Products
502	New and Improved Food Products

Outcome #3

1. Outcome Measures

# of participants receiving certification in Better Process Control School, Culinary Scientists and ServSafe

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	675	786

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Foodborne illness is a major concern to public health experts and the food industry. According to CDC, approximately 76 million cases occur each year with 325,000 hospitalizations, 5,000 deaths, and at an estimated cost of $ 7.7 - $23 billion annually in medical costs and lost productivity. Retail food establishments and consumers are frequently the sources of the outbreaks. In Arkansas, the food industry is a large business with food processing alone representing an $11 billion per year business and 25% of all manufacturing.

What has been done

Arkansas food safety programs focus on the production, processing, distribution, and preparation of food. Better Process Control School (BPCS), Culinology (training technologists in culinary skills), and ServSafe help the food industries implement food safety systems and comply with state and federal regulations. BPCS has certified more than 2,340 people from major canning companies since it started in 1973, and Extension has been offering ServSafe to retail food establishments for more than 10 years.

Results

In 2008, 794 participants were enrolled in the BPCS, Culinary Scientists, and ServSafe programs. 74 ServSafe programs were offered within the State of Arkansas. Of the 691 participants enrolled in ServSafe, 600 were certified, producing a certification rate of 86.8% for the year. Forty-eight participants were enrolled in BPCS with 45 receiving certification and 55 were enrolled in Culinology with 50 receiving certification. For the University of Arkansas, BPCS 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. Six additional food-related workshops that reached 250 people per class was the end-product of efforts expended as an outreach of BPCS.

4. Associated Knowledge Areas

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

Outcome #4

1. Outcome Measures

% of participants who increased knowledge of chronic disease prevention

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	65	93

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
724	Healthy Lifestyle

Outcome #5

1. Outcome Measures

# of 4-H journals completed in Food, Nutrition and Health

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	450	99

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

702	Requirements and Function of Nutrients and Other Food Components
806	Youth Development

Outcome #6

1. Outcome Measures

% increase in knowledge of healthy food choices among nutrition program participants

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	60	89

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #7

1. Outcome Measures

# of food service managers who report improved food handling practices within a commercial establishment

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	40	92

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #8

1. Outcome Measures

# of growers, producers , distributors or retailers implementing one or more practices to minimize food safety hazards - Experiment Station

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	35	12

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
702	Requirements and Function of Nutrients and Other Food Components

Outcome #9

1. Outcome Measures

% of individuals that exchanged at least two unhealthy lifestyles for healthy ones 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	Quantitative Target	Actual
2008	60	60

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #10

1. Outcome Measures

% of individuals who increased strength training activities from less than 3 times per week to 3 or more times per week 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	Quantitative Target	Actual
2008	75	63

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Arkansas' senior adult population is 14% of the total population. 55% of individuals 50 years old and older have osteoporosis and of those, 80% are women. Osteoporosis is a skeletal disorder in which bones weaken through the loss of bone mass or bone mineral density. This increases the risk of fracture, specifically hip fractures, thus increasing the risk of death. Even for those who survive, many experience loss of mobility and may have to enter long-term care facilities. Hip fractures cost more to repair than any other type of osteoporotic fracture.

What has been done

One of the main strategies for both treatment and prevention of osteoporosis is regular weight bearing and muscular strengthening exercise. The U of A Cooperative Extension Service offers a strength-training program specifically targeted to middle-aged and older women. The Strong Women Program is an evidence-based program, developed by Tufts University. Research shows that participants in the 'Strong Women' program increase strength, bone density, and balance, as well as reducing osteoporosis and hip fractures.

Results

51 of the 75 counties offered a Strong women program in 2008. Of the women taking part in Strong women, 1,334 (non-duplicated) completed a fitness test. Of those women, 83% (1,107) increased their strength; therefore, our assumption is that they also reduced low bone mass, thus reducing osteoporosis. Based on the standard national statistics that 55% of women over the age of 50 will have a hip fracture, it is surmised that 609 women will NOT have a hip fracture due to participation in our program. Using the direct average cost of a hip fracture being $ 13,470, it is projected that the Strong women program participants have avoided $ 8.2 million in direct medical expenditures.

4. Associated Knowledge Areas

KA Code	Knowledge Area
724	Healthy Lifestyle

Outcome #11

1. Outcome Measures

% of individuals who increased aerobic exercise from less than 3 times per week to 3 or more times per week 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	Quantitative Target	Actual
2008	70	77

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
724	Healthy Lifestyle

Outcome #12

1. Outcome Measures

% of individuals who reported they now get 30 minutes of moderate physical exercise on most days 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	Quantitative Target	Actual
2008	65	92

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
724	Healthy Lifestyle

Outcome #13

1. Outcome Measures

# of food processing and safety laboratory services provided and nutritional labels developed

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	200	122

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
503	Quality Maintenance in Storing and Marketing Food Products
502	New and Improved Food Products

Outcome #14

1. Outcome Measures

# of Journal articles accepted - Experiment Station

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	10	117

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
702	Requirements and Function of Nutrients and Other Food Components

Outcome #15

1. Outcome Measures

% increase in adoption of healthy food practices among nutrition program participants

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	50	67

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Arkansas is a poor, rural state with 17 percent of its population living in poverty and 14 percent of its households experiencing food insecurity. Nearly one in five Arkansans participates in the Food Stamp Program. Diets of Arkansans living in the Delta include substantially fewer fruits, vegetables and dairy foods, more added sugars and more calories from fat than the national average. The incidence of diet-related chronic diseases is higher than the national average and even greater among persons living in poverty.

What has been done

The University of Arkansas Cooperative Extension targets nutrition education programs to Arkansans in a variety of community settings using multi-session programs in group settings; learn-while-you-wait demonstrations; one-on-one lessons; and other strategies. UACES provided nutrition education programs in partnership with the Hometown Health Coalitions, Arkansas Department of Human Services, schools, community agencies, public sector or government-funded agencies, private non-profit and other service agencies in all 75 counties.

Results

* 35,815 unduplicated FSNE-eligible participants and 3,940 other Arkansans were reached through a variety of nutrition education programs.
* 61% of adult and 55% of youth participants reported increased fruit consumption and 57% of adult and 46% of youth participants reported increased vegetable consumption
* 69% of adult and 66% of youth participants reported increased low fat or fat free dairy consumption
* 79% of adult and 69% of youth participants reported they now use food/nutrition labels to make food choices and 33% of adult participants reported decreasing weight and 53% of adults and 90% of youth participants reported increased physical activity.

4. Associated Knowledge Areas

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

Outcome #16

1. Outcome Measures

% increase in use of a variety of food resources to reduce costs among nutrition program participants

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	30	92

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

Outcome #17

1. Outcome Measures

# of public and private representatives involved in discussions regarding public and organizational policies, regulations and industry practices that are barriers to dietary quality and physical activity

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	10	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
702	Requirements and Function of Nutrients and Other Food Components
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
724	Healthy Lifestyle
703	Nutrition Education and Behavior

Outcome #18

1. Outcome Measures

# of participants reporting reduction in body weight after completing a nutrition education program

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	167	337

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Excess weight in the form of body fat is linked to increased risk for cardiovascular disease, diabetes and certain types of cancer. In Arkansas 36% of adults are overweight and 29% are considered obese. Research shows that even small decreases in weight can lower the risks for these chronic diseases. It is estimated that obesity may cost Arkansas over $1 billion in health care costs and lost productivity annually. More than half the costs are paid by taxpayers via Medicare or Medicaid.

What has been done

The UACES offered the 15-week Reshape Yourself program in twenty one counties in FY08. Reshape Yourself supports the idea that people of all sizes and shapes can improve health by adopting healthy practices. Participants learn to plan balanced diets based on MyPyramid, balance calorie intake with calorie expenditure, read food labels, determine which foods are high in calories and fat and find enjoyable ways to be physically active and many more ideas for maintaining a healthy weight.

Results

The Reshape Yourself program experienced a 67% graduation rate. The average weight loss per graduate was 11.7 pounds. Graduates walked 22,477 miles and lost 2,342 pounds. 91% of participants reported altering behavior to follow standard serving sizes. 89% of participants decreased body weight. 87% of participants reported an increase in walking activity. 59% of participants asked about or screened reported decreased blood pressure. 66% of participants asked about or screened reported decreased blood cholesterol. 64% of participants asked about or screened reported decreased blood glucose. 18% of participants asked about decreasing medication reported their doctor had reduced or eliminated prescribed medication as a result of lifestyle changes made.

4. Associated Knowledge Areas

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

Outcome #19

1. Outcome Measures

# of participants reporting reduction in blood pressure after completing a nutrition education program

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	68	64

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 #20

1. Outcome Measures

# of participants reporting a reduction in blood cholesterol after completing a nutrition education program

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	38	62

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #21

1. Outcome Measures

# of participants reporting a reduction in blood glucose after completing a nutrition education program

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	48	60

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 #22

1. Outcome Measures

# of revised and or adoption of new public laws and organizational policies and practices that support sustained improvement of diet quality and physical activity for Arkansas citizens

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2	2

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
702	Requirements and Function of Nutrients and Other Food Components
724	Healthy Lifestyle

Outcome #23

1. Outcome Measures

# of new food businesses started

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	12	6

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
502	New and Improved Food Products

Outcome #24

1. Outcome Measures

# of participants who indicate that they intend to adopt one or more healthy food/nutrition practices

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	10000	17222

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Food security is defined as households having access, at all times, to enough food for an active, healthy life for all household members. A report by the U.S. Department of Agriculture stated that Arkansas is the fourth worst state in the nation for food insecurity (14.3 percent of all Arkansas households were food insecure). Groups with higher rates than the national average are households with incomes below the official poverty line, children in households headed by a single woman, Black and Hispanic households.

What has been done

EFNEP in Arkansas provides one-on-one and group education within 13 priority counties with a high food stamp and Hispanic population. The programs are informal and available at convenient locations and times. Program Assistants indigenous to the target population deliver intensive multi-session nutrition education lessons. The majority of adult participants complete the EFNEP curriculum in less than 12 months. Youth are taught using summer and enrichment programs.

Results

EFNEP enrolled 3,992 participants that included 13,232 family members. Participation outcome data indicated the following as a result of completing the nutrition education program:
* 2176 participants indicated they increased their knowledge/skills related to healthy food choices
* 2135 participants who reported they seldom run out of food before the end of the month
* 1777 adult participants who reported they were more often comparing prices before they buy food
* 1294 hours of trainings
* 2523 Blacks reached
* 323 Hispanics reached

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
724	Healthy Lifestyle

Outcome #25

1. Outcome Measures

# of individuals who increased walking activities from less then 3 times per week to 3 or more times per week 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	Quantitative Target	Actual
2008	1730	969

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Obesity has reached epidemic proportions with over a third of the US population weighing in as obese(as indicated by a BMI of 30 kg/m or higher). Obesity increases the risk of mortality and many chronic diseases(i.e., heart disease, cancer, diabetes, etc) and other health problems(i.e., respiratory,gynecological,developmental,etc). Ultimately, obesity decreases a person's quality of life and overburdens the health care system, attributing over $600 million dollars in health care costs in Arkansas alone.

What has been done

Arkansas has responded to the obesity epidemic by encouraging Arkansans to move more. Walk Across Arkansas (WAA) is a statewide physical activity campaign in the form of a walking competition. It is offered twice per year, for 8 week increments with 8-person teams. Miles walked are counted using pedometers or conversion formulas (if other forms of activity are utilized). At the end of the program, teams with most miles and improvements, across various categories, receive prizes and are announced statewide.

Results

In 2008, 1,224 Arkansans participated in WAA. Seventy-nine percent (n=969) reported they increased walking activities from <3 times per week to 3+ times per week. Participants reported improvement in health and well-being in terms of food habits, activity, energy, sleep, blood work, stress and relationships. The average number of miles each participant walked per week as a result of WAA increased from 27 to 205 miles. National surveys indicate that for every 1,000 steps taken (or half a mile); $1 is saved in healthcare costs. This means that each Arkansan who participated in WAA had an average healthcare savings of $420 per year, or a potential statewide savings of $514,080 per year.

