University of Arkansas
Division of Agriculture

Joint Report of Accomplishments and Results
2005-2006

FY2005-2006 Report of Accomplishments
Arkansas Division of Agriculture

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Arkansas Agricultural Experiment Station
FY2005-2006 Report of Accomplishments

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University of Arkansas Division of Agriculture

Executive Summary

The goal of the University of Arkansas, Division of Agriculture is to improve the quality of life for all Arkansans. The UA Division of Agriculture reaches more than 2.72 million Arkansans through research, teaching and educational programs. The Arkansas Cooperative Extension Service has faculty located in all 75 counties. Agricultural Experiment Station scientists and Extension faculty are located on five university campuses, at five research and extension centers, and support the work of Division of Agriculture personnel at eight branch experiment stations.

These are challenging times for rural Arkansans, as nearly half of the state's 75 counties lost population and jobs in the last few years. From 2000-2003, 15,472 jobs were lost in counties with decreasing populations. Since these were mostly better-paying manufacturing jobs, their loss results in a decreased tax base for those counties. The Division's Cooperative Extension Service, in partnership with the Policy and Issues Education Center, works with local governments across rural Arkansas as they seek creative solutions to maintain services as locally generated revenue declines. In 2005-2006, Extension faculty met with county judges and quorum court members to analyze their financial situations, and to assist in the development of short- and long-term strategies which include: cutting services, increasing revenue, and supporting economic development to expand the tax base.

The aging farming population is also a growing issue, and farm operators increasingly work off the farm. Almost all population growth in the Delta and Ouachita areas is due to an increase in the Hispanic population. Hispanics are becoming a prominent social group across Arkansas. Child poverty remains endemic in the Delta and Ouachita regions of the state; and as Hispanics start families, their children are more likely to be poor (Arkansas Agricultural Experiment Station, Rural Sociology, *Demographic Change in Arkansas and Agriculture, 2007)*. These demographic shifts impact not only the needs of our increasingly diverse clientele, but likewise the priorities, content and delivery of Extension educational programs.

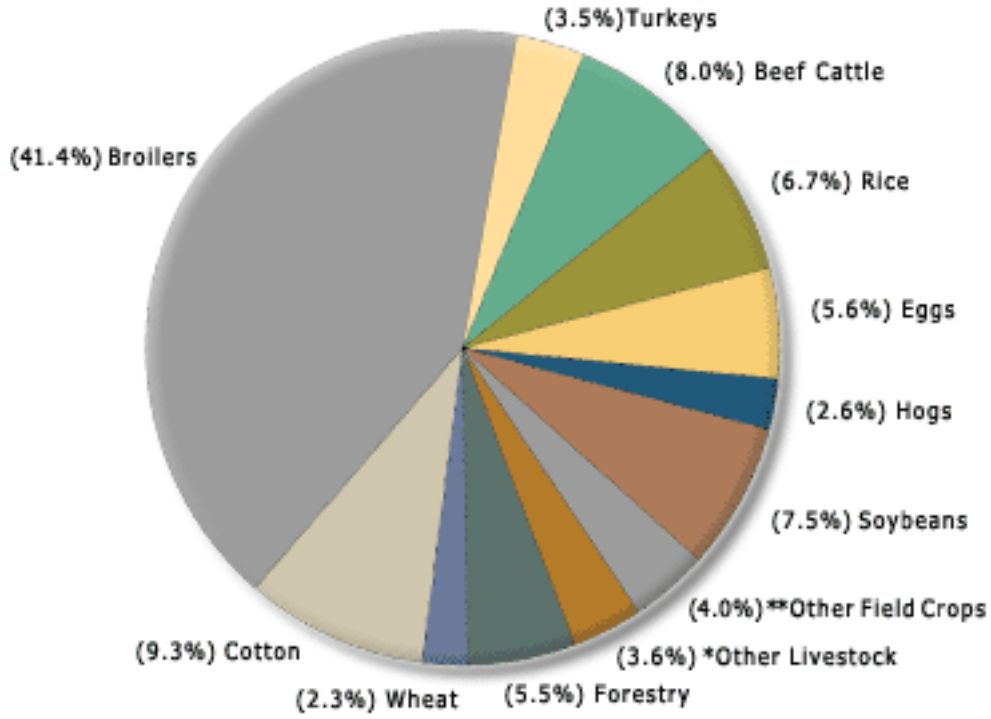
Virtually all growth in Arkansas occurs in the urban areas, much of which is in the Northwest area of the state. Jobs, youth, and an increasing percentage of the child-bearing-age population are leaving Arkansas' rural areas. This has a multiplier effect on the population decline. The Annie E. Casey Foundation's 2006 Kids Count Data Book is an annual report on the educational, social, economic, and physical well-being of children. The 2006 report ranks Arkansas 45th in the nation (with 1st being the optimal rank), in relation to the overall condition of our children. Arkansas' 4-H program provides meaningful long-term youth development opportunities for many of these high-risk children.

Over 215 state and county University of Arkansas Division of Agriculture faculty address the needs of Arkansas children through the 4-H Youth Development Program. In FY2005-2006, faculty delivered state-wide programs that resulted in 822,079 educational contacts. Last year, 772 4-H *Science/Engineering/Technology*, 629 *Healthy Lifesty*les, and 32 *Youth in Governance* programs were conducted with 31,403 non-duplicated youth participants. In FY2005-2006, Arkansas 4-H youth received more than $80,000 in college scholarships at the state level, and $43,893 in scholarships at the county level for their 4-H work. Over 56,684 youth were awarded funds from county livestock premium sales, representing over $615,065 in awards. Outcome evaluation data for the Arkansas 4-H program reflects that 328 youth serve on advisory/management groups, and 1,775 youth participated in community service projects during the year. 4-H volunteers likewise contribute an average of 192 hours per year for a total of 1,664,064 hours donated for support of local and state-wide programs for Arkansas' youth in 2005-2006.

In 2005 there were 47,000 farms in Arkansas, with 14.4 million acres in diverse agricultural business operations. The number of farms declined in 2006 to 46,500, with 14.3 million acres in agricultural operations (source: http://www.nass.usda.gov/). The value of farm production in Arkansas exceeded $15.3 billion in 2003. More than

25 commodities are produced in the state. Arkansas agriculture provides 286,940 jobs through direct, indirect, and induced impacts; this is nearly one in every five jobs in the state. Approximately 19 percent of the state's total labor income ($8.94 billion) is generated through agricultural businesses (Economic Impact of Arkansas Agriculture, UA Division of Agriculture, 2006). The diversity of Arkansas' agricultural economy is reflected in the farm production profile below:

Arkansas Farm Production Profile



*includes aquaculture
**includes feed grains, horticulture & money crops

Source: Arkansas Farm Bureau, http:/www.arfb.com/commodity.ark_ag/profile

Arkansas farm sales rank 13th in total cash receipts nationally, reflecting the strength of Arkansas' agricultural economy. Arkansas ranks in the top 20 states for the production of 17 agricultural commodities, including:

- No. 1 in Rice
- No. 2 in Cotton
- No. 2 in Cottonseed
- No. 2 in Broilers
- No. 3 in Catfish
- No. 3 in Turkeys
- No. 8 in Eggs
- No. 8 in Grain Sorghum
- No. 10 in Pecans

- No. 11 in Soybeans
- No. 11 in Tomatoes (fresh)
- No. 13 in Grapes
- No. 13 in Beef Cows
- No. 16 in Cattle and Calves

Source: National Agricultural Statistics Service, 2005-2006 data.

Arkansas ranks 4th in timber production: approximately 18 million acres of forest land representing approximately 56 percent of the total land base (University of Arkansas, Arkansas Forest Resources Center, 2005). Forestry is the leading employer in South Arkansas, one of the nation's leading timber-producing regions.

Forest-based tourism, recreation, watershed protection, and wildlife habitat are vital to the economy, environmental health, culture and identity of Arkansas. The Arkansas Forest Resources Center (AFRC) is a unit of the University of Arkansas Division of Agriculture. Some issues require a very active statewide forest resources program, such as the urban/wildland interface. Other issues include ecological impacts, wildlife nuisance and safety concerns such as deer-vehicle collisions, storm water run off and land-use policy conflicts. The UA Forest Resource Center has projects at state-wide Division locations and on public and private forestlands, actively partnering with the Game and Fish Commission, Forestry Commission, Natural Resources Conservation Service and forest products companies.

Division of Agriculture Experiment Station scientists and Extension faculty work collaboratively to identify changing issues to support the diversity of research and education needs within Arkansas' agricultural production system. Soybeans, rice, wheat, corn, grain sorghum and cotton account for 40 percent of value added crops, while the other 60 percent of value added crops include hay and forage, melons, fruits, vegetables, pecans, turfgrass and ornamental plants. The animal agricultural sector includes production and processing of poultry, eggs, beef and dairy products, hogs and pigs and other animals. Aquaculture is a major enterprise and is often a companion to row crop farming in the Delta region. More than 38,000 acres are devoted to catfish production in Arkansas, and 99 million pounds of catfish are grown annually. Another 32,000 acres are used for the production of bait fish, ornamentals or other food fish.

TOP 4 STATES Value of Aquaculture Products Sold: 2005 U.S. Total - $1.09 Billion	
1. Mississippi	$249.7 million
2. Arkansas*	$110.5 million
3. Alabama	$102.8 million
4. Louisiana	$101.3 million

*Source: 2005 Census of Aquaculture, USDA-NASS

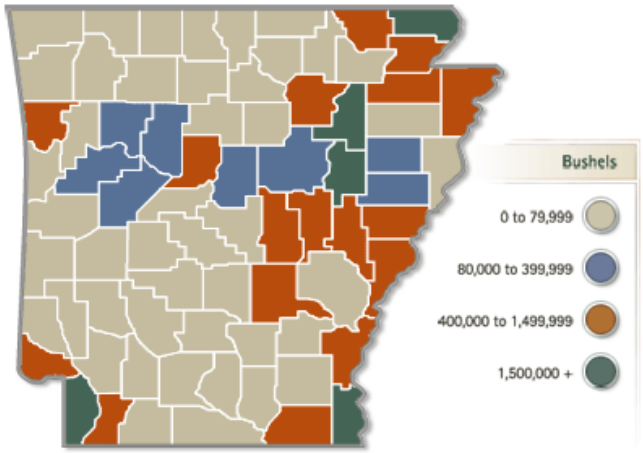
Arkansas is poised to become an important producer of bioenergy. In 2007 the USDA noted that work is underway to add another 6.2 billion gallons to the annual capacity of the U.S. ethanol sector (http://www.ers.usda.gov/Features/Bioenergy/). The emerging interest and investment in biofuels is a new area for development and expansion in Arkansas. The first plant became operational in the fall of 2005, a second in 2006 and the third will be online in 2007. Arkansas produced 27 million gallons of biodiesel in 2006. Wastes from farming, animal production, forest production, and other unwanted agricultural byproducts can be converted

into renewable resources and valuable energy. In Arkansas the biomass potential is significant when factoring combined resources available from: grain to ethanol, perennial crops, and crop, process and forestry residues. The Division of Agriculture's Biofuels Working Group supports this emerging industry through research and education targeting:

- The provision of biofuel feedstocks to refineries now in production;
- Plans for future dedicated cellulosic energy crops for the next generation of biofuels conversion technologies; and
- The development of new conversion technologies and co-product streams.