4. Associated Knowledge Areas

KA Code	Knowledge Area
724	Healthy Lifestyle

Outcome #26

1. Outcome Measures

# of culinary participants sampled by survey that reported actual practice change as a result of the workshop within 2 years

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	30	45

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
502	New and Improved Food Products
504	Home and Commercial Food Service

Outcome #27

1. Outcome Measures

# of small and very small meat and poultry plants that successfully completed an Action Plan developed in consultation with the University of Arkansas after a USDA-FSIS Notice of Intended Enforcement

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	5	4

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
502	New and Improved Food Products
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

FTE in Gerontology reported programs and outcomes not previously accounted for within plan.
New faculty member (1 FTE) assigned to the Health subject matter area.
External funding impacted the degree in which programs were reduced.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- Retrospective (post program)
- Before-After (before and after program)
- During (during program)
- Other (Conversion charts; national comparison charts)

Evaluation Results

Programming instructors used multiple evaluation strategies to determine program outcomes. The evaluation design was primarily based on the programs' intended outcomes and those that were relevant to the activities and educational interventions. Nutrition and Health programs used health screenings to determine behavioral changes and differences within physiologically-related measurement levels (e.g.; blood pressure levels, blood glucose levels, cholesterol levels). Fitness tests indicated that the 83% (1,107) Strong Women's program participants increased their strength.

Before and after weigh-ins were used to determine weight loss and increases in physical activity during and following the program interventions. Food recalls were used to determine increases in the consumption of fruits and vegetables (2322 EFNEP graduates increased consumption from entry to exit by 49%).

Seventy-nine percent (n=969) Walk Across Arkansas participants reported they increased walking activities <3 times per week to 3+ times per week. Miles walked were calculated using pedometers. Health care cost savings for Arkansans were calculated using national healthcare cost averages. Based on national averages the Walk Across Arkansas program participants yield an average healthcare savings of $420 per year.

The ServSafe and Better Processing School programs assisted the food industry in the implementation and compliance with food safety regulations. End of program testing was usedto determine pass/fail rates of participants seeking certification (86.8% certification rate for ServSafe; 90% certification for Better Processing).

Process Evaluation (Explanation for variances)

State Output:

#1-- Underreported due to data entry failure. Data reported under a different state outcome.

State Outcome:

#5- A shift in the program emphasis to Science Technology Engineering and Math.

#8- Educators failed to report appropriately to the indicator. Training issue.

#10- The quantitative actual is skewed due to the wording of the question. This is an ongoing program and the actual data captured included those returning enrollees who were already exercising.

#13 and #23- A change in the economy which led to a reduced amount of entrepreneurs.

#17 - Target too ambitious and needs to be reduced due to a lack of FTE's contributing to this outcome.

#19- Less FTE's conducting program.

#25- A back-log in data entry.

Key Items of Evaluation

Outcome data from key programs reveal the following impacts:

• Fifty-one of the 75 Arkansas counties offered a Strong Women program. Of the women taking part in the program, 1,334 (non-duplicated) completed a fitness test. Of those women 83% (n=1,107) increased their strength; therefore, our assumption is that they also reduced low bone mass, thus reducing osteoporosis. Based on the standard national statistic that 55% of women over the age of 50 will have a hip fracture, 609 women will not have a hip fracture due to participation in the program. Using the direct average cost of a hip fracture being $13,470, Strong Women program participants in Arkansas have avoided $8.2 million in direct medical expenditures.

• 35,815 unduplicated Food Stamp Nutrition Education eligible participants were reached through the University of Arkansas-Cooperative Extension food stamp nutrition education program. Of those participating, 67% of adults and 90% of youth participants reported increased physical activity; 70% of adults and 43% of youth participants increased vegetable consumption.

• The Right Bite Cooking School teaches participants to plan healthy meals, select health-promoting foods, and prepare foods using healthy cooking methods. Of those participating 93% (n=442) at end of program survey indicated a positive attitude changes related to food and nutrition; 88% of participants reported altering behavior to follow standard serving sizes; 92% reported increased use of food labels.

• Six hundred of the 691 ServSafe participants received certification; Forty-eight participants were enrolled in Better Process Control Schools with 45 receiving certification and 55 enrolled in Culinology with 50 receiving certification.

• Arkansas responded to the obesity epidemic by encouraging Arkansans to move more. National surveys indicate that for every 1,000 steps taken (or 1/2 a mile), $1 is saved in healthcare cost. This means that Walk Across Arkansas participants had an average healthcare savings of $420 per year, or a potential statewide savings of $514,080 per year.

• The Reshape Yourself program experienced a 67% graduation rate. The average weight loss per graduate was 11.7 pounds. Graduates recorded that they walked 22,477 miles and lost 2,342 pounds.

Program #7

V(A). Planned Program (Summary)

1. Name of the Planned Program

Natural Resources & Environment

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	5%		5%	
102	Soil, Plant, Water, Nutrient Relationships	5%		5%	
111	Conservation and Efficient Use of Water	10%		10%	
112	Watershed Protection and Management	15%		15%	
122	Management and Control of Forest and Range Fires	5%		5%	
123	Management and Sustainability of Forest Resources	25%		25%	
124	Urban Forestry	5%		5%	
133	Pollution Prevention and Mitigation	10%		10%	
135	Aquatic and Terrestrial Wildlife	15%		15%	
605	Natural Resource and Environmental Economics	5%		5%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	15.0	0.0	12.0	0.0
Actual	17.4	0.0	23.3	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
279708	0	342335	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
211589	0	347682	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
1643143	0	7849674	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

4-H Rice for Ducks programs
Arkansas Acres for Wildlife program
Develop educational materials, curriculum, & resources
Geographic Information Systems (GIS) and Geographic Positioning Systems (GPS) training
Site visits, one-on-one consultations
Workshops
Field Days
Farm Visits
Demonstrations
Educational Meetings
News-articles
Newsletter
Web-based Education

2. Brief description of the target audience

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

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	**Target**	**Target**	**Target**	**Target**
Plan	5000	186000	3000	10000
2008	14422	54880	2640	229

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

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	6	7	
2008	11	38	49

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of plan writers trained

Year	Target	Actual
2008	70	12

Output #2

Output Measure

- Number of private nutrient applicators trained

Year	Target	Actual
2008	1200	35

Output #3

Output Measure

- Number of commercial applicators trained

Year	Target	Actual
2008	120	5

Output #4

Output Measure

- Number of courses held for registered foresters

Year	Target	Actual
2008	13	18

Output #5

Output Measure

- Number of Natural Resource Educational Meetings

Year	Target	Actual
2008	45	119

Output #6

Output Measure

- Number of Natural Resource Demonstrations

Year	Target	Actual
2008	25	98

Output #7

Output Measure

- Number of Natural Resource Field Days

Year	Target	Actual
2008	8	11

Output #8

Output Measure

- Number of Natural Resources & Environment clientele contacts from education classes, workshops, group discussions, one-on-one interventions, demonstrations, and other educational methods

Year	Target	Actual
2008	8000	17235

Output #9

Output Measure

- Number of Natural Resources & Environment education classes, workshops, group discussions, one-on-one interventions, demonstrations, and other educational events

Year	Target	Actual
2008	2290	2510

Output #10

Output Measure

- Number of 4-H Rice for Ducks Program participants

Not reporting on this Output for this Annual Report

Output #11

Output Measure

- Number of Acres enrolled in Arkansas Acres for Wildlife

Year	Target	Actual
2008	1700000	1240157

Output #12

Output Measure

- Number of Natural Resource Workshops

Year	Target	Actual
2008	40	69

Output #13

Output Measure

- Number of Educational Materials & Curriculum delivered

Year	Target	Actual
2008	8	55055

Output #14

Output Measure

- Number of Natural Resource Newsletters

Year	Target	Actual
2008	4	44049

Output #15

Output Measure

- Web-Based Education: Number of web modules, sites

Year	Target	Actual
2008	2	14

Output #16

Output Measure

- Number of Abandoned Pesticide Collection Events

Year	Target	Actual
2008	5	0

Output #17

Output Measure

- Number of municipal separate storm-sewer system (MS4) jurisdictions educated on stormwater management regulations, planning, and implementation.

Year	Target	Actual
2008	4	16

Output #18

Output Measure

- Number of bioenergy educational events.

Year	Target	Actual
2008	{No Data Entered}	18

Output #19

Output Measure

- Number of ecosystem services program events.

Year	Target	Actual
2008	{No Data Entered}	5

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Number of landowners indicating an increased understanding of natural resource management
2	Number of acres impacted by Natural Resources & Environmental educational efforts
3	Number of clientele who adopt Best Management Practices in Natural Resource management that protect and enhance water quality.
4	Number of Landowners who adopt wildlife management practices that enhance wildlife habitat or prevent & control wildlife damage to property
5	Number of pounds of chemicals collected in Abandoned Pesticide Collection Events
6	Number of registered foresters maintaining CFEs

Outcome #1

1. Outcome Measures

Number of landowners indicating an increased understanding of natural resource management

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	300	2088

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Arkansas has 18.4 million acres of timberland which produces between 20 and 25 million tons of industrial roundwood each year. Ten years ago, significant portions of this timberland was owned by forest industry, which also had significant resources and expertise to manage and protect this forest. Over the past five years, nearly all industrial forest land in Arkansas has been transferred to non-industrial private owners. Forest land ownership is becoming more fragmented and the new owners often are focused on short-term economic returns or the development of this forest land into permanent non-forest uses. At the same time, the demand for timber, clean water, biodiversity, and biomass for renewable fuels is likely to place greater demands on Arkansas's forest lands in the near future.

What has been done

The use of existing research and demonstration plots, as well as continued development of new projects on field stations located around the state are used to support workshops, seminars, and field days. The University of Arkansas cooperates with other forestry organizations in conducting landowner education programs, and whenever possible, before and after surveys of landowner knowledge regarding new technologies, new markets, and new management techniques are conducted.

Results

Under the outcome target of natural resource management, landowners have indicated increased awareness of soil and water conservation practices, and how to obtain the best benefit to cost ratios for management inputs of water (irrigation), herbicides, and fertilizers on their forest land. As industrial fire-fighting capacity has been reduced though changes in land ownership, landowner awareness regarding fire management and prevention techniques has been a priority of several workshops conducted in cooperation with the Arkansas Forestry Commission. As the Wildland Urban Interface (WUI) continues to grow in Arkansas through expanded development of forest lands, landowner education is turning also towards suburban landowners, educating them in protecting their home from wildfire dangers, dealing with nuisance wildlife, and reducing their negative impact on water resources through proper use and disposal of household chemicals.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management
101	Appraisal of Soil Resources
135	Aquatic and Terrestrial Wildlife
122	Management and Control of Forest and Range Fires
123	Management and Sustainability of Forest Resources
111	Conservation and Efficient Use of Water
102	Soil, Plant, Water, Nutrient Relationships
124	Urban Forestry
133	Pollution Prevention and Mitigation

Outcome #2

1. Outcome Measures

Number of acres impacted by Natural Resources & Environmental educational efforts

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	42000	1241687

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Natural resource management, water quality and quantity, alternative energy, professional development, pollution mitigation and prevention are all key issue facing Arkansans. Providing households, nutrient applicators, landowners, farmers, and natural resource professionals the tools and knowledge necessary to implement sustainable natural resource management is the goal of this program. An estimate of the acres actually impacted by our efforts helps stakeholders and the agency gage success.

What has been done

Various programs fall under the Natural Resource and Environment umbrella and are delivered at county, state and regional levels. There were over 400 natural resource education meetings, short-courses, workshops, field days, and demonstrations for households, landowners, farmers, natural resource professionals, and other stakeholders held. Topics included wildlife habitat restoration, hardwood and pine management, wildlife food plots, nutrient management, GIS/GPS applications, and storm water management.

Results

In 2008, 3,359 landowners and farmers enrolled over 1,240,157 acres in the Acres for Wildlife Program, a cooperative program between the Arkansas Game and Fish Commission and the UA Cooperative Extension Service. The objective of the program is to improve wildlife habitat on private land through establishing food plots and encouraging management plants. Of the landowners enrolled in Acres for Wildlife, 298 cooperators requested and received information about developing wildlife management plans. Landowner Education: 40 different workshops, field days, conferences, and meetings were held in Arkansas in 2008. Over 2,000 individuals including foresters, land managers, and landowners attended these events.

Although the acreage impacted in unknown, over 200 commercial and private nutrient applicators were trained regarding pollution prevention and water quality protection in 2008. Twenty-five livestock operators managing over 1,500 acres learned to minimize their impact on water quality as a result.

Thirty-one MS4 jurisdictions in Arkansas participated, identified as Phase II areas (including 48 cities/towns and 13 unincorporated areas in 13 counties) were educated about storm water runoff mitigation, illicit discharge detection and elimination, runoff control, and pollution prevention.

4. Associated Knowledge Areas

KA Code	Knowledge Area
135	Aquatic and Terrestrial Wildlife
111	Conservation and Efficient Use of Water
101	Appraisal of Soil Resources
605	Natural Resource and Environmental Economics
123	Management and Sustainability of Forest Resources
102	Soil, Plant, Water, Nutrient Relationships
122	Management and Control of Forest and Range Fires
133	Pollution Prevention and Mitigation
112	Watershed Protection and Management

Outcome #3

1. Outcome Measures

Number of clientele who adopt Best Management Practices in Natural Resource management that protect and enhance water quality.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	200	2088

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Eastern Arkansas has hundreds of stream miles impaired by turbidity. EPA considers siltation from row crop agriculture as the leading source of stream impairments in Arkansas. The loss of nutrients in runoff from applications of animal manures to pasture as fertilizer is an issue of great concern and interest in Northern and Western Arkansas. It has prompted new State nutrient management regulations, two federal lawsuits against the poultry industry and an increased concern to poultry producers over the long-term sustainability of their livlihood.

What has been done

The University of Arkansas Division of Agriculture is conducting field research and education on reducing agriculture's contribution to nonpoint source pollution to include programs addressing nutrient management, soil and water conservation, and the effectiveness of selected BMPS in reducing sediment and nutrients in runoff from agricultural operations.

Results

As a result of our research and educational efforts, we assume that row crop producers are implementing BMPS to reduce pollutant loads from crop production in the Mississippi Delta of Arkansas. And that livestock producers are implementing BMPS to reduce pollutant loads from pastures treated with poultry litter in the Ozark Highlands region of Arkansas. With regard to nutrient management, we have trained over 140 nutrient management planners and over 2700 private and commercial nutrient applicators.

4. Associated Knowledge Areas

KA Code	Knowledge Area
123	Management and Sustainability of Forest Resources
112	Watershed Protection and Management
111	Conservation and Efficient Use of Water
135	Aquatic and Terrestrial Wildlife
133	Pollution Prevention and Mitigation

Outcome #4

1. Outcome Measures

Number of Landowners who adopt wildlife management practices that enhance wildlife habitat or prevent & control wildlife damage to property

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	190	386

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Private landowners account for approximately 80% of the landholdings in Arkansas. Their actions on the landscape directly affect wildlife populations. Those who adopt wildlife management practices will help not only high visibility species such as white-tailed deer and wild turkey, but also species of concern such as Northern bobwhite, spotted skunk, and 300+ lesser known species described in the state wildlife action plan. Reducing conflicts with wildlife will result in a win-win outcome for both landowners and wildlife. The economic costs can be substantial to individuals experiencing property damage and health issues from encountering wildlife. For example, hiring a professional to remove a bat colony from a home can cost $3,000 to $10,000 or more.

What has been done

Extension agents in 75 county offices and professional wildlife and forestry faculty have conducted workshops, co-coordinated conferences, answered public inquiries, prepared and distributed fact sheets, newsletters, and educational seed packets, and posted information on websites. In one workshop alone, 90 landowners received training and resources about white-tailed deer management with an emphasis on using native plants to manage the landscape. The Extension website invites the public to ask pest management experts questions which are routed to relevant professional faculty for response.

Results

The reported actual quantitative outcome of 386 is conservative given numerous public contacts through a variety of methods, many of which are difficult to document changes in behavior. The actual outcome represents those clients who county agents followed up and reported adoption of a practice to improve wildlife habitat or prevent wildlife damage. County agents also collected evaluations from meeting participants and asked their intention to adopt practices which improve wildlife or prevent wildlife damage. When feasible, landowners can benefit financially by preventing or controlling wildlife damage themselves instead of hiring a nuisance wildlife control operator. We provide research-based information and legal aspects of encounters with nuisance wildlife species such as snakes, skunks, deer, armadillos, moles, gophers, bats, and bears.

4. Associated Knowledge Areas

KA Code	Knowledge Area
135	Aquatic and Terrestrial Wildlife
123	Management and Sustainability of Forest Resources
605	Natural Resource and Environmental Economics
102	Soil, Plant, Water, Nutrient Relationships
101	Appraisal of Soil Resources
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management

Outcome #5

1. Outcome Measures

Number of pounds of chemicals collected in Abandoned Pesticide Collection Events

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:
Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	45000	164856

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Unknown quantities of old and abandoned pesticides are stored on farms in Arkansas. They pose a threat to the environment in the event of floods, tornados, fires and just sitting in old barns and sheds. The Arkansas Abandoned Pesticide Trust Fund was established to provide funds for collection and disposal of old farm chemicals, however all the funds must be used for collection and disposal. This creates a void providing information and education to farmers of the dangers posed by these old chemicals and how to participate in planned collection events.

What has been done

The UACES, with funding from an EPA 319 grant, developed educational and promotional materials to be utilized in educating farmers about the dangers of old abandoned pesticides and how to participate in future pesticide collection events. Past history showed that farmers showed reluctance to participate in old pesticide collection events due to distrust and mis-information of the program.

Results

In counties in the grant targeted area, two collection events per county were offered over a two year period. In all but one case, participation and amounts collected increased after education was provided to the farmers. The educational materials are now being utilized by county agents as collection events are offered around the state. 8 collection events were conduct during FY 08.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management
133	Pollution Prevention and Mitigation

Outcome #6

1. Outcome Measures
Number of registered foresters maintaining CFEs

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:
Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	450	517

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Under legislation passed in 1999, all individuals referring to themselves as foresters and providing assistance to private forest landowners must be registered with the Board of Registered Foresters. Statewide, there are approximately 500 Registered Foresters. Each must complete 6 hours of Continuing Education a year to remain registered. The Forestry Continuing Education program works to fulfill these educational requirements of foresters in particular and all other professionals in general.

What has been done

Input into the Forestry Continuing Education program is derived directly from the Continuing Education advisory board comprised of registered foresters, University faculty, private forest landowners, and other natural resource professionals. Input is also received from the Arkansas Forest Resources Center advisory board, county agents, Arkansas Forestry Commission, and other partner agencies via various meeting, direct contact, and planning meetings.

Results

The Arkansas Forest Resources Center conducted 18 meetings, workshops and short courses which qualified for Continuing Forestry Education hours. These offerings provided the Registered Foresters with many opportunities to gain they Continuing Education hours at a number of locations and times through the year. Topics covered in the Continuing Education short courses include Global Information Systems applications in forestry, forest vegetation modeling, forest management, wildland urban interface issues, biofuel issues, timber taxation, and prescribed fire. Workshops are from 1 to 5 days long depending upon the course material. For example, the Prescribed Fire short-course is a five day intensive field-based course.

4. Associated Knowledge Areas

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

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 (Budget constraints and emerging technologies)

Brief Explanation

Program delivery was shifted several times through the year because of the need to supply immediate information to constituents and county agents. Additionally, programs have been refocused to deal with the broad range of biofuel topics that require a global shift of effort. A broad scale effort to define appropriate technologies and their adaptability to Arkansas conditions has shifted much of our research effort to these topic areas.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- Before-After (before and after program)
- During (during program)

Evaluation Results

Field days, workshops, and other educational events are evaluated for content and future direction during or immediately after the program.Evaluations are usually administered by the program coordinators including county agents, Extension faculty, and other program coordinators.Information gathered from evaluations is used to plan future programs, collect information about program effectiveness, and gage participants' interest in other topics.Much of this data is then entered into an Extension database and then aggregated across individuals and programs.The reports generated provide information important for determining future educational programs.

Many educational meetings and workshops are developed collaboratively with industry, agency, and other stakeholders.These groups meet periodically to assess and evaluate programs resulting in either new and/or modified programs.

Individual faculty members are also evaluated to determine program direction and modification.

Key Items of Evaluation

Program participant evaluations along with cooperator and internal reviews will assist in determining the future direction of all programs.

Program #8

V(A). Planned Program (Summary)

1. Name of the Planned Program

Pest Management

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
211	Insects, Mites, and Other Arthropods Affecting Plants	10%		10%	
212	Pathogens and Nematodes Affecting Plants	10%		10%	
216	Integrated Pest Management Systems	30%		30%	
312	External Parasites and Pests of Animals	20%		20%	
403	Waste Disposal, Recycling, and Reuse	5%		5%	
721	Insects and Other Pests Affecting Humans	15%		15%	
723	Hazards to Human Health and Safety	10%		10%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	28.0	0.0	20.0	0.0
Actual	15.6	0.0	2.4	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
250205	0	78490	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
189271	0	79716	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
1470181	0	934096	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

The University of Arkansas Division of Agriculture Research Pest management Program will reduce the impacts of major pests by increasing the knowledge base on major pests, diseases, and weeds of importance to Arkansas; developing new crop protection strategies and technologies for our major crop systems; and integrating new knowledge in plant and animal genomics and basic science into new pest management strategies.Methods will include grower meetings, training extension agents and crop consultants, educational newsletters, Extension publications, visits to individual growers /homeowners, diagnosis of pest problems, newspaper/magazine /professional journal articles, interviews, field days, web-based information, and/or applied on-farm research.

The University of Arkansas Division of Agriculture Extension Pest Management program will be delivered through the following methods, targeting issues specific to Arkansas:

The Cotton Nematode and Disease Management Program supports and assists county extension programs in the state, particularly the Delta region, to better identify, understand, and manage major cotton diseases in Arkansas.

The Pesticide Applicator Training Program provides certification and recertification training sessions for private and commercial/non-commercial applicators statewide each year. County Extension agents provide the training for private applicators (farmers), and the pesticide assessment specialist is responsible for training the commercial/non-commercial applicators.

The Cotton, Rice and Soybean IPM Programs offer funding through mini-grants for county extension education efforts focused primarily on integrated pest management of cotton, rice and soybean pests. County extension education efforts are aimed at improving crop production and pest management through adoption of research-based recommendations.

The Rice, Soybean, and Wheat Pathology Programs assist county programs to educate growers and others to identify, understand and manage the rice, soybean, and wheat diseases in Arkansas.

The Soybean Cultivar Disease Screening Program assists soybean producers in selecting appropriate soybean cultivars for their farms to avoid losses from diseases and nematodes.

As part of the Diversified IPM Program, urban and commercial horticulture educational programs are delivered to train urban and commercial vegetable, ornamental, turf and fruit clientele in pest and plant disease management practices.

Human Integrated Pest Management will develop sound recommendations for IPM targeting pests affecting humans, and to deliver the recommendations to a variety of sectors of the public. Pests to be targeted include Africanized bees, termites, and fire ants in residential settings. Delivery methods include presentations at educational meetings and workshops, extension publications and newsletters, web-based materials and visits to households of affected citizens.