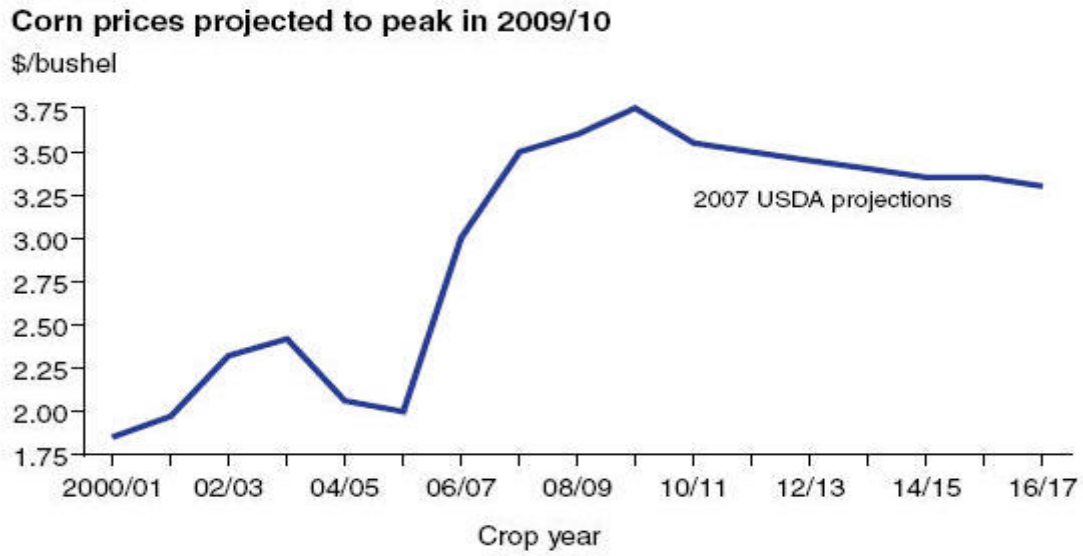
The surge in corn use for ethanol production is increasing the price of corn received by producers, thereby reducing the income support received by the Nation's feed grain sector. UA Division of Agriculture economists note that continued growth in ethanol production is expected, and this growth will exert pressure on the agriculture sector for expanded corn production. The growth rate depends on several factors: oil prices, ethanol prices, feedstock costs, changes in technology, and changes in government incentives and policies.

2006 Arkansas Corn Production



2006 Corn Production = $76,212,000
Source: Arkansas Farm Bureau, 2007

Arkansas produces an average of 27 million bushels of corn a year on 209,000 acres. Increasing corn prices have led to a corn acreage forecast for 2007 in Arkansas of more than 500,000 acres. In marketing year 2005, the season average price received for corn was $2 per bushel. As of March 2007, the projected price for marketing year 2006 is $3.20 per bushel. In February of 2007 December corn futures reached a high of $4.30 per bushel.



Source: *USDA Agricultural Projections to 2016*, February 2007.

The issues related to biofuels, managing energy and air quality, and new applications for geo-spatial technology led the University of Arkansas Division of Agriculture to invest in three new faculty members. These new faculty members possess the expertise to provide guidance to Arkansas stakeholders in these highly specialized areas. To coordinate research, extension and education efforts, the Division of Agriculture organized an Environmental Task Force in 2002. This task force initiated collaborative work on emerging environmental issues. The group is charged with inventorying existing research and extension activities, setting priorities, and initiating new programs as needed. The task force established an agenda of seven key areas where its efforts are focused:

- Phosphorus management
- Sediment, turbidity and total maximum daily limit (TMDL) issues of water quality in eastern Arkansas
- Water rights and policy
- Availability of water of suitable quality
- Bacteria and other emerging pollutants
- The TMDL process
- Air emissions

The goals of the task force include establishing a scientific foundation for environmental decisions that is consistent with the Division's land grant mission in service to the state. As a result of leadership from the task force, soil scientists and biological engineers refined a phosphorus index that helps nutrient planners and applicators reduce the impact of phosphorus fertilizer on lakes, streams and ponds. Their research is incorporated into a settlement agreement in the Eucha-Spavinaw watershed lawsuit.

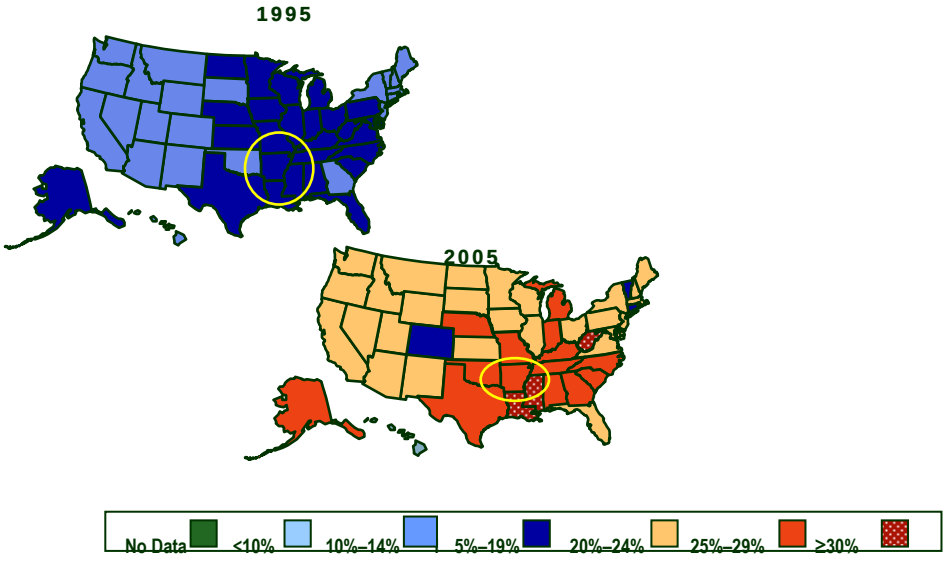
Extension specialists have trained approximately 120 planners and about 2,000 commercial and private applicators on how to use the phosphorus index and tailor nutrient use to specific soils. The task force also advances collaboration with state and federal agencies like the Arkansas Department of Environmental Quality and the Environmental Protection Agency (EPA).

Arkansas has one of the highest obesity rates in the United States, with 61 percent of adults being either overweight or clinically obese. Annual medical expenditures relating to obesity in Arkansas are estimated at $633 million. Almost 79 percent of adult Arkansans are at risk for health problems related to a lack of physical activity. High blood pressure affects more than one-third of adult Arkansans, and the adult diabetes rate in Arkansas is 7.9

percent - one of the highest in the U.S. The charts below demonstrate the increased challenges in our country and state related to obesity.

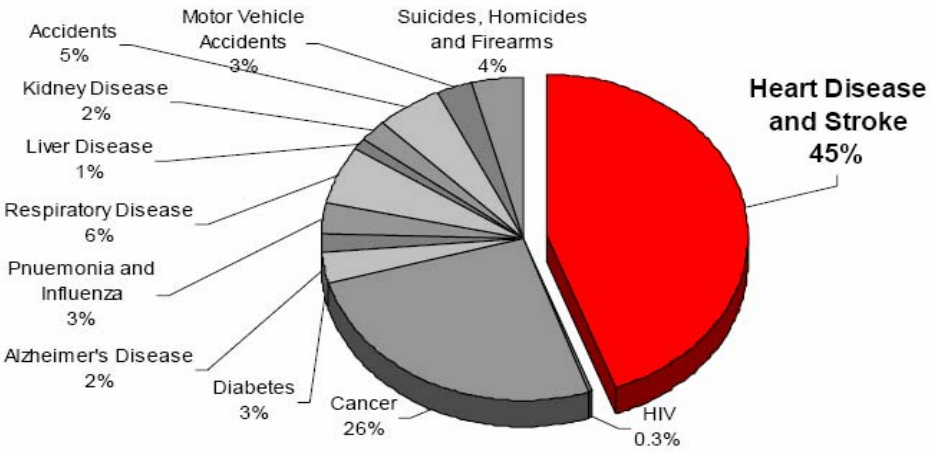
Obesity Trends* Among U.S. *Adults*
BRFSS, 1995, 2005

(*BMI ≥30, or about 30 lbs overweight for 5'4" person)



CDC US Obesity Trends, 1985-2005

Major Causes of Death in Arkansas in 2001*



- Heart disease is the #1 killer in Arkansas.
- 8,327 people in Arkansas died of heart disease in 2000.**
- Stroke is the #3 killer in Arkansas.
- 2,255 people in Arkansas died of stroke in 2000.**

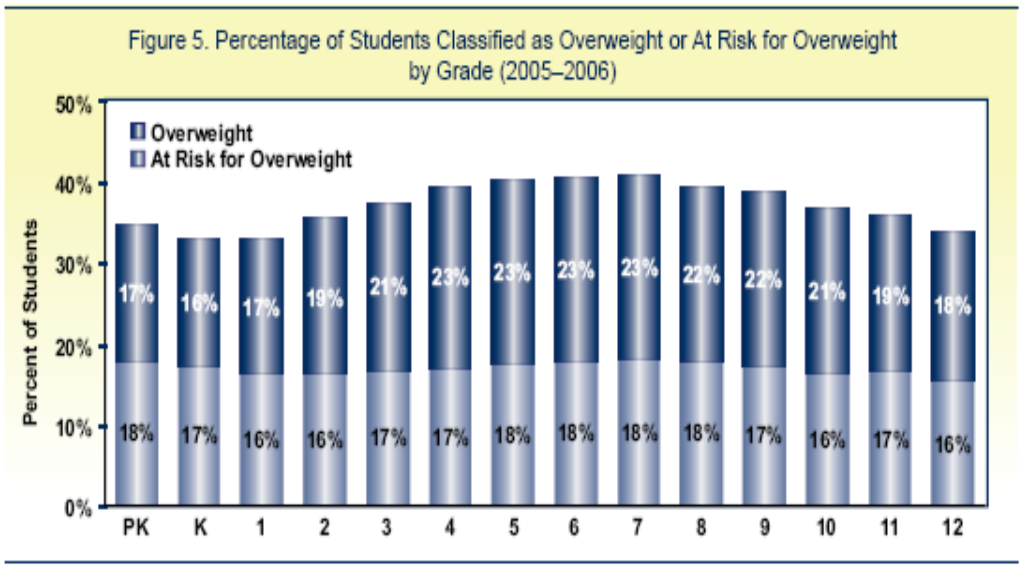
Arkansas has the 7th highest death rate from heart disease, stroke, and other cardiovascular diseases in the nation.***

Childhood obesity in Arkansas reaches epidemic proportions: among school-aged children in grades K-12, 17 percent are at risk to become overweight and 21 percent are currently overweight. In 2001 Columbia University researchers noted that "potential approaches to fighting the obesity epidemic must begin in the childhood years." University of Arkansas Extension professionals address this critical health problem through state-wide programming in all 75 counties. Arkansas received extensive national media coverage by mandating the collection of BMI (body mass index) data on school-aged children. UA Division of Agriculture faculty partner with Arkansas schools and state and federal agencies to address the challenges relating to the epidemic of childhood obesity in our state.

The Arkansas public school BMI data is the most comprehensive quantitative database of its kind in the country, with the potential to serve as a key secondary source for measuring the collective impact of public policy, environmental and educational interventions related to children's nutritional and health status.

The fast food industry, increasing school standards, changing family culture, and sedentary American lifestyle all have an impact on even the youngest family member's waistline. More importantly they impact that child's development of serious chronic disease, which reduces his or her potential longevity. The Centers for Disease Control recently projected that, "for the first time in history, the adolescent population is less healthy than its parents were at the same age." A 2006 report from the International Obesity Task Force predicts that ". . . childhood obesity levels are expected to soar by 2010." Columbia researchers Richard Deckelbaum and Christine Williams likewise note that "lower socioeconomic status is an important predictor for high overweight and obesity prevalence in U.S. children." Arkansas children fit all of these risk factors, and the proof is in the BMI evidence provided in the chart below.