2. Brief description of the target audience

Crop producers
Livestock producers
Division of Agriculture personnel
Agricultural consultants
Agricultural industry personnel
Pesticide applicators
Pest Control Operators
Homeowners
Golf course superintendents
Commercial pest management personnel
Master gardeners
Commercial landscapers
Landscape management staff
Public Health Officials
Other researchers
Students
Extension Specialists
Research Funding Personnel and Agencies
Policy and Decision Makers
Regulatory Personnel
State Plant Board Personnel
General Public

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	78000	65000	0	0
2008	39000	47500	741	4

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

Patent Applications Submitted

Year	Target
Plan:	3
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	5	45	
2008	3	64	67

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- # of one-on-one contacts

Year	Target	Actual
2008	60000	39741

Output #2

Output Measure

- # of field demonstrations

Year	Target	Actual
2008	375	355

Output #3

Output Measure

- # of farm tours

Year	Target	Actual
2008	60	75

Output #4

Output Measure

- # of publications written

Year	Target	Actual
2008	15	67

Output #5

Output Measure

- # of farm visits made

Year	Target	Actual
2008	6000	7726

Output #6

Output Measure

- # of pesticide applicator education classes

Year	Target	Actual
2008	90	100

Output #7

Output Measure

- # of homeowner education classes

Year	Target	Actual
2008	50	35

Output #8

Output Measure

- # of hits on website

Year	Target	Actual
2008	4000	100000

Output #9

Output Measure

- # of newsletters

Year	Target	Actual
2008	420	35

Output #10

Output Measure

- # of research field days

Year	Target	Actual
2008	10	57

Output #11

Output Measure

- # of workshops

Year	Target	Actual
2008	15	50

Output #12

Output Measure

- # of newsletter articles

Year	Target	Actual
2008	65	195

Output #13

Output Measure

- # of Arkansas Commodity Board grants received

Year	Target	Actual
2008	25	7

Output #14

Output Measure

- # of federal grants and contracts

Year	Target	Actual
2008	20	4

Output #15

Output Measure

- # of educational classes

Year	Target	Actual
2008	224	239

Output #16

Output Measure

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

Year	Target	Actual
2008	78000	55000

Output #17

Output Measure

- # of Pest Management education classes, workshops, group discussions, one-on-one interventions, demonstrations, and other educational events

Year	Target	Actual
2008	66824	40000

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Refereed Journal Publications
2	# of participants becoming aware of IPM strategies
3	# of participants intending to adopt IPM practices
4	# of participants gaining knowledge of IPM practices
5	# of participants gaining knowledge of proper pesticide application practices
6	# of participants passing commercial pesticide certification exams
7	# of producers adopting one or more IPM practices
8	# of homeowners adopting one or more IPM practices
9	# of participants adopting one or more proper pesticide application practices
10	# of diagnostic submissions
11	# of producers using computer-assisted programs
12	# of clients using scouting programs
13	# of clientele that have adopted IPM-related practices
14	# of pest monitoring traps utilized
15	# of business start ups
16	Annual soybean yield - bushels per acre
17	Annual value of soybean production (1,000 Dollars)
18	Annual rice (all) yield -- pounds per acre
19	Annual value of rice (all) production (1,000 dollars)
20	Annual cotton (all) yield -- pounds per acre
21	% of soybean acreage receiving herbicide applications
22	Pounds (1,000) of herbicides applied to planted soybean acreage
23	% of soybean acreage receiving insecticide applications
24	Pounds (1,000) of insecticides applied to planted soybean acreage
25	% of soybean acreage receiving fungicide applications
26	Pounds (1,000) of fungicides applied to planted soybean acreage

Outcome #1

1. Outcome Measures

Refereed Journal Publications

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	50	67

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
721	Insects and Other Pests Affecting Humans
312	External Parasites and Pests of Animals
216	Integrated Pest Management Systems

Outcome #2

1. Outcome Measures

# of participants becoming aware of IPM strategies

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	4000	7583

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
216	Integrated Pest Management Systems
403	Waste Disposal, Recycling, and Reuse
312	External Parasites and Pests of Animals
721	Insects and Other Pests Affecting Humans
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants

Outcome #3

1. Outcome Measures

# of participants intending to adopt IPM practices

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	4000	6058

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Soybean rust entered the southern U.S. by Hurricane Ivan in 2004, and is considered a model introduced crop biosecurity threat. Knowledge among southern soybean producers, University personnel and the industry is still limited, and improving knowledge among stakeholders to deal with soybean rust year to year, and other biosecurity threats, remains a challenge.

What has been done

University of Arkansas Division of Agriculture Extension specialists organized a first time soybean rust forum in March 2008, with an objective to change the level of knowledge about this model biosecurity disease threat among soybean stakeholders. The Forum was held in Brinkley, AR - a centralized location for the Arkansas soybean industry and included expert crop biosecurity speakers from Arkansas and Louisiana Land Grant University systems. Attendees were surveyed for knowledge change and other data using an instrument developed in consultation with assessment specialists with the University of Arkansas Cooperative Extension Service.

Results

The Post/Pre survey instrument focused on knowledge change (based on presentations) in 6 areas: 2007 Soybean Rust late epidemic in AR; the Soybean Rust Lab; Soybean Rust in Louisiana and its impact northward; Forecasting soybean rust each year; expectations of soybean rust in 2008; and fungicides. The instrument was delivered to all 113 attendees and door prizes were used as incentives for survey completion by 87 (77%) participants. Participants included 20% farmers; 20% consultants; 6% seed company personnel; 2% farm supply store personnel; 5% crop protection company personnel; and 47% University/extension personnel with 59% of participants indicated they were SBR first detectors. Overall, before the presentations, participants indicated 30% had low knowledge of the topics above, with 46% indicating medium knowledge and 24% high. After the presentations, only 5% indicated low knowledge; 44% indicated medium; and 51% indicated high. The greatest change in knowledge was among farmers and consultants, with these groups indicating 44-54% low knowledge of the above areas before the presentations, and only 2-10% indicating low knowledge afterwards. Survey participants indicated that at this time, their preferred information source to improve their knowledge of soybean rust and crop biosecurity included email (1); text messages (2); extension agent (3); newsletters (4) and web sites (5). The session generated many questions that were worked on during 2008.

4. Associated Knowledge Areas

KA Code	Knowledge Area
721	Insects and Other Pests Affecting Humans
212	Pathogens and Nematodes Affecting Plants
211	Insects, Mites, and Other Arthropods Affecting Plants
312	External Parasites and Pests of Animals
216	Integrated Pest Management Systems
723	Hazards to Human Health and Safety
403	Waste Disposal, Recycling, and Reuse

Outcome #4

1. Outcome Measures

# of participants gaining knowledge of IPM practices

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	4000	5335

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Recent changes in the soybean production system including reduced tillage, round-up ready technology, early season production system, and acreage shifts of commodities have resulted in shifts in pest status for many soybean insects. This along with increased value of the commodity and increased costs of production has resulted in the need to educate growers and decision-makers (consultants and distributors) on the importance of insect scouting to insure growers do not lose yield because of insects.

What has been done

In 2008 Extension Entomologists teamed up with plant pathologists and agronomists to conduct five soybean scouting schools targeting growers, consultants, and other field people. Training included sampling techniques, insect identification, estimating damage and thresholds for insect pests and pest complexes. Plant pathologists trained participants on disease identification, fungicide control watching for Soybean Rust. The agronomist provided information on growth and physiology of soybean and growth stages. There were 163 participants.

Results

Surveys of participants indicated that the increase in knowledge particularly relating to sampling techniques and damage assessment had increased significantly. County agent surveys indicate a 25% increase in acreage now scouted on a regular basis and crop consultants indicate that the soybean acreage they scout has increased almost 40% in the last two years. Estimates by county agents indicate that scouted acreage has increased from about 20% in 2006 to around 59% in 2008. With outbreaks of stink bugs and corn earworm in 2008 over 2,000,000 acres were treated with an insecticide maintaining economic profit for growers.

4. Associated Knowledge Areas

KA Code	Knowledge Area
212	Pathogens and Nematodes Affecting Plants
403	Waste Disposal, Recycling, and Reuse
216	Integrated Pest Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
721	Insects and Other Pests Affecting Humans
312	External Parasites and Pests of Animals
723	Hazards to Human Health and Safety

Outcome #5

1. Outcome Measures

# of participants gaining knowledge of proper pesticide application practices

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	920	3971

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
721	Insects and Other Pests Affecting Humans
211	Insects, Mites, and Other Arthropods Affecting Plants
723	Hazards to Human Health and Safety
212	Pathogens and Nematodes Affecting Plants
312	External Parasites and Pests of Animals
403	Waste Disposal, Recycling, and Reuse
216	Integrated Pest Management Systems

Outcome #6

1. Outcome Measures

# of participants passing commercial pesticide certification exams

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	600	401

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
723	Hazards to Human Health and Safety
721	Insects and Other Pests Affecting Humans
216	Integrated Pest Management Systems
403	Waste Disposal, Recycling, and Reuse
312	External Parasites and Pests of Animals
211	Insects, Mites, and Other Arthropods Affecting Plants

Outcome #7

1. Outcome Measures

# of producers adopting one or more IPM practices

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	4000	4544

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The grape colaspis, Colaspis brunnea, also known as the lespedeza worm, is the most important insect pest of rice in the Grand Prairie region of Arkansas. Rice water weevil has been long recognized as the most troublesome pest of rice throughout the midsouth. Currently, with the loss of Icon (fipronil) seed treatment, which was voluntarily withdrawn from use on rice in 2002, control of these pests has been severely limited. Currently, the only control option is foliar application of pyrethroids, which are only marginally effective and the impact on off-target sites can be problematic, particularly in areas with catfish and bait ponds. Recent studies of three seed treatments have shown that they have a great potential to replace fipronil. Outbreaks of grape colaspis in 2007 and 2008 -- from which thousands of acres received severe damage including reduced stand, stunted plants and resulting yield loss -- indicate the importance of finding a way to control these pests. It appears that these seed treatments may have the greatest potential to solving this pest problem and reduce environmental concerns.

What has been done

In 2007, studies were conducted in 6 locations in Arkansas to evaluate the efficacy of the seed treatments, thiamethoxam, clothianidin, and rynaxapyr. These studies indicated excellent control of rice water weevil and potential - when combined with all of the seed treatments -- for controlling grape colaspis. Working with rice entomologists in Texas, Louisiana, Mississippi, and Missouri, and pooling available data, the group of entomologists decided to submit a Section 18 for rynaxapyr which appeared to have the most efficacy for rice water weevil, but the impact on grape colaspis was still unclear. The Section 18 was approved and, in 2008, we increased small plot work with the seed treatments to 17 locations and added10 large block trials with rynaxapyr. The results of 2008 indicated that control of rice water weevil was very good with rynaxapyr but only suppression was achieved for grape colaspis. All studies indicated that rice seed treatments increased yields by an average of 14 bu/ A over untreated checks.

Results

Our studies indicate that seed treatments increase plant stand counts by 10-15%, which can often be the difference in obtaining an adequate stand. In the Grand Prairie, growers often plant excessive seed rates to compensate for damage by grape colaspis. Growers planting 120 lbs/ A now, could reduce their seeding rate as much as 18 lbs with use of a seed treatment. Also, the seed treatments indicate an increased yield on the average of 14 bu/ A. Reduced seed cost and increased yield achieved with seed treatments will undoubtedly increase the profitability of rice farmers in Arkansas.

4. Associated Knowledge Areas

KA Code	Knowledge Area
403	Waste Disposal, Recycling, and Reuse
721	Insects and Other Pests Affecting Humans
216	Integrated Pest Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
312	External Parasites and Pests of Animals
723	Hazards to Human Health and Safety

Outcome #8

1. Outcome Measures

# of homeowners adopting one or more IPM practices

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	240	453

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
403	Waste Disposal, Recycling, and Reuse
312	External Parasites and Pests of Animals
212	Pathogens and Nematodes Affecting Plants
216	Integrated Pest Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
721	Insects and Other Pests Affecting Humans

Outcome #9

1. Outcome Measures

# of participants adopting one or more proper pesticide application practices

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	920	2723

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
312	External Parasites and Pests of Animals
216	Integrated Pest Management Systems
723	Hazards to Human Health and Safety
721	Insects and Other Pests Affecting Humans
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
403	Waste Disposal, Recycling, and Reuse

Outcome #10

1. Outcome Measures
# of diagnostic submissions

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	770	2223

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Monitoring crops in Arkansas for routine and biosecurity disease and nematode threats remains an ongoing challenge. Recent improvements in online reporting and networking of the state's main diagnostic clinics have improved this effort.

What has been done

The University of Arkansas Division of Agriculture Cooperative Extension Service implemented on-line sample record keeping and distance diagnosis in 2008. This system, supplied by the DDDI coalition created by the University of Georgia, supports networking between clinics, clientele sample entry and submission, permanent on-line records, and archiving of reports and images. The system includes support for biosecurity samples, regional information exchange, and data submission to the Southern Pest Detection Network.

The modified DDDI system was fully used by the Plant Health Clinic near Lonoke, AR (plant diseases) and the Nematology Diagnostic Laboratory near Hope, AR (plant nematodes) during 2008. Samples were submitted by county extension agents in 67 of 75 counties and diagnosed by respective lab personnel. A total of 28 out of state potential biosecurity samples were received and diagnosed, with none being positive threats. A total of 2719 suspected plant disease samples were received at Lonoke with 65% from the crop areas of the Delta region in eastern Arkansas; 20% from the SW part of the state that includes crop areas in the Red River Valley; and 15% from the northwest part of the state where most of the fruit crops are grown. The total number was lower than 2007 (3531) but a large one-source sample submission that year skewed total numbers, and the 2008 total was almost twice the previous 10 year average of 1400 per year. The nematode clinic received 1048 samples from clientele during 2008, about the same number of non-research samples as 2007. More than one-half of the samples were from cotton farms; while corn, soybean and golf course samples were also large sample source crops. A total of 43 rice samples were examined for the phytosanitary pest, white tip nematode, at the request of the rice export industry and the State Plant Board.