Arkansas Overweight and At-Risk Students by Grade



Through research and consumer education on nutrition, preparation and selection of more nutritious foods, healthy life style choices and food resource management, the Cooperative Extension faculty and staff enable Arkansans to improve their overall health and well-being. Programs target low-income families and their children, food stamp recipients, minority audiences and clientele with specific health concerns, such as diabetes or hypertension. Programs are primarily delivered through the Expanded Food and Nutrition Education Program (EFNEP), Food Stamp Nutrition Education (FSNE), Eating and Moving for Life (a minority health initiative), Reshape Yourself (a weight reduction and physical activity program), Walk Across Arkansas (a physical activity program), Health Rocks, and BodyWalk (programs targeting youth and overall healthy lifestyles).

The findings from the FSNE program evaluation with students and parents of elementary school children provide evidence that nutrition education in schools is a way of preventing or even reversing the rise of obesity. Key dietary and lifestyle changes reported by parents of students participating in the FSNE program include:

- 93.2% - Less high fat/fried foods
- 90.5% - More/Different vegetables
- 86.6% - More water
- 86.1% - More/Different fruits
- 77.8% - More dairy
- 76.8% - Less fast food
- 76.1% - Increased physical activity

This outcome data offers promise of the Division of Agricultures' capacity to reach and impact the health practices of adults in a cost-effective fashion. Statewide BMI data reflects an interruption in the upward trend in number of "overweight" and "at risk for overweight" Arkansas students.

Arkansas Overweight and At-Risk Students by Year

Table 3. Trends in BMI Classifications for Arkansas Public School Students

Category	Year 1 ('03–'04)	Year 2 ('04–'05)	Year 3 ('05–'06)
Overweight	20.9%	20.8%	20.4%
At risk for overweight	17.2%	17.2%	17.1%
Healthy weight	60.1%	60.1%	60.6%
Underweight	1.8%	1.9%	1.9%
Total students assessed*	348,710	372,369	371,082

*Results presented include all data for years 1 and 2 and data received by June 14, 2006 for year 3 analysis.

The FSNE impact evaluation informs us that 2nd and 3rd grade students are most likely to talk to parents about what they learned, and more parents of 2nd and 3rd grade students report making dietary and lifestyle changes.

Food safety continues to be of utmost concern to most consumers with periodic well-publicized incidents maintaining a continual level of concern among consumers. Several product recalls in recent years have included Arkansas-based companies. The Food Safety Center within the Institute of Food Science and Engineering was created to focus multi-disciplinary research on food safety issues. The University of Arkansas has participated in a coordinated research effort with Kansas State and Iowa State as part of the Food Safety Consortium.

Through the Institute of Food Science and Engineering, Division of Agriculture Experiment Station scientists are working directly with the food industry to address research needs in food processing and food safety and assist in the development of new uses for raw agricultural products. The institute provides matching grants for direct collaborations with food industry partners. New funding from the state legislature as part of the tobacco settlement has been directed to create the Arkansas Biosciences Institute. A portion of these funds has been

directed to address agricultural research with medical applications. Funding through the institute will give us the opportunity to greatly enhance our research efforts in agrimedicine, nutraceuticals and human nutrition.

Between anthrax attacks and an outbreak of foot-and-mouth disease, there is an increased awareness that our country can be vulnerable to a terrorist attack. Our agricultural ecosystem may also be at risk from either accidental or intentional introduction of pests and plant and animal diseases not commonly found in the United States. It is believed that the southern region is most vulnerable to the introduction of new pests and disease because of geographic location, heavy tourist traffic and a climate ripe for maintaining disease-inducing organisms. The introduction of Asian Soybean Rust to Arkansas was confirmed September 2004, and is believed to be related to the path of Hurricane Ivan. Arkansas Division of Agriculture Extension faculty and Experiment Station scientists work together with producers to stem the spread of this threat.

With an estimated $11.5 billion in total production value of crops grown in the southern region, it is very important to protect the U.S. agriculture system from exotic pests. Arkansas Division of Agriculture faculty and staff work collaboratively with eleven other states (Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas, and Puerto Rico) through the Southern Plant Diagnostic Network (SPDN). This network links plant disease diagnostic clinics to enhance national agricultural security. SPDN is committed to improving regional capabilities for rapid and accurate identification and diagnosis to safeguard against newly introduced and re-emerging pests and pathogens, which could pose a threat to our agricultural system. Over 40 Arkansas Extension county agents have been trained as first detectors. Through support from the Department of Homeland Security, these agents were trained on how pests enter the U.S., diagnostic criteria, and how to bag and report plant samples.

The 2005-2006 CSREES Report of Accomplishments provides a comprehensive report of the University of Arkansas Division of Agricultures' annual accomplishments, with program information organized under the five national goals for the Cooperative Extension Service and Agricultural Experiment Station. Multi-state and integrated reports are provided, as well as information related to the Division work with diverse stakeholders across the state, region and nation. 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.

Respectfully submitted,

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Vice-President for Agriculture
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FY2005-2006 Annual Report of Accomplishments and Results

Cooperative Extension Service
Division of Agriculture
University of Arkansas System

May 2007

Introduction

The Arkansas Cooperative Extension Service is the statewide public service education component of the University of Arkansas System's Division of Agriculture. The mission of the Arkansas Cooperative Extension Service is to develop and transfer need-based educational programs in response to issues identified by citizens at the local level and to support Arkansas' economic, environmental and social goals. Extension works to achieve these goals through partnerships with producers, public and private sector organizations, and through the use of new technologies and research-based information transferred to individuals, families, communities and businesses across Arkansas. Through research and education, the Cooperative Extension Service:

- Empowers the agricultural system with knowledge that will improve our competitiveness in domestic production, processing and marketing;
- Supports and strengthens the health and economic well-being of Arkansas families;
- Provides experiential learning opportunities for the state's youth to support their growth and development in citizenship, leadership and life skills; and
- Fosters individual, organizational and community development to maximize the leadership potential of all Arkansans.

In FY2005-2006 Extension faculty made 2,138,217 educational contacts, which represents 822,079 4-H and youth development contacts, 528,066 contacts for commercial agricultural programs, 202,103 non-commercial agriculture and natural resource program contacts, 142,020 community development contacts, and 443,204 nutrition, family and other consumer sciences contacts. Outcome evaluation was conducted on Extension programs by state faculty and is reported in the program narrative report.

For the purpose of this report, the accomplishments of Extension's planned programs have been summarized, and selected programs are reported under the five national goals, which are: Goal 1: An agricultural production system that is highly competitive in the global economy; Goal 2: A safe and secure food and fiber system; Goal 3: A healthy and well nourished population; Goal 4: Greater harmony between agriculture and the environment; and Goal 5: Enhanced economic opportunity and quality of life for Americans. This report represents only a portion of our total Extension programs.

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Goal 1 – An agricultural system that is highly competitive in the global economy.

Agriculture is one of Arkansas' most important industries. It accounts for 20 percent of the jobs with approximately $15.3 billion in added value. Arkansas agriculture contributes approximately 10 percent of the state's gross product, which is greater than any contiguous state. Arkansas ranks eleventh in the nation in total farm receipts and fourth in timber production. The University of Arkansas Cooperative Extension Service conducts numerous educational programs to improve the efficiency of production for a very diverse agricultural industry.

The crops sector of Arkansas agriculture consists of all enterprises engaged in the production and processing of cotton, food and feed grains, oil bearing crops, fruits, nuts, vegetables, and hay and pasture. This sector accounts for approximately 58,000 jobs and $909 million in wages.

Arkansas cotton growers harvested a record 2.56 million bales of cotton from 1.16 million acres in 2006. The statewide yield of 1,059 pounds of lint per acre was second only to that of 2004, in which 1,114 pounds of lint per acre was produced. Arkansas leads the Mid-South in lint production per acre and trails only California and Arizona when comparing one- and three-year yield averages.

Arkansas wheat producers harvested 305,000 acres during the 2006 season with an average yield of 61 bushels per acre. The state average yield broke the old record of 56 bu/acre. Dry conditions throughout much of the winter and spring provided an ideal growing season for much of the state. A majority of wheat in the state is grown in a double crop rotation with soybean and is planted following corn, grain sorghum, soybean, cotton and rice.

Corn acreage harvested in 2006 decreased to 180,000 acres, which is approximately equal to the 10-year state acreage. Average state corn yield was 146 bu/acre, an increase of 15 bu/acre compared to 2005. Hot and dry conditions persisted for much of the summer, but with 80 percent or more of the crop irrigated, exceptional yields were realized in many fields. Corn acreage will greatly expand in 2007 due to improved grain prices.

Grain sorghum acreage remained relatively low at 60,000 harvested acres in 2006, which was a 2,000-acre decline from 2005. Grain sorghum yields were good considering the very dry summer that was experienced. State average yield was 85 bu/acre with approximately 50 percent of acreage being irrigated. Educational programs addressing cultivar/hybrid selection, soil fertility requirements, production practices, timing of inputs, crop rotation benefits and irrigation timing were key factors involved with profitable production of wheat, corn and grain sorghum in 2006.

In 2006, rice was grown on 1.400 million acres with an estimated average yield of 6,850 lbs/A (152 bushels per acre). Rice acreage decreased 14 percent from the 2005 record acreage. The 2006 state acreage was the lowest it has been since 1997, but the yield was second best average yield on record, nearing the mark established in 2004. The near-record yields can be attributed to improved varieties, improved management practices and favorable weather during critical times during the growing season. The 2006 crop saw reasonably good prices matched with excellent yields. However, Arkansas rice producers continue to face many challenges in order to produce a profitable crop and maintain sustainability of the land.

Arkansas soybean producers planted 3.11 million acres, which was an increase of 120,000 acres compared to last year. With this large acreage, soybeans remain the largest (based on planted acreage) row-crop in Arkansas and revenues generated from soybean production are vital to the soybean producer. Production efficiency in 2006 was impacted largely by the weather, but pest management issues (weeds, insects and diseases), irrigation techniques and fertility problems still impacted production. The Arkansas soybean program addressed many of these issues

through its Soybean Research Verification Program (SRVP) and provided key recommendations for efficient soybean production.

The animal agriculture sector in Arkansas includes production and processing of poultry, eggs, beef and dairy products, hogs and pigs, and other animals. This sector employs approximately 62,233 Arkansans with $1.38 billion in wages. Approximately 30,000 farms in Arkansas produce cattle with the number of beef cows and heifers reaching over 1.0 million head in 2006. The average cow herd size is 37 head with 80 percent of the farms having less than 50 head. The gross income from Arkansas' beef cattle industry reached $555 million with a total economic impact over $850 million annually.

Successful Arkansas livestock programs include the Arkansas Beef Improvement Program, Arkansas Beef Quality Assurance Program, Arkansas Steer Feedout Program, Reducing Winter Feed Cost Focus Program and Arkansas Cattle Growers' Conferences.

Forages are the basis of a healthy livestock industry. Educational programs included grazing schools, strip grazing for stockpiling forages, alfalfa demonstrations highlighting grazing and hay production, soil management to improve bermudagrass stand demonstrations and forage youth programs.

The total annual economic impact of the dairy industry with heifers and dairy products is $400 million. Approximately 200 dairies with 22,000 dairy cows are located in Arkansas. Income from dairy production totals $40-$50 million per year. New developments during the year include the transition of dairy farms from conventional dairy farming to organic production and interest in legislation to improve milk prices for producers.