Results

The system permitted more comprehensive and timely sample diagnostic record keeping and sharing in real time among stakeholders and biosecurity networks like SPDN. This innovation should allow Arkansas to stay in the forefront of early detection and early warning of crop biosecurity threats.

4. Associated Knowledge Areas

KA Code	Knowledge Area
212	Pathogens and Nematodes Affecting Plants
723	Hazards to Human Health and Safety
211	Insects, Mites, and Other Arthropods Affecting Plants
403	Waste Disposal, Recycling, and Reuse
216	Integrated Pest Management Systems
721	Insects and Other Pests Affecting Humans
312	External Parasites and Pests of Animals

Outcome #11

1. Outcome Measures

# of producers using computer-assisted programs

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	650	963

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
216	Integrated Pest Management Systems
312	External Parasites and Pests of Animals
721	Insects and Other Pests Affecting Humans
403	Waste Disposal, Recycling, and Reuse
723	Hazards to Human Health and Safety
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants

Outcome #12

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	Quantitative Target	Actual
2008	258	3086

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Fungicide use on rice in Arkansas has increased from about 20% of acres sprayed prior to 1997 to about 70% of acreage sprayed annually today. This represents an increased cost of production for the Arkansas rice crop of more than $16,000,000 based on an average 1.3 million acres of rice grown each year in the state. The basis for spraying has apparently switched from scouting and decision making systems to preventative spraying, without any research foundation to support the latter. Growers, impressed by new fungicide technology introduced in 1997, started assuming that all applications were profitable while consultants have become more and more reliant on fungicides for late season risk management - 'just in case' to avoid any surprises.

What has been done

Over the past several years, faculty in the Division of Agriculture Department of Plant Pathology conducted replicated fungicide field trials using four types of rice cultivars at different locations around the state comparing preventative fungicide applications to no fungicide. At a few locations, up to 20 cultivars were inoculated with the sheath blight fungus and compared in replicated plots either treated or not treated (paired-plots) with a preventative fungicide over 3 years.

Results showed that semidwarf long grain rice treated preventatively either broke even or had a measurable yield and/or milling quality benefit about 75% of the time. Standard height long grain cultivars broke even or benefitted only 40% of the time, while medium grain and hybrid cultivars did not benefit from preventative treatments. In 'paired-plot' studies, only semidwarf long grain and standard long grain cultivars had a measurable yield benefit from preventative treatments when inoculated, and milling quality benefit varied by year. Medium grain and hybrid cultivars rarely benefitted, even under inoculated conditions, and some long grain cultivars had marginal benefit from the fungicides. Results clearly showed that preventative fungicides did not always return a profit or even break even; in fact, sometimes there was a clear profit loss with this approach.

Results

Results were widely presented to growers and consultants and many audience members interviewed were surprised by these findings and indicated they would rethink fungicide use. We estimated that, in an average year, with the current mix of semidwarf long grain, medium grain, standard long grain and hybrid rice cultivars planted in Arkansas, 20-40% of the acreage should be treated, if scouted. If growers and consultants employed an IPM approach and reduced sprayed acreage from the current 70% to 40%, the savings would be approximately $10,000,000 - not counting environmental benefits from less fungicide application.

4. Associated Knowledge Areas

KA Code	Knowledge Area
212	Pathogens and Nematodes Affecting Plants
312	External Parasites and Pests of Animals
723	Hazards to Human Health and Safety
721	Insects and Other Pests Affecting Humans
403	Waste Disposal, Recycling, and Reuse
216	Integrated Pest Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants

Outcome #13

1. Outcome Measures

# of clientele that have adopted IPM-related practices

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	50	4997

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The bug complex in Arkanasas consists primarily of the tarnished plant bug (TPB) Lygus lineolaris, with occasional numbers of clouded (mired) plant bug Neurocolpus nubilus, southern green stink bug Nezara viridula (L.), green stink bug Acrosternum hilare, and brown stink bug Euschistus servus. Prior to 1995, mid-season populations of the bug complex were controlled by insecticides directed at other pests, so mid-season damage from bugs was rare. However, with >80% Arkansas cotton now being planted to Bt-transgenic cotton and the eradication of the boll weevil, many of the foliar applications for mid-season pests have been eliminated. One consequence of this change is that hemipteran pests have become the dominant mid-season pest complex in Arkansas. Control costs and crop losses associated with bugs have increased dramatically during the flowering period, with 4-8 insecticide applications targeted at bugs in some years. Also, consultants and other decision makers were making applications for plant bugs using outdated sampling techniques, spraying on a calendar basis and/or spraying based on presence of plant bugs, rather than on a well-developed threshold.

What has been done

Large plot studies were used to study sampling techniques in 2006-2008 for plant bugs and other heteropteran pests. The most efficient sampling methods were using a sweep net prior to bloom and a black shake sheet from bloom until cutout. In 2007-2008, we determined the threshold of plant bugs early season and mid- to late season. Our studies were conducted in grower fields with stakeholders: consultants and growers. These trials indicated that the threshold prior to bloom was 8 plant bugs per 100 sweeps and 3 plant bugs per 5 row feet with a black shake sheet.
Results of these trials have been shared with growers and consultants in every major venue on cotton production in the state the past 3 years, including the Arkansas Crop Management Conference, the Crop Consultants Association Meeting, in cotton production meetings in every major cotton growing county (17), and agent training sessions. In many cases we asked the stakeholder (private consultant) to give presentations at meetings to encourage adoption of these improved sampling procedures and thresholds. Educational materials included a refereed journal article, an Extension publication for clientele, and numerous popular press opportunities. We are continuing further development and validation of monitoring methods, thresholds and control strategies for bugs in Arkansas/Mid-South cotton to update future recommendations.

Results

Because of various educational efforts, our clientele recognize the importance of this evolving issue and support research and educational programs that address the problem. In a recent survey conducted with private consultants, the adoption of sampling techniques recommended went up over 36% in the last 3 years. Estimates on dollars per acre spent on plant bug indicate that the number of plant bug applications have gone down the past two years and grower surveys indicate that 85% of growers use IPM, and that decisions to spray are based on thresholds rather than crop phenology or convenience factors. Results of the survey also indicated that adoption of the consultants with our current thresholds is over 80%. A previous survey indicated that over 50% of consultants had no faith in the thresholds at that time.

4. Associated Knowledge Areas

KA Code	Knowledge Area
721	Insects and Other Pests Affecting Humans
312	External Parasites and Pests of Animals
403	Waste Disposal, Recycling, and Reuse
723	Hazards to Human Health and Safety
212	Pathogens and Nematodes Affecting Plants
216	Integrated Pest Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants

Outcome #14

1. Outcome Measures

# of pest monitoring traps utilized

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	216	724

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
312	External Parasites and Pests of Animals
721	Insects and Other Pests Affecting Humans
216	Integrated Pest Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
723	Hazards to Human Health and Safety
403	Waste Disposal, Recycling, and Reuse

Outcome #15

1. Outcome Measures

# of business start ups

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2	2

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
403	Waste Disposal, Recycling, and Reuse
211	Insects, Mites, and Other Arthropods Affecting Plants
721	Insects and Other Pests Affecting Humans
312	External Parasites and Pests of Animals
216	Integrated Pest Management Systems
723	Hazards to Human Health and Safety

Outcome #16

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	Quantitative Target	Actual
2008	38	38

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
403	Waste Disposal, Recycling, and Reuse
216	Integrated Pest Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants

Outcome #17

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	Quantitative Target	Actual
2008	791094	1092975

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #18

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	Quantitative Target	Actual
2008	6610	6660

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #19

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	Quantitative Target	Actual
2008	740648	1459127

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #20

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	Quantitative Target	Actual
2008	916	1022

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
211	Insects, Mites, and Other Arthropods Affecting Plants
403	Waste Disposal, Recycling, and Reuse
216	Integrated Pest Management Systems

Outcome #21

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	Quantitative Target	Actual
2008	95	99

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
403	Waste Disposal, Recycling, and Reuse
211	Insects, Mites, and Other Arthropods Affecting Plants

Outcome #22

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	Quantitative Target	Actual
2008	4152	7000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #23

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	Quantitative Target	Actual
2008	14	65

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
403	Waste Disposal, Recycling, and Reuse
212	Pathogens and Nematodes Affecting Plants
216	Integrated Pest Management Systems

Outcome #24

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	Quantitative Target	Actual
2008	344	514

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
403	Waste Disposal, Recycling, and Reuse
211	Insects, Mites, and Other Arthropods Affecting Plants

Outcome #25

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	Quantitative Target	Actual
2008	8	26

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
403	Waste Disposal, Recycling, and Reuse
211	Insects, Mites, and Other Arthropods Affecting Plants

Outcome #26

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	Quantitative Target	Actual
2008	21	95

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
216	Integrated Pest Management Systems
212	Pathogens and Nematodes Affecting Plants
403	Waste Disposal, Recycling, and Reuse
211	Insects, Mites, and Other Arthropods 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
- Other (NASS)

Brief Explanation

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- Before-After (before and after program)
- During (during program)
- Other (NASS)

Evaluation Results

Process Evaluation: An analysis of the data reflects a need to improve the accuracy of reporting in the Planned Program Area. Direct and Indirect contacts are clearly under reported at this time. This is an area that will be addressed for process improvement. In some cases (output #9) the target was set too high and will be addressed in POW modifications.

Key Items of Evaluation

More-complete reporting will yield better direct and indirect contacts. Structured sampling will produce more-accurate output data.

Program #9

V(A). Planned Program (Summary)

1. Name of the Planned Program

Plants & Plant Products

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	10%		10%	
102	Soil, Plant, Water, Nutrient Relationships	10%		10%	
111	Conservation and Efficient Use of Water	10%		10%	
112	Watershed Protection and Management	10%		10%	
201	Plant Genome, Genetics, and Genetic Mechanisms	10%		10%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	10%		10%	
204	Plant Product Quality and Utility (Preharvest)	10%		10%	
205	Plant Management Systems	10%		10%	
206	Basic Plant Biology	10%		10%	
213	Weeds Affecting Plants	10%		10%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	69.0	0.0	25.0	0.0
Actual	85.9	0.0	36.7	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
1379428	0	1320919	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
1043488	0	1341552	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
8100409	0	19987594	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Develop and conduct workshops, educational meetings, demonstrations, and field days
- Direct clientele contact: on- site visits, phone calls, mail and emails
- Develop and produce educational products and materials
- Conduct tours and demonstrations
- Conduct discovery and applied research
- Publish educational materials
- Provide diagnostic services
- Media work through print, radio, TV and internet
- Partnering with commodity associations, groups, Master Gardeners, and traditional and nontraditional groups
- Coordination of Master Gardener programs
- Develop improved crop production systems that maximize profitability and sustainability

2. Brief description of the target audience

Growers/producers
Consultants
Agri Business/Allied Industries
Horticulture production and Service Businesses
Master Gardeners
General Public
Other researchers
Students
Extension Specialists
Teaching faculty
Research funding personnel and agencies
Public

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	195500	424500	0	0
2008	165412	153834	4487	721

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

Patent Applications Submitted

Year	Target
Plan:	10
2008 :	3

Patents listed
Rice cullivar Spring patent #7,429,697
Non toxic endophytes patent #7,465,855

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	100	
2008	0	150	150

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- # of agronomic production education meetings (multi-topic)

Year	Target	Actual
2008	240	46

Output #2

Output Measure

- # of production education meetings that address fertilizer, soil and water management

Year	Target	Actual
2008	27	179

Output #3

Output Measure

- # of production education meetings that address variety selection

Year	Target	Actual
2008	20	198

Output #4

Output Measure

- # of production education meetings that address plant monitoring and nutrition

Year	Target	Actual
2008	13	179

Output #5

Output Measure

- # of production meetings that address soil and water testing

Year	Target	Actual
2008	10	159

Output #6

Output Measure

- # of production education meetings that address variety/hybrid selection consultations