Horticulture (commercial and recreational) contributes significantly to the state's economy and improves the quality of lives for Arkansans. A broad selection of fresh market vegetable crops (tomatoes, melons, squash, peppers, etc.) and fruit crops (blackberries, blueberries, apples, peaches, etc.) continues to increase in acreage. In addition, ornamental horticulture, including turfgrass related businesses and services, nursery retail and landscape services, is one of the fastest growing segments of agriculture nationally and in Arkansas. Extension activities are centered on marketing, production systems, maintaining quality, cultivars selection and retail business (nursery, greenhouse, landscape, etc.), enhancing current businesses and new startup businesses.

Although horse ownership is primarily a recreation, it does contribute approximately $3 billion to the state's economy. Educational programs such as Positive Reinforcement for Excellent Performance (PREP I and II) Training, Horsemen's Short Course and other horse care and management programs were delivered to over 3,500 horse owners last year. Approximately 1,500 horse owners reported improved equitation and horsemanship skills and 500 owners changed nutrition management practices.

Other important areas of Extension programming include Poultry Production and Management. Arkansas is one of the top poultry producing states. Extension programs included Poultry Short Course, Poultry Breeder Management training, Breeder Management workshops, Hatchery Management training, Animal Health – Poultry Disease Prevention, HACCP and Sanitation Training for the Poultry Industry, and Impact of Water Quality in Poultry Production, among others. Programs resulted in five poultry processing plants improving their HACCP plans, 1,258 water samples being submitted for microbial and mineral analysis, 301 poultry producers changing their water quality management practices and seven poultry production complexes improving bird performance, saving an average of $750,000 in production costs annually.

The educational programs of the University of Arkansas Cooperative Extension Service are as diverse and comprehensive as Arkansas' agriculture industry itself.

Total FTEs
113.58

Total Budgetary Amount
$6,628,361.11

KEY THEME: AGRICULTURAL COMPETITIVENESS

Program Response: Agricultural Economics and Agribusiness (AEAB)

Bruce Ahrendsen, Section Leader – Agricultural Economics and Agribusiness, 501-575-6643, ahrendsen@uark.edu

Situation

Arkansas agricultural producers faced another difficult year in 2006 as the state incurred another drought and a significant rise in production costs associated with the natural disaster and another year of higher energy prices. AEAB documented at least $980 million losses for Arkansas agriculture due to these causes. These uncertain times required farmers to have a better understanding of sound farm management including risk management, viable marketing strategies and financial planning.

These producers can benefit from educational programs that address farm management, commodity marketing, price risk management and agricultural policy concerns.

Stakeholder Input

Specialists in Agricultural Economics and Agribusiness are in continuous contact with agricultural leaders in industry, lending institutions, farm organizations, commodity promotion boards and USDA.

Overview

Research Verfication Trials – Extension economists conduct detailed economic analyses for the wheat, rice, soybeans, cotton, grain sorghum and corn research verification trials. These projects allow for an examination of the University of Arkansas' recommended production practices and serve as a method of strengthening Extension agents' expertise in recommended technology. Economic analysis is an important part of the research verification trials and gives specialists and researchers areas to target for improved economic efficiency. Annual reports are published for distribution to promotion boards and clientele.

Production Economics – A series of Extension technical bulletins is developed annually for estimating production costs of wheat, soybeans, cotton, rice, corn and grain sorghum. The production cost estimates were used in numerous grower meetings to help producers evaluate the profit potential for each of the major row crops. The production cost estimates are now available on the Internet through the Extension home page for the general public.

Production economic efforts for cotton focused on:

- Increasing farm profitablility and ways to reduce production costs.
- Economic analysis of transgenic cotton varieties.
- Economic analysis of no-till row cotton.
- Precision agriculture.

The results were presented at state and county meetings and published in a fact sheet, proceedings and newsletters.

Production economic efforts for poultry focused on creating spreadsheet decision aids that examine costs of production and can be used to evaluate infrastructure investments on the farm. These are available on the AEAB web site.

Farm Management and Marketing Newsletter – This quarterly publication, designed to bring timely management information to county Extension agents and agricultural producers, continues to gain strength. A typical issue contains equal numbers of articles from research and extension faculty in Agricultural Economics and Agribusiness. The newsletter's distribution includes a mailing to all county offices, with some agents forwarding the entire newsletter to their producers. Issues are also directly mailed to organizations and businesses, including the media. Over 1,000 issues are directly distributed to Extension clientele each quarter. In addition, the newsletter is posted on the Extension and AEAB web pages, allowing interested individuals to print off the entire newsletter or a single article.

Commodity Situation and Outlooks – Numerous presentation are made at county level production meetings related to market outlook. This information helps producers in making both old and new crop marketing decisions as well as management decisions related to crop mix.

Vegetable, Fruit and Ornamental Marketing Information – County agents and tomato growers appreciate receiving a weekly newsletter during the tomato season that contains information on the U.S. tomato market situation. A series of brochures and fact sheets were also developed on direct and wholesale marketing options. Leadership was provided to develop farmers' markets and a support organization.

Price Risk Management – Numerous seminars and in-service trainings for agents are being conducted on the use of commodity futures options to manage price risk. Clientele are being instructed in the use of puts and calls in combination with LDPs and crop insurance.

Agricultural Policy – The agricultural policy educational and research program places primary emphasis on defining and solving agricultural policy, management and resource development problems of Arkansas farm firm systems and supporting infrastructure with specific emphases on rice farm systems.

More specifically, the program focuses on the following:

- Identifying economic and public policy problems limiting profitability and economic viability of Arkansas Delta farm systems.
- The consequences of public policy alternatives on Arkansas farms and infrastructure with primary focus on rice and cotton farms.
- Consequences of technology and the new global economy on Arkansas production systems and infrastructure. Given U.S. monetary and fiscal policy and the new global economy, alternative business strategies are proposed to enhance profitability and economic viability of Arkansas farms and infrastructure.

In FY 2006, Extension policy specialists were involved in providing agricultural policy and outlook information to clientele through web, print media and radio and planned and participated in the rice industries national meeting. The team also greatly added to the number of representative farms that are available to conduct analysis on the impact of policy changes on Arkansas farms.

Farm Family Risk Management Program – This program continues to provide valuable assistance to producers, primarily in row-crop producing areas of Arkansas. The major focus of this program is to help producers evaluate the financial position and performance of their operations and identify strategies to continually improve the overall financial health of their businesses.

Assistance is being provided to Arkansas row-crop producers in the following areas:

Financial statement preparation, financial analysis, cash-flow planning, farm record keeping, enterprise budgeting, marketing strategies, purchase or lease decisions, irrigation investments and land leveling or improvement investments. In addition to individualized farm management assistance, the risk management specialists working in this program conduct workshops in record keeping, financial analysis and commodity marketing.

The Arkansas Farm Family Risk Management Education Initiative is available to row-crop producers in 27 eastern Arkansas counties. Producers may contact their local county Extension office for information on this program or they may contact the risk management specialist directly. Specialists in this program can provide on-farm assistance to clients. Information is available in brochure form. These brochures are available at county Extension offices. Also, these materials are available at county Extension-sponsored events.

Horticulture Economics

Fruit Enterprise Budgets – A series of budgets have been developed and released throughout the past year. There are 11 vegetable and 14 fruit budgets available for use by horticulture producers. The budgets are available on Extension's web pages as well as through our county offices. The average number of hits per month is 69. In addition to providing a resource for understanding production cost, the budgets outline resource needs, application/operation timing and recommended application rates for seeding and chemical applications.

Survey of Arkansas Horticulture Industry – This statewide project assesses the economic contribution of the state's horticulture industry. The project collected and analyzed data for seven specific sectors of the industry: (1) fruit, nut, vegetable and herb producers, (2) fruit, nut, vegetable and herb processors, (3) turf producers, (4) golf courses, (5) ornamental producers, (6) ornamental processors and (7) landscape architects. The published report included three components: analysis of survey data, compilation of secondary data and estimation and presentation of the industry's economic impact.

The report provided a summary of data collected for each sector. In addition to providing some descriptive statistics for the industry, economic impacts were estimated. Using input-output technique, the economic impact of the industry on Arkansas' economy was presented and discussed. The report was dispersed to industry stakeholders, academic faculty and policy makers including the Arkansas State Horticulture Society, Arkansas Green Industry Association, Arkansas Turfgrass Association, Arkansas State Plant Board and Arkansas Farm Bureau's Horticulture Committee. Additionally, reports were sent to media representatives.

Marketing Horticutural Products – A marketing program was conducted at two Extension regional training events and a statewide University of Arkansas conference on specific strategies for marketing horticultural products. The focus of those programs examined niche marketing opportunities and the importance of developing business and marketing plans. Additionally, a train-the-trainer workshop was conducted to provide resources working with horticulture producers and businesses.

Two brochures were developed and distributed to assist the promotional efforts of the state's horticulture industry. One brochure highlighted direct marketing efforts of primarily fruit, vegetable and nut producers. The brochure provided a listing of farmers' markets and pick-your-own operations in the state. A detailed map was part of the brochure indicating each business/market location and contact information. The second brochure focused on the nursery, ornamental and turf business. The brochure serves as a buyers' guide for the industry and was a collaborative effort between the University, Arkansas Green Industry Association and Arkansas Turfgrass Association.

General Program Information – The horticulture economic program has developed and provided information to assist producers in examining the feasibility of starting horticulture businesses, production costs estimates for various fruit and vegetable crops, risk management information, marketing costs, direct marketing options and business structure information. This information includes resources on risk management and enterprise budget tools for business planning. A link has been developed on Extension's web site entitled Horticulture Business Resources. The site details available risk management resources and compiles University of Arkansas, various USDA agency and selected land grant university reports and publications to assist the state's producers.

Extension Program Results and Accomplishments

Output Indicators

446 Number of total contacts reported related to management, marketing and/or farm policy.

4,306 Number of participants attending educational meetings and receiving educational materials related to farm and risk management.

267 Number of educational materials produced.

226 Number of in-service trainings conducted on commodity marketing.

Outcome Indicators

241 Number of producers who implemented changes in management practices as a result of farm management educational efforts.

Source of Funds

Smith-Lever 3b and 3c. Agricultural economists received external funding from commodity promotions boards, USDA, Risk Management Agency and Cotton Incorporated.

Scope of Impact

Dissemination – Statewide availability of programs to interested counties. Management, marketing and farm policy information is available through UAEX web site.

Scope of Program –
State Specific: These programs have been delivered at some level in all 75 Arkansas counties.
Multi-state Extension: Louisiana, Mississippi, Oklahoma and Texas.
Multi-state Research: Texas and Oklahoma.
Multi-state Integrated Research and Extension: Oklahoma and Mississippi.

KEY THEME:
AGRICULTURAL PROFITABILITY

Program Response:
Commercial Fruit and Nut Production

Contact: M. Elena Garcia, Extension Horticulture Specialist, megarcia@uark.edu, 479-575-2790, Horticulture

Situation

A large selection of fruits for both retail and whosale marketes were grown statewide in 2006. These crops included apples, peaches, blueberries, blackberries and grapes. The acreage continues to increase as new growers come into the market and as new niche marketing opportunities appear and established growers take advantage of these opportunities to expand their acreage. The increase in farmers' markets throughout the state has contributed to an increased interest in new orchard esablisjhments. The pecan indusrty continues to grow with new acres being planted, and with the formation of the Arkansas Pecan Growers Association, this industry will have a cohesive force in production and marketing strategies.

The drought of 2005-2006 and weather conditions before and during flowering adversely affected some crops, particularly blackberries and pecans. Growers using irrigation had successful and consistent production. Pecan production varied according to the region of the state with areas most affected by the drought having lower than aveage yields.

Marketing continues to be a challenge for all perishable horticultural crops, including fruits. A more concerted assistance, likely from the state level, with horticultural marketing would significantly improve the potential for horticultural crops in the future of Arkansas.

Increasing growth of retail marketing in both urban and rural areas will create opportunities for fruit and nut growers as well as enhance quality of life in local communities. Market development will be critical for fruit growers to fully realize opportunities.

Stakeholder Input

Stakeholders are actively recruited in each county to help identify needs and provide critical review of county programs in meeting the needs of the county. Stakeholders include, but are not limited to, producers and horticulture-industry representatives. County Extension agents and Extension specialists utilize this feedback in developing county and statewide programs to meet the needs of all clientele. These programs include, but are not limited to, formal educational meetings, field meetings, demonstrations, newsletters and development of educational materials distributed through traditional means as well as electronically.

Cooperative efforts with grower groups, regulatory agencies and other organizations with horticulture interest also provide valuable feedback in programming on a regional and statewide basis.

Overview

The most significant issues facing our clientele include:

- **Pest Management** – Fruit growers often work with diversifed production systems that require unique knowledge and expertise for the various pest-plant interaction systems. Growers lack knowledge and resources to address pest management issues.

- **Nutrition Management** – The continued addition of fertilizers to perennial crops with no pH adjustment has contributed to serious nutritional imbalances in many fruit and nut orchards. Awareness by growers of this problem will result in both economic and environmental benefits.

- **Production Systems** – Changes in the production systems allow the growers to produce crops more efficiently. Shifts in the production systems such as high density orchards will benefit the growers and have a minimum impact on the environment.

- **Labor** – Much of the fresh market vegetable industry depends on seasonal hand labor for harvesting and packing the product. Hiring and training enough labor to meet the needs of the industry is a significant problem.

- **Maintaining Quality** – Harvest and quality management are essential. Poor quality does not sell, and there are no discounts for lower quality product. Post-harvest management is essential for maintaining quality.

- **Cultivar Selection** – Cultivar selection should best fit the available genetics and pest management needs.

- **Food Safety** – Education of growers and handlers of produce is necessary to maintain a safe, wholesome and secure food supply.

Extension Program Results and Accomplishments

Output Indicators

Events	Method
112	Annual training (40 hours)
18	Board meetings
26	Civic programs
55	Committee meetings
3	Demonstrations
103	Educational meetings
19	Educational workshops
18	Farm visits
2	Field days
18	Flower and garden shows
3	Garden tours
31	Horticulture education
2	Media
120	Monthly meetings
36	News articles
5	Newsletters
9	Newsletters

9	Office consultations
12	One on one
72	Other
7	Planning sessions
55	Radio
33	Site visits
11	State MG Meeting
11	TV
5	Work days
13	Workshops
4,694	Individuals participating in these programs
308	MG educators trained in your county
856	New volunteers trained
32,948	Total learning hours reported
63,311	Total working hours reported
151	Programs conducted for leaders and volunteers

Outcome Indicators

274	MG projects in your county
3	New commercial operations
16	New commercial producers in your county
11	New farmers' markets operating in your county
52	New projects in your county
11	New U-Pick operations in your county
533	Participants who adopted new production technologies
328	Participants who reduced their chemical and fertilizer inputs
115	Participants who reduced their chemical and fertilizer management inputs
16,208	Participants who improved their home garden or landscape
23,065	Participants who participated in leisure gardening activities
10,292	Participants who report improved satisfaction from leisure gardening activities
2,647	Phone calls answered by Master Gardeners
1,512	Volunteers recertified

Source of Funds

Smith-Lever 3b and 3c funds.

Scope of Impact

Dissemination – Available statewide through web, publications and media releases.

Scope of Program – Multi-state Integrated Research and Extension: Arkansas, Oklahoma.

Program Response:
Commercial Vegetable Production

Contact: Craig Andersen, Extension Horticulture Specialist, crander@uark.edu, 479-575-2639, Horticulture

Situation

A broad selection of fresh market vegetable crops were grown statewide in 2006. These crops included tomatoes, melons, squash, peppers, sweet corn, sweet potatoes, cabbage, greens, spinach and southern peas. The acreage continues to increase as new growers come into the market and as new marketing opportunities appear. The continued drought during 2006 adversely affected some crops. Growers using irrigation had successful and consistent production and fewer disease problems

The use of drip irrigation and plasticulture has been successful, providing the consistent production of fresh market vegetables. Weather conditions and temperatures were favorable for the tomato, pumpkin, melon, squash, sweet potato and pepper industries. Southern peas, green beans, greens and spinach were the major processing crops in 2006. The number and quality of farmers' markets in the state continued to expand in 2006 with over 50 markets in varying stages of organization being identified. The establishment of a statewide farmers' market organization will allow the markets and growers better accesss to resources and information. Currently, about one-third of the markets have joined the orgaization.

Multi-disciplinary collaboration between growers, Extension personnel and researchers continued in efforts to solve problems critical to the state's tomato and melon industry.

Increasing interest in sustainable and local production offers new opportunites in the state. From the consumers there is an increased demand for locally grown and organic produce. This demand has traditionally been served by the farmers' markets and is one of the reasons for expansion of farmers' markets. Produce retailers have recognized this demand and are increasingly offering these products in the stores. The growth of retail marketing in both urban and rural areas will create opportunities for vegetable growers as well as enhance quality of life in local communities. Market development will be critical for vegetable growers to fully realize these new opportunities.

Overall marketing continues to be a challenge for all perishable horticultural crops, especially vegetables. A more concerted assistance, likely from the state level, with horticultural marketing would significantly improve the potential for horticultural crops in the future of Arkansas.

Stakeholder Input

Stakeholders are actively recruited in each county to help identify needs and provide critical review of county programs in meeting the needs of the county. Stakeholders include, but are not limited to, producers and horticulture-industry representatives. County Extension agents and Extension specialists utilize this feedback in developing county and statewide programs to meet the needs of all clientele. These programs include, but are not limited to, formal educational meetings, field meetings, demonstrations, newsletters and development of educational materials distributed through traditional means as well as electronically.

Cooperative efforts with grower groups, regulatory agencies and other organizations with horticulture interest also provide valuable feedback in programming on a regional and statewide basis.

Overview

The most significant issues facing our clientele include:

- **Marketing** – The number of crops and the quantity that can be grown are limited by the ability of the growers to sell their crops. Perishable crops depend on rapid sales within a short time frame to maintain value and profitability.

- **Production Systems** – Changes in the production systems allow the growers to produce crops more efficiently. Shifts in the production systems will benefit the growers and have a minimum impact on the environment.

- **Labor** – Much of the fresh market vegetable industry depends on seasonal hand labor for harvesting and packing the product. Hiring and training enough labor to meet the needs of the industry is a significant problem.

- **Maintaining Quality** – Harvest and quality management are essential. Poor quality does not sell, and there are no discounts for lower quality product. Post-harvest management is essential for maintaining quality.

- **Cultivar Selection** – Cultivar selection should best fit the available genetics and pest management needs.

- **Food Safety** – Education of growers and handlers of produce is necessary to maintain a safe, wholesome and secure food supply.

Extension Program Results and Accomplishments

Output Indicators

Events	Method
112	Annual training (40 hours)
18	Board meetings
26	Civic programs
55	Committee meetings
1	Demonstration
2	Demonstrations
103	Educational meetings
19	Educational workshops
18	Farm visits
2	Field days
18	Flower and garden shows
3	Garden tours
31	Horticulture education
2	Media
120	Monthly meetings
36	News articles
5	Newsletters
9	Newsletters
9	Office consultations
12	One on one
72	Other

7	Planning sessions
55	Radio
33	Site visits
11	State MG Meeting
11	TV
5	Work days
13	Workshops

Outcome Indicators

4,694	Individuals participating in these programs
308	MG educators trained in your county
274	MG projects in your county
3	New commercial operations
16	New commercial producers in your county
11	New farmers' markets operating in your county
52	New projects in your county
11	New U-Pick operations in your county
856	New volunteers trained
533	Participants who adopted new production technologies
328	Participants who reduced their chemical and fertilizer inputs
115	Participants who reduced their chemical and fertilizer management inputs
16,208	Participants who improved their home garden or landscape
23,065	Participants who participated in leisure gardening activities
10,292	Participants who report improved satisfaction from leisure gardening activities
2,647	Phone calls answered by Master Gardeners
151	Programs conducted for leaders and volunteers
1,512	Volunteers recertified
32,948	Total learning hours reported
63,311	Total working hours reported

Source of Funds

Smith-Lever 3b and 3c funds.

Scope of Impact

Dissemination – Available statewide through web, publications and media releases.

Scope of Program – Multi-state Integrated Research and Extension: Arkansas, Oklahoma.

Program Response:
Cotton Production Education

Contact: Frank Groves, Cotton Research Verification Coordinator - Cotton, 870-460-1091, fgroves@uaex.edu

Situation

Arkansas cotton producers and crop advisors make key management decisions that impact yield as well as profitability. These decisions include, but are not limited to, variety selection, fertility and soil management, IPM/COTMAN data collection and interpretation and maintaining quality of lint in an effort to reduce production costs while maintaining high levels of production.

Stakeholder Input

Stakeholders are actively recruited in each county to help identify needs and provide critical review of county programs in meeting the needs of the county. Stakeholders include, but are not limited to, producers, agricultural advisors and Ag-industry representatives. A small but representative group of individuals whose livelihoods are directly impacted by cotton make up the Cotton Agriculture Council in each county. The councils meet annually with agents and specialists. The County Council has a direct impact in the development of the educational program of the county through their feedback. County Extension agents and Extension specialists utilize this feedback in developing county and statewide programs to meet the needs of all clientele. These programs include, but are not limited to, formal educational meetings, field meetings, demonstrations, newsletters and development of educational materials distributed through traditional as well as electronic means.

Cooperative efforts with promotion boards, grower groups, regulatory agencies and other organizations with cotton interests also provide valuable feedback on programming on a regional and statewide basis.

Overview

The most significant issues facing our clientele include:

- **Variety Selection** – The number of variety/technology combinations available is plentiful and often confusing. Variety selection should best fit genetics as well as pest management needs.

- **Fertility and Soil Management** – Fertility needs should be based on meeting the plant's needs. Shifts in tillage systems will benefit the producers as well as the environment.

- **IPM/COTMAN** – IPM programs are the foundation of our cotton educational programs. COTMAN is a tool that can help tie all cotton Extension programs together in a systems approach including initiation and termination of cultural practices.

- **Maintaining Quality** – Harvest management is essential in maintaining high quality. Discounts as a result of poor quality are costly to producers. Harvest aid timings can greatly impact fiber quality.

- **Reducing Production Expense** – Yield drives profit. Reducing expenses per unit of production is the key to keeping the cotton industry competitive in Arkansas.

Extension Program Results and Accomplishments

Output Indicators

In efforts to meet the needs of clientele the following were implemented in 2006:

Demonstrations:
6 Cotton Research Verification
18 Variety
2 Plant growth regulators
1 In-furrow/seed treatment protectants
3 Harvest aid timing

Educational Meetings:
15 Production meetings
2 Cotton scout trainings
11 IPM meetings
7 Harvest aid meetings
7 Field day/crop tours

Applied Research:
2 Plant growth regulators
5 Fertility
4 Harvest aid
1 Subsurface drip irrigation

Outcome Indicators

- Arkansas cotton growers harvested a record 2.56 million bales of cotton from 1.16 million harvested acres. Our statewide yield of 1,059 pounds of lint per acre is second only to that of 2004, in which 1,114 pounds of lint per acre was produced. Lint yields during the last three years have averaged 1,061 pounds per acre. Prior to the last three years, statewide lint yield averages had not exceeded 1,000 pounds per acre. Arkansas leads the Mid-South in lint production per acre and trails only California and Arizona when comparing one- and three-year yield averages.