Year	Target	Actual
2008	38	146

Output #7

Output Measure

- # of demonstrations/on-farm research

Year	Target	Actual
2008	190	1576

Output #8

Output Measure

- # of farm visits

Year	Target	Actual
2008	364	20533

Output #9

Output Measure

- # of field days

Year	Target	Actual
2008	51	5

Output #10

Output Measure

- # of informal surveys of participants to measure culture practices

Year	Target	Actual
2008	18	168

Output #11

Output Measure

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

Year	Target	Actual
2008	550	5766

Output #12

Output Measure

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

Year	Target	Actual
2008	2500	2894

Output #13

Output Measure

- # of hits to plant and plant products web-based educational material

Year	Target	Actual
2008	6500	0

Output #14

Output Measure

- # of Arkansas Commodity Board Grants received

Year	Target	Actual
2008	50	39

Output #15

Output Measure

- # of federal grants and contracts

Year	Target	Actual
2008	25	18

Output #16

Output Measure

- # of Plants & Plant Products clientele contacts from education classes, workshops, group discussions, one-on-one interventions, demonstrations, and other educational methods

Year	Target	Actual
2008	190274	169444

Output #17

Output Measure

- # of Plants & Plant Products education classes, workshops, group discussions, one-on-one interventions, demonstrations, and other educational events

Year	Target	Actual
2008	4002	55197

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	# of commercial forage producers who gained awareness related to management technology
2	# of commercial forage producers who gained knowledge related to production practices
3	# of new Master Gardeners trained and certified
4	# of participants who changed or adopted a new commercial forage management practice
5	# of participants who changed or adopted a new forage and/or grazing management practice
6	# of clientele who select improved varieties
7	# of clientele using soil testing
8	# of clientele using plant testing
9	# of clientele using water testing
10	# of impacted acres using soil testing
11	# of impacted acres using plant testing
12	# of impacted acres using water testing
13	Forage testing submissions
14	# of producers using strip-grazing for their stockpiled forages
15	# of clientele (non-duplicated) who use the DD50 program for improved production efficiency
16	# of impacted acres using the DD50 program for improved production efficency
17	# of clientele using RICESEED program
18	# of acres planted based on ouput from RICESEED program
19	# of Master Gardeners who recertified
20	Business start ups
21	# of new horticultural businesses and new farmers markets
22	Acres of harvested wheat (all)
23	Yield (bushels) of harvested wheat (all)
24	Price (bushel) of harvested wheat (all)
25	Value of production of harvested wheat (all)
26	Acres of harvested soybeans (all)
27	Yield (bushels) of harvested soybeans
28	Price (per bushel) of harvested soybeans
29	Value of production of harvested soybeans (all)
30	Acres of harvested rice (all)
31	Yield (pounds) of harvested rice (all)
32	Price (dollars/cwt) of harvested rice (all)
33	Acres of harvested cotton (all)
34	Yield (pounds) of harvested cotton (all)
35	Total production (bales) of harvested cotton (all)
36	Acres harvested of hay (all)
37	Yield (tons)of harvested hay (all)
38	Price (per ton) of harvested hay
39	Value of production of harvested hay (all)

Outcome #1

1. Outcome Measures

# of commercial forage producers who gained awareness related to management technology

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	200	155

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #2

1. Outcome Measures

# of commercial forage producers who gained knowledge related to production practices

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	200	415

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #3

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	Quantitative Target	Actual
2008	700	577

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
213	Weeds Affecting Plants
101	Appraisal of Soil Resources
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
102	Soil, Plant, Water, Nutrient Relationships
204	Plant Product Quality and Utility (Preharvest)
206	Basic Plant Biology
205	Plant Management Systems
111	Conservation and Efficient Use of Water

Outcome #4

1. Outcome Measures

# of participants who changed or adopted a new commercial forage management practice

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	55	460

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Tall fescue, a widely grown pasture grass in Arkansas, normally contains a fungus called an endophyte, which produces ergot-alkaloid toxins that reduce animal production and profitability. The endophyte also provides some degree of protection to the plant for drought tolerance and nematode resistance. Little is understood of the physiological and genetic mechanisms that explain the beneficial traits of such endophytes. Unlocking the mystery behind these mechanisms would allow scientists to select endophytes which are both nontoxic to livestock and have superior drought-protection and pest-protection benefits.

What has been done

The second year of a field trial was carried out in northwest Arkansas in which tall fescue populations differing in summer-dormancy trait, and either with or without endophyte infection, were compared for drought survival and physiological traits pertaining to drought tolerance. Field trials were initiated at the USDA-ARS Small Farms Research Center to determine progress in selecting for drought tolerance in tall fescue. Some of the populations were selected for persistence in the absence of their native endophytes.

Results

The second year of the field trial confirmed results from the first year, that the summer-dormancy trait was more important than endophyte presence in ensuring tall fescue plant survival during summer drought. This indicates that endophyte-free varieties of tall fescue could be developed which support excellent cattle production if they possess a high degree of summer dormancy. A patent was received (U.S. Patent no. 7,465,855) for four strains of endophyte which promote drought tolerance in tall fescue without causing fescue toxicosis in livestock. Such endophyte strains offer opportunities for promoting the sustainability of cattle, sheep, and horse production and health using low-cost, environmentally benign forage management systems

4. Associated Knowledge Areas

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

Outcome #5

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	500	3582

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Poultry litter has been applied to pastures and hay fields in western Arkansas as a fertilizer to stimulate forage growth for a number of years. Concerns of accumulation of P in soil and P and N runoff from fields receiving poultry manure have led to restrictions on how much poultry litter can be applied in regions designated as Nutrient Surplus Areas. To maintain sufficient forage production and ground cover, farmers will need to apply commercial fertilizers to replace or supplement the nutrients, especially nitrogen and potassium, once supplied almost entirely by poultry litter. To better manage the N in poultry litter and commercial fertilizers we need to know how much N is required to produce near maximal forage yields and the availability of N in poultry litter.

What has been done

Data from two multi-year research trials, one conducted between 1981-1985 and the other conducted from 2006-2008, were summarized to define the ammonium nitrate fertilizer equivalence of fresh and pelleted poultry litter applied to bermudagrass produced for summer hay production. Both projects compared season-total bermudagrass yields receiving a range of nitrogen rates from ammonium nitrate or fresh or pelleted poultry litter. Forage yield responses to each N source were then compared to define how much of the total N in poultry litter produced forage yields comparable to those produced with nitrogen applied as ammonium nitrate. Seven site-years of data for bermudagrass fertilized with 0-600 lb N/acre as commercial fertilizer nitrogen were evaluated to define the nitrogen rate that produces 90% of maximum forage yield potential.

Results

Non-irrigated bermudagrass requires approximately 360 lb N/acre/yr to produce 90% of its yield potential. Yield of non-irrigated bermudagrass receiving no N was 1.6 tons/acre compared to 6.8 ton/acre for forage receiving 360 lb N/acre applied in three or four split applications. The ammonium nitrate fertilizer equivalence of fresh and pelleted poultry litter was similar for the first year of litter application and tended to increase with subsequent annual litter applications. Results suggested that for the first year litter is applied to warm-season forage about 60% of its total N content is equivalent to commercial fertilizer N (1.67 lb litter-N is equal to 1 lb of commercial fertilizer N). After two or three annual application of litter the ammonium nitrate fertilizer equivalence of fresh and pelleted poultry increased to about 70% (1.4 lb litter-N is equal to 1 lb commercial fertilizer N). These results should aid farmers and nutrient management planners in prescribing commercial nitrogen fertilizer rates to match the production needs of individual farms and accounting for the N availability in poultry litter that, when allowed, may be applied to some fields.

4. Associated Knowledge Areas

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

Outcome #6

1. Outcome Measures

# of clientele who select improved varieties

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	9900	16317

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Arkansas farmers produce more than 45 percent of the rice grown in the United States under dynamic production conditions that differ from those in other rice-growing areas. Because of their prominence in this crop, Arkansas rice farmers depend on an Arkansas variety development program that provides a progression of improved varieties to meet the challenges of changing conditions in their fields and in the marketplace for rice.

What has been done

Arkansas rice producers provide check-off funds administered by the Arkansas Rice Research and Promotion Board to help support a dynamic rice breeding program by Arkansas scientists in cooperation with researchers in other states and the USDA. Check-off funding for the breeding program was started in 1980 and has increased substantially over the years. Nineteen varieties have been released from the Arkansas breeding program since 1980. Each variety comes with management recommendations developed through research on plant nutrients, diseases, insect pests, weeds and other areas. These recommendations help farmers tailor practices to the genetic potential of each variety. Genetic improvement in disease resistance, plant types, grain and milling yields, quality and other traits have helped increase yield and grain quality while controlling production costs.

Results

Fifty-one percent of the rice grown in Arkansas in 2008 was comprised of varieties developed in the Arkansas rice variety improvement program. When the program was started in 1980, the average rough rice yield in Arkansas was only 4,110 lbs/acre compared to 6850 lbs/acre in 2008 which is the highest state average yield in Arkansas history. Assigning a conservative value of 60 percent of this 2740 lbs/acre yield increase to new varieties, the average monetary gain in 2008, at a rough rice price of $14.00/cwt, would be $230/acre or $321 million for the 1.394 million acres grown in Arkansas, of which $167 million is due to the Arkansas varieties.

4. Associated Knowledge Areas

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

Outcome #7

1. Outcome Measures

# of clientele using soil testing

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	8750	304474

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
112	Watershed Protection and Management
111	Conservation and Efficient Use of Water
213	Weeds Affecting Plants
205	Plant Management Systems
101	Appraisal of Soil Resources

Outcome #8

1. Outcome Measures

# of clientele using plant testing

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	650	28057

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
101	Appraisal of Soil Resources
206	Basic Plant Biology
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
112	Watershed Protection and Management
205	Plant Management Systems
213	Weeds Affecting Plants
102	Soil, Plant, Water, Nutrient Relationships

Outcome #9

1. Outcome Measures

# of clientele using water testing

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	85	18

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Pesticides aid in the production of food and fiber. However, there is also the potential for contamination of surface water. If environmentally harmful amounts of pesticides begin to appear in surface water, early awareness of the situation would make it easier to remedy.

What has been done

We are monitoring surface water at four locations each on the Cache, St. Francis, L'Anguille rivers and Lagrue Bayou every two weeks from the middle of April through August for pesticides used in rice production. These four rivers were chosen because they are small and are mostly in rice producing areas so there would be less dilution of any pesticide present from water from non-rice producing areas. Some pesticides have been found at low parts per billion (ppb) levels during the growing season. The results for the past seven years have been variable for some aspects, but consistent for others. Originally molinate (Ordram) was one of the most frequently detected compounds, but the frequency declined and it is now not found. Now the most frequently detected compounds are quinclorac (Facet) and clomazone (Command). Concentrations are typically low (less than 10 ppb). In four of the last six years the highest concentration has been between 13 and 19 ppb, and in the other two years it was 28 ppb. Most detections are in June and July, when compounds are applied. Over the past seven years we have seen no trends of increasing detections, concentrations, or multiple compounds in a sample. We have now established a baseline of what is found and what to expect in year to year variation. Analyses in future years will allow us to see if there are differences, either up or down.

Results

It is not unusual to detect low levels of pesticides in surface water in an agricultural area especially during the growing season, since pesticides need some water solubility to be effective. We have not observed any trends toward increasing frequency, amounts of pesticides, or multiple detections in the rivers at the sites sampled in previous years. These results indicate that production practices as they are now being done in the rice growing areas do not seem to be having an adverse effect on the surrounding water due to pesticide contamination.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
101	Appraisal of Soil Resources

111	Conservation and Efficient Use of Water
112	Watershed Protection and Management

Outcome #10

1. Outcome Measures

# of impacted acres using soil testing

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	30100000	2782

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #11

1. Outcome Measures

# of impacted acres using plant testing

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	146000	36

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
206	Basic Plant Biology
101	Appraisal of Soil Resources
213	Weeds Affecting Plants
102	Soil, Plant, Water, Nutrient Relationships

Outcome #12

1. Outcome Measures

# of impacted acres using water testing

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	26700	7

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
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management

Outcome #13

1. Outcome Measures

Forage testing submissions

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:
Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	75	575

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
101	Appraisal of Soil Resources
204	Plant Product Quality and Utility (Preharvest)
206	Basic Plant Biology
213	Weeds Affecting Plants
205	Plant Management Systems

Outcome #14

1. Outcome Measures
# of producers using strip-grazing for their stockpiled forages

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:
Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	22	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
205	Plant Management Systems
102	Soil, Plant, Water, Nutrient Relationships

206	Basic Plant Biology
204	Plant Product Quality and Utility (Preharvest)

Outcome #15

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	1780	265

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
206	Basic Plant Biology
102	Soil, Plant, Water, Nutrient Relationships
201	Plant Genome, Genetics, and Genetic Mechanisms

Outcome #16

1. Outcome Measures

# of impacted acres using the DD50 program for improved production efficency

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	712500	91498

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
206	Basic Plant Biology
205	Plant Management Systems

Outcome #17

1. Outcome Measures

# of clientele using RICESEED program

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	250	40

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
205	Plant Management Systems
204	Plant Product Quality and Utility (Preharvest)
206	Basic Plant Biology
201	Plant Genome, Genetics, and Genetic Mechanisms

Outcome #18

1. Outcome Measures

# of acres planted based on ouput from RICESEED program

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:
Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	56000	9685

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #19

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	Quantitative Target	Actual
2008	500	1392

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

204	Plant Product Quality and Utility (Preharvest)
213	Weeds Affecting Plants
112	Watershed Protection and Management
206	Basic Plant Biology

Outcome #20

1. Outcome Measures

Business start ups

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	0	22

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Expansion of options of healthy fruits and vegetables available to American consumers continues to be an emphasis of research and development in new varieties. Blackberries are one of the newer fruits found routinely now on retail market shelves. The supply of blackberries has increased to the point that this fruit can be found year-around in many markets. The primary reason that blackberries are a more common item of retail commerce is the development of improved varieties that can be shipped to distant markets. Additional breeding and genetic improvement is increasing grower options for varieties and is a key for this industry to continue to expand.

What has been done

The University of Arkansas fruit breeding program has been working with blackberries since 1964. Repeated cycles of crossing and selection have been carried out to improve many traits including thornlessness, erect canes, productive plants, along with improved fruit characters such as larger size, increased sweetness, and firm berries that can be shipped. Emphasis on postharvest evaluations has resulted in substantial progress in identifying genotypes with shelflife adequate for distant-market shipping. A series of thornless blackberry varieties has been released including Navaho, Apache, Arapaho, Ouachita, and the newly released Natchez.

Results

Ouachita blackberry has been the most widely planted of the Arkansas varieties in the last two years with over 600,000 plants established for commercial production. It has shown coast to coast adaptation. Including the other releases, between 1,000,000 and 1,500,000 plants of all Arkansas varieties have been planted in the last two years. The new Natchez had approximately 100,000 plants purchased by commercial growers in its first year of marketing in 2008. Substantial plantings have been established in Arkansas, Georgia, North Carolina and California. Characteristics such as high yields, excellent postharvest performance, sweet berries, and broad adaptation all have contributed to this success. These variety options developed by the University of Arkansas are making blackberries a high-value, profitable crop for specialty crop growers and providing an expanded market for this healthy, natural fruit.

4. Associated Knowledge Areas

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

Outcome #21

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	Quantitative Target	Actual
2008	2	21

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Producers of traditional row crops (e.g. rice, cotton, soybeans) in the Delta region of Arkansas are looking for agricultural alternatives to stabilize and potentially increase farm revenues. Ornamental horticulture is one of the fastest growing segments of agriculture in the United States. Nursery production in Arkansas, ranked at 32nd in the United States, is considered the sector with greatest growth potential. Access to major transportation lanes, reasonably priced agricultural land, labor, water, and other resources makes Arkansas a prime state for large-scale nursery production. According to a Cooperative Extension Service (CES) survey in 2003, 45% of woody plant material in Arkansas is imported from other states. Arkansas nursery products could also be exported to many states.

A majority of county agents are not technically trained in horticulture, and need assistance in handling horticulture issues. Existing ornamental horticulture businesses require training and exposure in new plants and production methods to stay competitive. Tremendous opportunities exist for new ornamental horticulture business in Arkansas but these businesses require training and technical assistance.

What has been done

Cooperative Extension Service programs are designed to focus efforts on enhancing current ornamental horticulture businesses and to start new businesses. CES programs are focusing their efforts in 4 primary areas:

* Extension programs provide technical training and support for new and existing ornamental horticulture businesses and county extension agents.
* Printed and internet based fact sheets and a quarterly newsletter are distributed to existing ornamental horticulture businesses.
* Web based materials are being designed to support quick access to timely and intensive graphics based information.
* A statewide plant evaluation program initiated in 1999 is designed to evaluate and help market 'new' plant material for the Arkansas market.

Results

Cooperative efforts by a team of faculty and staff within the Cooperative Extension Service have helped the third largest rice producer in the Delta region transition from rice to wholesale nursery production. The farm, located in Harrisburg, has planted a total of 120 acres of ornamental trees since the spring of 2002 with an estimated wholesale value of $2.5 million. This same team of University experts is also helping a former row crop farmer in White County transition to ornamental shade tree production. In 2005, field nurseries started production in Clay and Jackson Counties and container nurseries started production in Washington and Independence Counties. An additional nursery started container production in Washington County in 2006.

Since 1999, workshops and materials have been developed to encourage and support the development of new ornamental horticulture businesses. The cornerstone of these programs is the 'Starting a New Horticulture Business' workshop, which is followed by more in-depth workshops in plant materials, plant propagation, and an annual 'tune-up' workshop. A successful in-service training was conducted for county agents to cover basic ornamental horticulture topics and resources. The Cooperative Extension Service, in cooperation with the Arkansas Department of Agriculture, updated and re-printed a wholesale supplier guide for nursery, greenhouse, and turf producers. This color guide will be distributed in Arkansas to landscapers and garden centers to encourage the purchase of Arkansas grown ornamental products. The guide will also be distributed out of state at major nursery and landscape trade shows and conferences.

Twenty-three new fact sheets have been developed since 1999 and a new quarterly newsletter has been initiated to convey information to counties and business clientele in a timely manner.

Emphasis is being placed on development of the commercial horticulture web site. A large web project was launched in January 2002 that includes over 900 plant photographs and comments on the landscape value of these plants. Other units added in 2002 included Toxic Plants database, Plant Use Lists, Photographic List of Crapemyrtle Cultivars, and a summary of Daylily Cultivars Susceptible to Daylily Rust. A pictorial guide to identifying common Arkansas landscape trees was added in 2006. This site will be accessible by businesses and consumers. Plant Flash Cards were offered for sale in 2007.

The statewide plant evaluation program currently has 105 plants under intensive review for landscape performance at 3 sites across Arkansas.

CES faculty in agriculture economics and horticulture are have completed an economic impact survey. This first ever survey of horticulture in Arkansas documented the economic contribution of horticulture to Arkansas agriculture.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
204	Plant Product Quality and Utility (Preharvest)
201	Plant Genome, Genetics, and Genetic Mechanisms
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants

Outcome #22

1. Outcome Measures

Acres of harvested wheat (all)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	570000	980000

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
213	Weeds Affecting Plants
112	Watershed Protection and Management
206	Basic Plant Biology
111	Conservation and Efficient Use of Water
205	Plant Management Systems
201	Plant Genome, Genetics, and Genetic Mechanisms
102	Soil, Plant, Water, Nutrient Relationships

Outcome #23

1. Outcome Measures

Yield (bushels) of harvested wheat (all)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	50	57

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #24

1. Outcome Measures

Price (bushel) of harvested wheat (all)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	3	6

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

Outcome #25

1. Outcome Measures

Value of production of harvested wheat (all)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	87780000	335160000

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

Outcome #26

1. Outcome Measures

Acres of harvested soybeans (all)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2890000	3355055

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #27

1. Outcome Measures

Yield (bushels) of harvested soybeans

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:
Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	38	38

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

Outcome #28

1. Outcome Measures
Price (per bushel) of harvested soybeans

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:
Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	7	8

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

Outcome #29

1. Outcome Measures
Value of production of harvested soybeans (all)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	791094000	1019900000

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

Outcome #30

1. Outcome Measures

Acres of harvested rice (all)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	1455000	1390000

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
206	Basic Plant Biology
201	Plant Genome, Genetics, and Genetic Mechanisms

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

Outcome #31

1. Outcome Measures

Yield (pounds) of harvested rice (all)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	6610	6660

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

Outcome #32

1. Outcome Measures

Price (dollars/cwt) of harvested rice (all)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	7	7

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

Outcome #33

1. Outcome Measures

Acres of harvested cotton (all)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	945000	620000

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

Outcome #34

1. Outcome Measures

Yield (pounds) of harvested cotton (all)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:
Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	916	1022

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

Outcome #35

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	Quantitative Target	Actual
2008	1804000	1320083

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

Outcome #36

1. Outcome Measures
Acres harvested of hay (all)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	1340000	1337000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #37

1. Outcome Measures

Yield (tons)of harvested hay (all)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2	2

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

Outcome #38

1. Outcome Measures

Price (per ton) of harvested hay

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	55	70

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
205	Plant Management Systems
101	Appraisal of Soil Resources

Outcome #39

1. Outcome Measures

Value of production of harvested hay (all)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	148631000	233975000

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

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

Program outcomes will be influenced by market conditions including the fuel vs food pressure, changes in payments to farmers, land grant university funding, the downturn in the economy and as always weather conditions. Any or all of these factors could cause projected outcomes to vary widely.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- Retrospective (post program)
- Before-After (before and after program)
- During (during program)
- Time series (multiple points before and after program)
- Case Study
- Comparisons between program participants (individuals,group,organizations) and non-participants
- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- Comparison between locales where the program operates and sites without program intervention
- Other (NASS)

Evaluation Results

Comprehensive program and departmental evaluation reviews for research, extension and teaching programs are conducted on a five to seven year cycle by various research based evaluation methods. The Department of Crop, Soil, and Environmental Sciences will be reviewed in 2009-10. Data on shifts in production technology, acreage, cropping systems, and enrollment will be compared to historic levels and trends.

Key Items of Evaluation

Program #10

V(A). Planned Program (Summary)

1. Name of the Planned Program

Technology & Engineering

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	11%		11%	
111	Conservation and Efficient Use of Water	12%		12%	
112	Watershed Protection and Management	4%		4%	
132	Weather and Climate	1%		1%	
402	Engineering Systems and Equipment	12%		12%	
404	Instrumentation and Control Systems	5%		5%	
405	Drainage and Irrigation Systems and Facilities	10%		10%	
512	Quality Maintenance in Storing and Marketing Non-Food Products	10%		10%	
601	Economics of Agricultural Production and Farm Management	5%		5%	
605	Natural Resource and Environmental Economics	5%		5%	
806	Youth Development	25%		25%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	**Extension**		**Research**	
	1862	**1890**	**1862**	**1890**
Plan	5.0	0.0	0.0	0.0
Actual	14.4	0.0	2.2	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**
231548	0	28905	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
175158	0	29356	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
1358991	0	880545	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Conduct field tours, work shops, educational meetings and farm visits
Produce publications and post information to web site
Conduct on-farm demonstrations
Develop and release CES decision support tools
Conduct non-duplicated 4-H Youth technology and engineering programs

2. Brief description of the target audience

Row crop producers, livestock producers, poultry producers, landowners, consultants, pesticide applicators, agricultural agencies and businesses and other interested groups
4-H Youth

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	**Target**	**Target**	**Target**	**Target**
Plan	3000	1100	550	700
2008	12535	20158	7039	528

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

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	5	30	35

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- # of any CES on-farm demonstrations of livestock and poultry manure management, drainage and irrigation water management, fertilizer and pesticide application or crop processing

Year	Target	Actual
2008	30	393

Output #2

Output Measure

- # of any CES Field Tours of livestock and poultry manure management, drainage and irrigation water management, fertilizer and pesticide application or crop processing

Year	Target	Actual
2008	10	11

Output #3

Output Measure

- # of any CES sponsored Educational Meetings addressing livestock and poultry manure management, drainage and irrigation water management, fertilizer and pesticide application or crop processing