- Arkansas ranked second in bales of cotton produced nationwide in 2006, producing 11.78 percent of the total U.S. crop from only 9.11 percent of the U.S. harvested acres. The Arkansas cotton and cottonseed crop is valued at over $500 million annually.

- 1,730 farms in Arkansas produce cotton, three-fourths of which are irrigated.

- Shifts in pest management technologies and labor shortages on the farm have been the driving force in the adoption of conservation tillage practices. The use of conservation tillage practices has increased from 18.1 percent to 25.2 percent of cotton acreage in Arkansas since 1992 as reported by the Conservation Tillage Information Center. They also report the use of intensive-till practices dropping from 70.4 percent to 53.5 percent during the same timeframe. Continued effort in demonstrating the benefits of conservation tillage is critical to sustaining this trend. These shifts benefit producers as well as the environment.

- Cotton producers are using COTMAN and other tools in an IPM program to better time cultural practices ranging from irrigation initiation, supplemental nitrogen requirements, insecticide timing, as well as better

timing the termination of irrigation and insecticide applications and defoliation activities. There remains a tremendous opportunity to increase the utility of COTMAN to assist in improving profitability.

- The quality of cotton produced in Arkansas is high. One composite measure of quality is reflected in cotton termed "tenderable" or of sufficient quality to meet standards for delivery on New York No. 2 futures contract. The quality of the Arkansas crop far exceeded that of other Mid-South states including Mississippi, Louisiana and Tennessee (85.0 percent vs. 63.2 percent, 65.9 percent, and 76.2 percent, respectively).

- The Cotton Research Verification Program (CRVP), developed in Arkansas in 1980, continues to be a well-accepted program by all clientele. Six fields were enrolled in the program in 2006. It is a good reflection of Arkansas cotton production and of the scenarios growers faced throughout the season. Economics is a major component of the program. In calculating the break-even price, the cost of production per pound of lint is used after 25 percent of the yield is given to the landlord for rent. These break-even prices ranged from $0.41 per pound in Desha County to $0.55 per pound in Chicot County. The average cost of production for the nine fields was $0.50 per pound. This does not include risk and management costs. The average loan price was $0.54 per pound. The CRVP is an important tool for educational efforts. This program offers an excellent means to transfer technology to producers as well as offer valuable hands-on training for county Extension agents.

Source of Funds

County programs and the CRVP are funded with Extension (Smith-Lever) and IPM funds. Applied research/demonstrations and seminars/meetings are funded by outside sources such as industry grants and/or funding by Cotton Incorporated. Direct funding totaled over $155,000, and "in kind" gifts totaled $95,000 for the cotton program.

Scope of Impact

Dissemination – Information is disseminated to any interested party through mail, Extension web sites, personal communications, Cotton Comments newsletters, and by producer meetings, conferences and seminars. Publications and Extension support materials developed include:

5	Presentations/posters at professional meetings
31	Cotton/CRVP newsletters
4	Extension publications
6	Articles in research bulletins
10	Agent distance education (Centra)
2	Educational materials
9	Training modules/demonstration protocols
15	Individual articles
18	Article interviews
15	Television and radio interviews
2	Computer software
2	Teaching aids

Scope of Program – The majority of the cotton program is state specific and directed to Arkansas cotton producers. The program impacts at least 25 of the counties in Arkansas. Cotton-producing counties include Lafayette, Miller, Ashley, Chicot, Desha, Drew, Lincoln, Jefferson, Lonoke, Pulaski, Prairie, Arkansas, Woodruff, Jackson, Cross, Monroe, Lee, St. Francis, Phillips, Crittenden, Mississippi, Poinsett, Craighead, Greene and Clay counties. This program impacts all counties in Arkansas where cotton is produced.

Multi-state Extension efforts exist between Mississippi, Missouri, Tennessee, Louisiana and Texas, primarily through the use of COTMAN. Joint efforts by all cotton-producing states are currently underway to form a community of practice to help address the needs of clientele, to be delivered through extension and other related delivery methods.

Program Response: Extension Soybean Educational and Applied Research Program

Contact: Dr. Jeremy Ross, Extension Agronomist – Soybeans, 501-671-2148, jross@uaex.edu

Situation

In 2006, Arkansas soybean producers planted 3.11 million acres, which was an increase of 120,000 acres compared to last year. With this large acreage, soybeans remain the largest (based on planted acreage) row-crop in Arkansas, and revenues generated from soybean production are vital to the soybean producer. Each year, soybean producers are trying to maximize production efficiency and profits while minimizing expenses. The weather had the greatest impact on production efficiency in 2006, but pest management issues (weeds, insects, and diseases), irrigation techniques and fertility problems also had an impact on production. The Arkansas soybean program addressed many of these issues through its Soybean Research Verification Program (SRVP) and provided key recommendations for efficient soybean production.

Stakeholder Input

In many instances, County Agriculture Councils planned educational programs consisting of demonstrations, participated in the SRVP, conducted educational meetings, etc., to address the long-term sustainability of soybean production and other row crops in the county. In addition, Extension was called upon to deal with emerging issues of 2006 that were pretty much unforeseen and had to be dealt with through spontaneous educational programming as the crop season progressed.

Overview

The most significant issues facing our clientele include:

- **Variety Selection Criteria** – In 2006, over 300 varieties were tested in the University of Arkansas Variety Testing Program. With these options, producers are constantly searching for high-yielding varieties that are suited to their production systems. In addition, with at least nine soybean seed companies headquartered in the state, providing an unbiased source of research-based variety recommendations is crucial.

- **Fertility and Soil Management** – We continue to find fertility issues each year. With the onset of nutrient management plans for producers, research specifically addressing the potential of poultry litter is a major research focus. Additional testing is needed to ascertain the benefits of conservation tillage in Arkansas soybean production systems.

- **Reducing Production Expense** – Based on current Farm Bill legislation, yield is the primary factor that drives profit. Reducing production expenses without sacrificing yield is the overall goal of Arkansas soybean producers. Research identifying areas of minimizing input costs while maximizing yields remains important.

- **Irrigation Technology** – Arkansas soybean producers are gradually realizing the potential benefits of irrigation. While some areas of the state are dealing with water availability issues, current research is needed to help in irrigation efficiency and proper irrigation termination.

Extension Program Results and Accomplishments

Output Indicators

In efforts to meet the needs of clientele the following were implemented in 2005: (2006?)

Demonstrations:
15 Soybean Research Verification Program fields
1 variety
10 Production topics

Applied Research:
3 Seed treatment evaluations
1 Conservation tillage evaluations
4 Fungicide evaluations
3 Seeding rate/row spacing evaluations
5 Alternative fertility sources

Educational Meetings:
1 Arkansas Soybean Research Conference
45 County production meetings
15 Field day/county crop tours

Outcome Indicators

In 2006, Arkansas harvested 3.07 million acres of soybeans with an average yield of 35 bushels per acre. This average yield is down 4.0 bushels from 2004. Arkansas ranks 10th nationally in soybean production, and soybeans are produced in 42 counties in Arkansas. Only 65 percent of the soybean acreage in 2006 was irrigated, and 92 percent of the acreage was produced using transgenic soybeans.

The 2006 Arkansas Soybean Research Verification Program (SRVP) consisted of 15 commercial soybean fields. The Early Season (ESPS), Full Season (FSSPS) and Double-crop (DCSPS) production systems were utilized in the 2006 SRVP. In 2006, the SRVP program accurately represented all production systems and percent transgenic varieties utilized throughout the states' 3.11 million acres. Varieties of maturity group III, IV and V were selected using SOYVA, a computerized variety selection program, and planted from April to July. Fertilizer applications, tillage, weed control, irrigation and all other management practices were implemented according to research-based University of Arkansas (U of A) Extension recommendations. The SRVP average yield for the 13 irrigated fields was 55.7 bushels per acre. In the nonirrigated environment, the average yield was also 33.8 bushels per acre. As with previous years, the average SRVP yield was 17.8 bushels per acre higher than the projected state average yield of 35 bushels per acre.

Source of Funds

County programs are funded with regular Extension (Smith-Lever) and IPM funds. Replicated studies and other conferences and seminars were all funded by outside sources such as industry grants and/or funding by the Arkansas Soybean Promotion and/or United Soybean Board (total grants are approaching $250,000 in value). The agricultural

industry also donates materials valued in excess of $40,000 annually to assist with the Arkansas soybean Extension and applied research program.

Scope of Impact

Dissemination – Information is disseminated to any interested party through e-mail, mail, Extension web sites, personal communications and by producer meetings, conferences and seminars. Publications and Extension support materials developed include:

3 Extension publications
34 Educational materials (consisted of weekly soybean updates and production newsletters dealing with current production issues)
35 Article interviews
16 Television and radio interviews
1 Computer software program

Scope of Program – All soybean-producing counties in Arkansas have delivered one or more of these educational efforts contributing to the viability of the Arkansas soybean industry. High yields and improved management of natural resources, while developing programs to deal with the ever-changing production environment in Arkansas, are some of the accomplishments attributed to the Arkansas soybean educational and applied research program.

Program Response: Extension Weed Science Educational and Applied Research Program

Contact: Dr. Bob Scott, Extension Weed Specialist, 501-671-2278, bscott@uaex.edu, Dr. Ken Smith, Extension Weed Specialist, 870-723-5527, ksmith@uamont.edu, and Dr, John Boyd, Extension Weed Specialist, 501-671-2224, jboyd@uaex.edu

Situation

In 2006, producers treated over 90 percent of their row crop and small grain acres with herbicides. Weed control continues to be the most significant pest management decision that rice, corn, wheat, soybean and grassland farmers face each season. After variety selection, it is often the first management decision made each year. Failure to control weeds can often nullify other concerns, as weed competition has the potential to completely rob crops of profitability. In addition, weeds can reduce the value of harvested grain, interfere with harvest and reduce land values. Each year growers attempt to lower weed control cost while still maintaining the maximum yield potential for various production crops. Weed control efforts in 2006 were hampered by dry conditions and herbicide resistance, but largely successful in rice, soybeans, cotton and other crops due having numerous herbicides available and sound use recommendations for those products. The Arkansas Extension Weed Program helps address weed control issues and herbicide use recommendations through the publication of the MP-44, *Recommended Chemicals for Weed and Brush Control*, and through numerous production meetings and popular press publications.

Stakeholder Input

In many instances, County Agriculture Councils planned educational programs consisting of demonstrations, educational meetings and research trials. Input from numerous basic herbicide manufacturers was obtained in the

form of research protocols. Input was gained from individuals in the Pesticide Division of the Arkansas State Plant Board. Also, producers, county agents and consultants provided consistent and constant feedback on weed control issues that most impact state crop production, and these issues are addressed in applied research protocols. In addition, Extension weed specialists were called upon to deal with emerging issues of 2006 that were unforeseen and had to be dealt with through spontaneous educational programming as the crop season progressed. An example of this is glyphosate drift to rice, which was a significant issue in 2006.

Overview

The most significant issues facing our clientele include:

- **Herbicide Drift Mitigation and Management** – With the increased reliance on glyphosate as our primary weed control tool in soybeans, cotton and soon corn, glyphosate drift to nontolerant crops has been an issue. Also, since the introduction of Clearfield rice and Newpath herbicide, drift of Clearfield herbicides onto non-Clearfield crops has been a concern.

- **Controlling Difficult Weeds** – We continue to find new and emerging weed issues each year. In 2006, yellow nutsedge in soybean, glyphosate-resistant horseweed in reduced tillage systems, texasweed, red rice in rice and several others are examples of weeds are currently in the difficult to control column. This year a glyphosate-resistant pigweed was identified in Arkansas. Research is needed on herbicides and systems to control these problem weeds.

- **Reducing Weed Control Costs** – Based on current Farm Bill legislation, yield is the primary factor that drives profit. Reducing herbicide expenses without sacrificing yield losses is the overall goal of most Arkansas producers. Research identifying ways to minimize weed control costs while maximizing yields remains an area of importance.

- **Technology Transfer (new herbicides and systems)** – Arkansas producers are introduced to at least one new herbicide each year. The role of the Weed Science program is to provide producers with a nonbiased source of information and recommendations on these new products.

- **Herbicide Resistance** – For the past several years, no new herbicide modes of action have been introduced. Furthermore, none appear to be in the pipeline for the immediate future. In 2006, a new weed, Palmer amaranth, was discovered that is resistant to glyphosate. Current research is focused on this and the discovery and control of other weeds with herbicide resistance. Also, in 2006 several populations of palmer amaranth were identified as possibly resistant to glyphosate. These fields are under investigation. Herbicide resistance is the most significant issue facing weed science in the near future.

Extension Program Results and Accomplishments

Output Indicators

In efforts to meet the needs of clientele, the following were implemented in 2005.

Demonstrations:
25 Soybean weed control
51 Rice weed control
7 Wheat weed control
1 Sunflower weed control
22 Cotton weed control

8 Corn weed control
51 Turfgrass weed control
10 Pasture weed control
3 Right of way weed control

Applied Research:
3 Herbicide drift
3 Conservation tillage evaluations
1 Biological jointvetch control
18 Weed control

Educational Meetings:
1 Arkansas Crop Management Conference
1 Arkansas Turfgrass Association Conference and Show
1 Arkansas-Oklahoma Turfgrass Short Course
86 County production meetings
9 Field days/county crop tours

Outcome Indicators

Recommendations for reduced rate weed control programs including products such as Command herbicide for rice and Roundup for Roundup Ready soybeans have resulted in savings for growers in the overall costs of their weed control programs. Data from this program have resulted in numerous section 24C and section 18 labels in the state. This program continues to be instrumental in the development of the Clearfield technology for rice that is now adopted on over 300,000 acres.

Source of Funds

County programs are funded with regular Extension (Smith-Lever) and IPM funds. Replicated studies and other conferences and seminars were all funded by outside sources such as industry grants and/or funding by the Arkansas Soybean Promotion Board, Arkansas Rice Promotion Board, Arkansas Corn and Grain Sorghum Promotion Board and several other sources (total grants are approaching $500,000 in value). Agricultural industry also donates materials valued in excess of $25,000 annually to assist with the Arkansas Weed Science Extension and applied research program.

Scope of Impact

Dissemination – Information is disseminated to any interested party through e-mail, mail, county agents, Extension web sites, personal communications, popular press articles and by producer meetings, conferences and seminars. Publications and Extension support materials developed include:

3 Extension publications (MP44 and glyphosate-resistant horseweed materials, turf weed control for professionals)
7 Fact sheets
26 Educational materials (consisted of e-mail, power point presentations, and various bulletins)
54 Article interviews
23 Popular press articles
16 Television and radio interviews

Scope of Program – All agricultural counties in Arkansas have utilized one or more of these educational efforts contributing to the viability of the Arkansas agricultural industry. High yields and improved weed management

are some of the accomplishments attributed to the Arkansas Weed Science educational and applied research program. In addition, many other states look to Arkansas for leadership in the area of weed management.

Programs of Excellence

General Program Information – Weed control studies are conducted at several locations across Arkansas. These programs focus on solving current and potential weed control issues in the state. Major areas of focus include developing low cost weed control programs for row crop and small grain producers, managing herbicide resistance and technology transfer in the form of herbicide recommendations. Research sites are located in Arkansas, Poinsett, Lonoke, Pulaski, Mississippi, Jackson and Desha counties.

Red Rice Control in Rice With the Clearfield System

For years red rice has plagued rice producers. No chemical control for red rice has existed for growers to use to control this weed in a growing rice crop. Control measures have consisted of cultural control practices such as crop rotation and water seeding. Over the past three years a new production system has successfully been launched in Arkansas that addresses this problem. The Clearfield rice production system and Newpath herbicide currently provide growers the option of controlling red rice in a growing rice crop. This system has been extensively research by our Weed Science program. Extension recommendations through multiple media outlets and through the county agent system have provided growers with sound recommendations and aided in the rapid adoption and success of this new rice production system. Current research is aiding in the longevity of this technology by examining herbicide resistance issues and evaluating stewardship policies.

Locations – This success story comes from all rice-producing counties in Arkansas.

Impact Numbers – Clearfield technology was adopted on over 150,000 acres of rice in Arkansas in 2004. Clearfield acres in Arkansas topped 200,000 in 2005 and exceeded 300,000 in 2006.

CES Section Contact Person – Dr. Bob Scott, Extension Weed Specialist, 501-676-3124, bscott@uaex.edu.

Management of Glyphosate-resistant Horseweed

Since it was first identified in 2002, glyphosate-resistant horseweed has spread to numerous counties in northeastern and central Arkansas. In response to this problem, county programs in the form of research demonstrations were initiated through the county agents. On-farm trials were established to look at alternative control measures. This data was then rapidly disseminated through publications, a production notebook, grower meetings, radio interviews and personal communications. A research initiative grant was obtained that was used to support travel and publication costs associated with this program. This program serves as a template for other counties in Arkansas where glyphosate-resistant horseweed is being discovered. In addition, the recommendations made by Extension as a result of this focus program have reduced the spread and severity of the glyphosate-resistant horseweed problem.

Locations – This success story highlights the Mississippi, Poinsett and Crittenden County programs. However the problem is now statewide.

Impact Numbers – This program has been adopted by over 75 percent of growers in these and other counties. Glyphosate-resistant horseweed now infests most of the Delta counties in Arkansas. The program adoption continued into 2006.

CES Section Contact Person – Dr. Ken Smith, Extension Weed Specialist, 870-723-5527, ksmith@uamont.edu.

Weed Control in Woody Landscape Plant Nurseries

Many Arkansas nurserymen are not aware of the huge impact that weed competition has on the growth and survival of woody landscape plants. Timely and effective weed control significantly reduces: (1) the mortality rate of newly established plants and (2) the amount of time needed to produce a saleable plant. Thus, implementing an effective weed control program increases profit for nurserymen. To demonstrate the beneficial effects of nursery weed control we established a demonstration at the Bemis Tree Farm located just south of Little Rock. A 16 ft^2 vegetation free zone was maintained around willow oak, red maple and Callery pear during the 2001-2006 growing seasons using a combination of pendimethalin and glyphosate herbicides. Shoot height, trunk diameter and percent survival for each species was compared in 2006 for weedy vs. weed-free trees.

Impact – Response to weed control was dramatic. Shoot height increase with weed control vs. no weed control for red maple, Callery pear and willow oak was 69 percent, 23 percent and 22 percent, respectively. Trunk diameter increased an average of 56 percent across these three species. Weed control did not improve Callery pear survival. However, willow oak survival with weed control was 96 percent compared to 62 percent for trees with no weed control. Red maple survival benefited the most from weed control, increasing from 36 percent without vegetation removal to 60 percent with vegetation removal. These results inspired the Bemis family to embark on a rigorous weed control program, which resulted in increased plant survival and growth throughout their operation.

CES Section Contact Person – Dr, John Boyd Extension Weed Specialist, 501-671-2224, jboyd@uaex.edu.

Program Response: Irrigation Scheduling

Phil Tacker, Biological and Agricultural Engineering, 501-671-2237, ptacker@uaex.edu

Situation

Arkansas' 4.5 million irrigated acres places it fourth in the country in irrigated acreage. Additionally, Arkansas continues to see an increase in irrigated acreage when irrigated acreage in other states is decreasing. Arkansas producers irrigate approximately 3 million soybean, cotton, corn and grain sorghum acres in order to increase and stabilize yields and quality and improve their potential for sustainability and profitability. These producers need a practical and effective method for scheduling irrigation.

Stakeholder Input

Personal communications with producers and county agents indicate that educational efforts in irrigation scheduling are needed. Many indicate personal experiences where irrigation scheduling has greatly enhanced crop yields and quality. Participating growers in Arkansas' Crop Research Verification Program consistently indicate that what they learn in the areas of irrigation management and scheduling greatly impacts their farm production. County Extension Councils and other advisory groups in the row crop-producing counties recommend that Extension address this issue. Cotton Incorporated and the Soybean, Corn and Grain Sorghum Research Promotion Boards fund educational efforts related to irrigation scheduling.

Overview

Irrigation is becoming increasingly necessary for producers to achieve crop yields and quality that improve their sustainability and opportunity for profit. Limited water resources, increased energy costs and a limited labor source pose a challenge to properly scheduling irrigation to efficiently meet crop water demands. An Irrigation

Scheduling Computer Program that is available through the Extension Service has proven to be a very helpful water management tool for producers. The program requires only a minimal amount of data input in order to project irrigation needs so the producer can better manage his irrigation water and labor to satisfy crop water needs and achieve desirable yields.

Extension Program Results and Accomplishments

Output Indicators

25 Educational meetings, tours, field days and workshops where information on irrigation scheduling was presented.

25 County Extension offices emphasizing irrigation scheduling in their educational efforts.

- Irrigation scheduling program is downloadable from CES web page.

Outcome Indicators

- Five Experiment Stations using irrigation scheduling program to improve water efficiency.
- Five other states (Missouri, Kentucky, Tennessee, Mississippi, Louisiana) using irrigation scheduling program to improving water efficiency.
- Approximately 400 farms and/or producers improving water efficiency by using irrigation scheduling program.
- 30 fields enrolled in the Crop Research Verification Program improving water efficiency by using irrigation scheduling program.

Source of Funds

Funding is from a combination of Smith-Lever Extension funds and grants from Cotton Incorporated and the state Commodity Promotion Boards – Soybean, Corn and Grain Sorghum.

Scope of Impact

Dissemination – Extension web site, educational meetings, field days/tours, field demonstrations, Crop Verification Program, conferences, seminars, workshops and Extension publications.

Scope of Program – The following row crop-producing counties promote irrigation scheduling and the use of the Irrigation Scheduling Computer Program: Arkansas, Ashley, Chicot, Clay, Conway, Craighead, Crawford, Crittenden, Cross, Desha, Drew, Faulkner, Greene, Hempstead, Independence, Jackson, Jefferson, Johnson, Lafayette, Lawrence, Lee, Lincoln, Little River, Logan, Lonoke, Miller, Mississippi, Monroe, Phillips, Poinsett, Pope, Prairie, Pulaski, Randolph, St. Francis, White, Woodruff and Yell.

Program Response:
Poultry Short Course

Contact: Dr. Frank T. Jones, Extension Poultry Specialist, 479-575-5443, ftjones@uark.edu

Situation

Although many consume the products produced by the poultry industry, few understand the production system. Although some may be interested in learning about the industry, much of the information available is either hopelessly out of date or too technical to understand.

Stakeholder Input

Numerous calls requesting short-term poultry training are received annually.

Overview

A comprehensive short course program was established. The program provided participants with a broad overview of poultry production. The course involves a "tell and show" format that includes discussing components of a poultry production system and then taking a field trip to see it in operation. The course includes components from breeders through further processing and involves hands-on exercises.