Year	Target	Actual
2008	50	117

Output #4

Output Measure

- # Attending any CES sponsored Educational Meetings addressing livestock and poultry manure management, drainage and irrigation water management, fertilizer and pesticide application or crop processing

Year	Target	Actual
2008	2500	2723

Output #5

Output Measure

- # of publications that include information on livestock and poultry manure management, drainage and irrigation water management, fertilizer and pesticide application or crop processing

Year	Target	Actual
2008	10	95

Output #6

Output Measure

- # of postings to web sites of information on livestock and poultry manure management, drainage and irrigation water management, fertilizer and pesticide application or crop processing

Year	Target	Actual
2008	5	7

Output #7

Output Measure

- # of CES software decision tools delivered

Year	Target	Actual
2008	100	142

Output #8

Output Measure

- # of county 4-H Tech Teams

Year	Target	Actual
2008	15	15

Output #9

Output Measure

- # of state 4-H Tech Team workshops

Year	Target	Actual
2008	6	6

Output #10

Output Measure

- # Of participants at the Arkansas 4-H Technology Conference

Not reporting on this Output for this Annual Report

Output #11

Output Measure

- # of participants enrolled in the 4-H GPS and Nature Mapping Program

Not reporting on this Output for this Annual Report

Output #12

Output Measure

- # Of Technology & Engineering clientele contacts from education classes, workshops, group discussions, one-on-one interventions, demonstrations, and other educational methods

Year	Target	Actual
2008	3550	15710

Output #13

Output Measure

- # of Technology & Engineering education classes, workshops, group discussions, one-on-one interventions, demonstrations, and other educational events

Year	Target	Actual
2008	265	2191

Output #14

Output Measure

- # Attending any CES Field Tours of livestock and poultry manure management, drainage and irrigation water management, fertilizer and pesticide application or crop processing

Year	Target	Actual
2008	200	235

Output #15

Output Measure

- # of cooperators involved in CES on-farm demonstrations of livestock and poultry manure management, drainage and irrigation water management, fertilizer and pesticide application or crop processing

Year	Target	Actual
2008	30	57

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	# of people who increased their knowledge after attending any CES sponsored educational meeting, field tour or on-farm demonstration addressing livestock and poultry manure management, drainage and irrigation water management, fertilizer and pesticide application or crop processing
2	# of people who adopted or implemented a recommendation after attending any CES sponsored educational meeting, field tour or on-farm demonstration addressing livestock and poultry manure management, drainage and irrigation water management, fertilizer and pesticide application or crop processing
3	# of county 4-H Tech Team members who increased their knowledge related to use of technology
4	# of participants in 4-H GPS and Nature Mapping program who increased their knowledge of careers that use GPS
5	% of participants enrolled in the 4-H GPS and Nature Mapping Program that used GPS for the first time during the program
6	% of participants enrolled in the 4-H GPS and Nature Mapping program that reported learning enough about GPS during the program to use it on their own
7	% of participants enrolled in the 4-H GPS and Nature Mapping program that plan to use GPS again in the future
8	# of 4-H Youth participants who learned "Wise Use of Resources" life skill
9	# of 4-H Youth participants who learned "Decision Making" life skill
10	# of county 4-H Tech Team members who completed a community service project using technology
11	# of 4-H Journals completed in technology and engineering
12	# of 4-H Youth projects completed in technology and engineering
13	# of non-duplicated 4-H Youth participating in technology and engineering events
14	Average water savings in % in MIRI fields
15	# of 4-H Youth awarded post secondary scholarships related to technology and engineering
16	% of participants enrolled in the 4-H GPS and Nature Mapping program that would consider a career in a technology field and/or in a field using GPS technology
17	# of requests for CES software decision tools
18	Acres associated with any of the following water management practices: measuring pump flow, multiple inlet irrigation, surge irrigation, irrigation scheduling, border irrigation, furrow irrigation with phaucet design

Outcome #1

1. Outcome Measures

# of people who increased their knowledge after attending any CES sponsored educational meeting, field tour or on-farm demonstration addressing livestock and poultry manure management, drainage and irrigation water management, fertilizer and pesticide application or crop processing

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	1130	1717

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The increase in corn acreage has mandated that much of the annual crop be handled, dried, and stored on farm - at least for a short period. There are a large number of on farm bins that are utilized for this. Corn bags and other potential storage options were utilized extensively in 2008. General management procedures for on-farm handling, drying, and storing helps growers better manage their harvest options and capitalize on additional marketing alternatives.

What has been done

- Studied several corn bag storage operations to develop best operating practices.
- Studied several on-farm bin operations to develop comparisons of cost inputs and efficiencies.
- Talked to as many grain bag users as possible to generate a broad base of experiences for utilization in development of educational materials.
- Developed best management practices for bins, grain bags, and other alternative storage options.
- Conducted several producers meetings and on-farm visits to familiarize producers with findings and recommendations.

Results

The 2008 corn harvest season was wet and damp for several days. Producers that had storage and drying capability were able to harvest in a much timelier manner. Corn that had to stay in the field longer was much more susceptible to hurricane damage, insects, and fungus attacks - especially aflatoxin. Bags have shown that they can provide a short term storage option if managed properly. The key is to place grain into the bags at market moisture or below to maintain storage quality. This work has verified that on farm storage helps producers better manage harvest and capitalize on potentially higher profit margins. The following points are key:

Harvest timeliness - no waiting on trucks to return from the mill.
Reduction in the cost of basis by marketing when basis is low.
Quality may be maintained in bins or bags with proper management.

4. Associated Knowledge Areas

KA Code	Knowledge Area
605	Natural Resource and Environmental Economics
405	Drainage and Irrigation Systems and Facilities
402	Engineering Systems and Equipment
512	Quality Maintenance in Storing and Marketing Non-Food Products
404	Instrumentation and Control Systems
111	Conservation and Efficient Use of Water
601	Economics of Agricultural Production and Farm Management
102	Soil, Plant, Water, Nutrient Relationships
112	Watershed Protection and Management
132	Weather and Climate

Outcome #2

1. Outcome Measures

# of people who adopted or implemented a recommendation after attending any CES sponsored educational meeting, field tour or on-farm demonstration addressing livestock and poultry manure management, drainage and irrigation water management, fertilizer and pesticide application or crop processing

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	90	1077

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Ground water for irrigation is becoming less available in some areas of the Arkansas Delta and the cost of pumping the water is a significant part of crop production. Growers need help with irrigation water management options that can increase irrigation efficiency and conserve water while decreasing irrigation pumping cost. The 'Phaucet' Computer Program (PCP) was developed by a Missouri Natural Resource Conservation Service (NRCS) team to assist with the design of furrow irrigation systems.

What has been done

The PCP was used by University of Arkansas Division of Agriculture staff to help a grower improve water management on furrow irrigated fields. He was first assisted with determining the pumping capacity of several of his irrigation wells with a flow meter that was provided for his use. The PCP was provided to the grower and he was trained on how to use it for designing the furrow irrigation for six early planted corn fields. The grower was asked to keep up with the pumping time required for the fields so a comparison could be made to the pumping time required in previous years. He was so impressed with how the PCP improved the irrigation on the six fields that he started using it to design several of his other fields. By the time the 2008 season was over, he had used the PCP on 155 different fields that involved 4300 acres of corn, cotton and soybeans that were irrigated with 42 different irrigation wells.

Results

The grower indicated that in comparison to previous years, he reduced the irrigation pumping time on the fields by an average of 25% and that the savings was almost 50% on a few of the fields. He also commented that this caused the $4 per gallon diesel to become $3 per gallon which resulted in a pumping cost savings of $100,000. This savings was due to an increased irrigation efficiency associated with a significant reduction in the amount of water runoff from the fields. The reduced pumping time resulted in saving just over 665 million gallons of ground water from having to be pumped from the irrigation wells. To put this in perspective, the water saved is equivalent to 5.7 inches of water covering all of the 4300 acres. The reduction in the amount of water runoff from the fields not only increased the irrigation efficiency but it was also very beneficial in protecting the environment. A much greater impact is expected when this is expanded to more growers through the efforts of University of Arkansas Division of Agriculture staff. This effort will hopefully result in similar results on a large percentage of the almost 2 million acres that are furrow irrigated in Arkansas.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management
601	Economics of Agricultural Production and Farm Management
404	Instrumentation and Control Systems
405	Drainage and Irrigation Systems and Facilities
512	Quality Maintenance in Storing and Marketing Non-Food Products
605	Natural Resource and Environmental Economics

402	Engineering Systems and Equipment
111	Conservation and Efficient Use of Water
102	Soil, Plant, Water, Nutrient Relationships

Outcome #3

1. Outcome Measures

# of county 4-H Tech Team members who increased their knowledge related to use of technology

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	100	150

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 #4

1. Outcome Measures

# of participants in 4-H GPS and Nature Mapping program who increased their knowledge of careers that use GPS

Not reporting on this Outcome for this Annual Report

Outcome #5

1. Outcome Measures

% of participants enrolled in the 4-H GPS and Nature Mapping Program that used GPS for the first time during the program

Not reporting on this Outcome for this Annual Report

Outcome #6

1. Outcome Measures

% of participants enrolled in the 4-H GPS and Nature Mapping program that reported learning enough about GPS during the program to use it on their own

Not reporting on this Outcome for this Annual Report

Outcome #7

1. Outcome Measures

% of participants enrolled in the 4-H GPS and Nature Mapping program that plan to use GPS again in the future

Not reporting on this Outcome for this Annual Report

Outcome #8

1. Outcome Measures

# of 4-H Youth participants who learned "Wise Use of Resources" life skill

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	250	107

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

Explanation for lower reportage is because the online evaluation tool used to gather this data was not in use for the entire year, so data reported represents only a partial year's results.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #9

1. Outcome Measures

# of 4-H Youth participants who learned "Decision Making" life skill

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	100	193

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 #10

1. Outcome Measures

# of county 4-H Tech Team members who completed a community service project using technology

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	30	18

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

Explanation for lower reportage is that all the counties with Tech Teams did not report on this outcome.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #11

1. Outcome Measures

# of 4-H Journals completed in technology and engineering

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	30	26

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 #12

1. Outcome Measures

# of 4-H Youth projects completed in technology and engineering

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	30	38

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 #13

1. Outcome Measures

# of non-duplicated 4-H Youth participating in technology and engineering events

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	100	728

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 #14

1. Outcome Measures
Average water savings in % in MIRI fields

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	23	22

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
605	Natural Resource and Environmental Economics
111	Conservation and Efficient Use of Water
402	Engineering Systems and Equipment
405	Drainage and Irrigation Systems and Facilities

Outcome #15

1. Outcome Measures

# of 4-H Youth awarded post secondary scholarships related to technology and engineering

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	12	14

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 #16

1. Outcome Measures

% of participants enrolled in the 4-H GPS and Nature Mapping program that would consider a career in a technology field and/or in a field using GPS technology

Not reporting on this Outcome for this Annual Report

Outcome #17

1. Outcome Measures

# of requests for CES software decision tools

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	100	142

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
605	Natural Resource and Environmental Economics
102	Soil, Plant, Water, Nutrient Relationships
132	Weather and Climate
111	Conservation and Efficient Use of Water

Outcome #18

1. Outcome Measures

Acres associated with any of the following water management practices: measuring pump flow, multiple inlet irrigation, surge irrigation, irrigation scheduling, border irrigation, furrow irrigation with phaucet design

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	500000	511892

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
512	Quality Maintenance in Storing and Marketing Non-Food Products
405	Drainage and Irrigation Systems and Facilities
111	Conservation and Efficient Use of Water
601	Economics of Agricultural Production and Farm Management
605	Natural Resource and Environmental Economics
402	Engineering Systems and Equipment
404	Instrumentation and Control Systems
112	Watershed Protection and Management

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- Before-After (before and after program)
- During (during program)
- Case Study
- Comparisons between program participants (individuals,group,organizations) and non-participants

Evaluation Results

During 2008, our program greatly exceeded Adult and Youth targeted contacts.

A Case Study approach was successfully conducted during the on-farm demonstration of using the 'Phaucet' Computer Program to design furrow irrigation systems for fields.A comparison of the irrigation situation before and after the demonstration revealed a 25% average reduction for both the irrigation water pumped and the pumping cost.

Key Items of Evaluation

25% average reduction for both the irrigation water pumped and the irrigation pumping cost.