Extension Program Results and Accomplishments

Output Indicators

1 Short course program conducted.

16 Presentations on poultry production provided by faculty.

1 Popular press article as a result of the short course.

Outcome Indicators

10 Allied industry leaders learned about the poultry industry.

Source of Funds

Smith-Lever, course registration fees.

Scope of Impact

Dissemination – The program is available to anyone national or international who wishes to take the course.

Scope of Program – Arkansas.

Program Response:
Rice Irrigation Water Management for Water, Labor and Cost Savings

Contact: Phil Tacker, Biological and Agricultural Engineering, 501-671-2237, ptacker@uaex.edu

Situation

Arkansas producers irrigate approximately 1.5 million acres of rice. Energy prices, especially diesel fuel, have increased, and the availability of irrigation water is declining in some rice-producing areas of the state. These factors, along with recent extended summer droughts and a declining labor force, have made it difficult for many producers to effectively flood irrigate their rice fields.

Stakeholder Input

Personal communications with producers and county agents indicate that educational efforts in improving rice irrigation water management are needed. County Extension Councils and other advisory groups in the rice-producing counties recommend that Extension address this issue. The Rice Research Promotion Board has funded educational efforts related to improving rice irrigation water management.

Overview

Extension promotes using Multiple Inlet Irrigation on rice for its improved water management that enables rice producers to irrigate more effectively and efficiently. Multiple Inlet Rice Irrigation (MIRI) offers potential water, energy and labor savings. It is also possible that MIRI fields can be flooded quicker, which improves fertilizer and herbicide efficiency which is more environmental friendly. Field runoff is also potentially reduced, which can protect surface water resources and the environment. MIRI may also reduce the detrimental effect that cold water from irrigation wells has on plant development and yield.

Extension Program Results and Accomplishments

Output Indicators

30 Educational meetings, tours, field days and workshops where information on multiple inlet rice irrigation was presented.

28 County Extension offices emphasized MIRI in their educational efforts.

20 Counties with MIRI field demonstrations – 7 of the counties are either designated or pending designation as critical groundwater usage areas.

25 Producers involved in MIRI field demonstrations.

25 MIRI field demonstrations.

Outcome Indicators

Four rice producers cooperated with Extension to conduct field comparison studies on MIRI during the 2006 season. Following are the farms, the counties and the results.

- Wood Farm, Cross County – used 19 percent less water during the season on MIRI field with silt loam soil.
- Carwell Farm, Cross County – used 22 percent less water during the season on MIRI field on silt loam soil.
- Easter Farm, Poinsett County – used 13 percent less water during the season on MIRI field on silt loam soil.
- Walls Farm, Poinsett County – used 8 percent less water during the season on MIRI field on silt loam soil.

Average water savings in percent for the four field comparisons was 16 percent.

Source of Funds

Support is from a combination of Smith-Lever Extension funds and funding from the Rice Research Promotion Board.

Scope of Impact

Dissemination – This program is available to any interested party through information presented through the following methods: Extension web site, educational meetings, field days/tours, field demonstrations, Crop Verification Program, conferences, seminars, workshops and Extension publications.

Scope of Program

State Specific: The following counties emphasize MIRI in their educational efforts: Arkansas, Ashley, Chicot, Clay, Craighead, Crittenden, Cross, Desha, Drew, Faulkner, Greene, Independence, Jackson, Jefferson, Lafayette, Lawrence, Lee, Lincoln, Lonoke, Miller, Mississippi, Monroe, Phillips, Poinsett, Prairie, Pulaski, Randolph, St. Francis, White and Woodruff.

Multi-state Extension: Mississippi, Louisiana and Missouri have used and implemented much of the information from MIRI work in Arkansas.

Program Response:
Soil Fertility and Plant Nutrition Education and Applied Research Program

Contact: Dr. Leo Espinoza, Assistant Professor/Extension Agronomist – Soil, 501-671-2168, lespinoza@uaex.edu

Situation

There has been a significant increase in average yields for most commodities grown in Arkansas. This increase has been, in part, a result of the introduction of improved hybrids and cultivars developed by public and private breeding programs. These new varieties and hybrids tend to respond dramatically to added inputs, with fertilizer being one of them. In consequence, there is a need to fine-tune and, if needed, modify existing fertilizer recommendations so Arkansas producers are able to maximize the yield potential of all commodities. The

increasing cost of chemical fertilizers and increasing environmental concerns requires that farmers maximize their fertilizer use efficiency so they are able to increase or maintain their productivity while maintaining environmental liability.

Low organic matter content of Delta soils is the probable cause for the common occurrence of some nutrient deficiencies, in addition to the use of irrigation water with an alkaline pH. Low organic matter is also a contributing factor in surface compaction (crusting) in many Arkansas soils. The presence of micronutrient deficiencies and the formation of a crust can significantly affect optimum crop production.

Stakeholder Input

The County Agriculture Council is one of the avenues for the identification of research and educational needs, with feedback collected at their annual meetings being the basis for most of the programs developed by counties and communicated to specialists via the county Extension agents. Feedback is also obtained from the official policy on state issues approved by county delegates to the Arkansas Farm Bureau annual convention. Additionally, the Promotion Boards for each commodity have identified the need to constantly revise fertilizer recommendations, with funds allocated to address such needs.

Overview

The most significant issues relevant to this program response include:

- **Soil Fertility and Plant Nutrition** – Soil testing is the foundation of a sound fertility program. Every year nearly 100,000 soil samples are received at the Soils Lab at Marianna. Fertilizer and lime recommendations are included with the majority of the soil test reports. Soil testing not only provides a guide to develop fertilizer recommendations for the intended crops, but also together with plant analysis can aid in the identification of potential problems.

- **Reducing Production Costs/Increasing Productivity** – The increasing cost of chemical fertilizers, especially those containing nitrogen, is a major concern for farmers growing crops, especially those that have a high nitrogen requirement.

- **Water Quality Issues** – Current environmental regulations particularly in northwest Arkansas will require the use of soil testing. A significant amount of time has been devoted to revise current fertilizer recommendations and to implement changes that will facilitate the use of soil testing information to develop nutrient management plans in environmentally sensitive areas.

- **Soil Quality** – The continued loss of organic matter through surface erosion is probably one of the reasons for the increased occurrence of nutritional deficiencies. Soil crusting, an increasing problem on silt loam soils, is accentuated by the lack of organic matter. Soil crusting can significantly reduce plant emergence, resulting in the need to replant entire fields with costly seed.

- **Response to Emerging Issues** – During every growing season, there are nutritionally-related issues that can potentially affect the yield potential of crops grown in Arkansas. Such issues have included boron deficiencies in soybeans, sulfur deficiencies in cotton and zinc deficiencies in corn and rice.

Extension Program Results and Accomplishments

Output Indicators

Demonstrations:
4 Cotton fertility demonstrations
2 Soybean fertility demonstrations
3 Corn fertility demonstrations
1 Bahiagrass fertility demonstration
1 Fescue fertility demonstration

Educational Meetings:
25 Production meetings
10 Staff trainings
4 Field days/crop tours

Applied Research Studies:
3 Cotton no-till trials
3 Cotton fertility trials
2 Corn no-till trial
5 Corn fertility trials
2 Soybean no-till trial
4 Soybean fertility trials
2 Wheat fertility trials
1 Bahiagrass fertility
1 Fescue fertility
2 Rice fertility

Outcome Indicators:

- Nearly 600,000 acres of soybean were sampled and provided with fertilizer and lime recommendations. This represents nearly 30 percent of the total soybean acres planted in 2006.

- Nearly 185,000 acres of cotton were sampled and provided with fertilizer and lime recommendations. This represents nearly 25 percent of the acres planted in 2006.

- Close to 144,000 acres of rice were sampled and provided with fertilizer and lime recommendations. This represents nearly 10 percent of the acres planted in 2006.

- Nearly 200,000 acres of pastures were provided with fertilizer and lime recommendations.

- 68,000 acres of corn were sampled and provided with fertilizer and lime recommendations. This represents nearly 25 percent of the acres planted in 2006.

- 3,000 acres of grain sorghum were sampled and provided with fertilizer and lime recommendations. This represents nearly 5 percent of the acres planted in 2006.

- Nearly 200 soil and tissue samples were received for diagnostic purposes. Assistance was provided to those samples that required further consideration.

- Arkansas soybean producers can potentially reduce yield losses by 20 bushels, if they follow Extension recommendations for soybean growing in areas affected by a boron deficiency.

- Arkansas grain sorghum producers could potentially increase their dryland yields by up to 40 bushels if they follow Extension's fertility and irrigation recommendations.

- More than 2,000 Arkansans received information on soil testing, best management practices for lime and fertilizer application and plant analysis via production meetings in 2006.

- Nearly 100 Arkansans were trained in soil fertility within the Master Gardener program.

- The fertilizer and lime recommendations for most commodities grown in Arkansas were revised and a "Fertilizer and Lime Recommendations Handbook" was produced.

Source of Funds

Funds were obtained from The Soil Test and Research Board, The Corn and Grain Sorghum Promotion Board, The Soybean Promotion Board, Cotton Incorporated and from seed and chemical companies and Extension (Smith-Lever Act). Direct funding to conduct applied research totaled over $90,000, with "in-kind" donations totaling nearly $40,000.

Scope of Impact

Dissemination – Information is disseminated to any interest party through, mail, e-mail, Extension publications, personal communications, producer meetings, conferences and seminars and by annual reports to the commodities' Promotion Boards.

Scope of Program – The Soil Fertility and Plant Nutrition Education and Applied Research Program aims at serving all counties in the state of Arkansas, whether they are row crop or pastures producers, and vegetable or fruit growers. Fertility research, demonstration and/or educational activities were conducted in the following counties: Baxter, Cleveland, Cross, Desha, Independence, Lee, Saline, St. Francis, Poinsett, Mississippi and White.

Program of Excellence

Major Revisions to the Soil Testing and Fertilizer Recommendation Program

Extension and Research faculty devoted a significant amount of time and effort during 2006 to revise existing fertilizer recommendations and to implement changes in current soil testing methodology. Such changes have been implemented and place Arkansas as a leader in fertility research and education in the nation. A new handbook, "Fertilizer and Lime Recommendations Handbook," was produced which includes revised recommendations for lime and nutrients, as well as explanation of the U of A's fertilizer recommendation philosophy.

General Program Information – Soil testing is provided free of charge to Arkansas residents. Fertilizer recommendations are provided with each of the close to 100,000 soil samples received by the lab each year. The Extension agent in each county revises each recommendation before it is delivered to clientele. Extension staff, producers, crop consultants and industry representatives have been updated on such changes through local and regional meetings.

Location – This success story highlights a statewide program.

Impact Numbers – More than one million acres of cropland were sampled during 2006 and provided with fertilizer recommendations. Educational assistant and technical support was provided when required.

CES Section Contact Person – Leo Espinoza, Extension Agronomist – Soils. 501-671-2168, lespinoza@uaex.edu.

Program Response: Technology Transfer and Applied Research in Feed Grains

Contact: Dr. Jason P. Kelley, Extension Agronomist – Wheat and Feed Grains, 501-671-2164, jkelley@uaex.edu

Situation

Arkansas wheat producers harvested 305,000 acres during the 2006 wheat harvest with an average yield of 61 bu/acre. The state average yield broke the old record of 56 bu/acre. Dry conditions throughout much of the winter and spring provided an ideal growing season for much of the state. Harvested wheat acreage increased from the previous year due to an improved planting season. Wheat continues to be a profitable crop for many producers. A majority of wheat in the state is grown in a double crop rotation with soybean and is planted following corn, grain sorghum, soybean, cotton and rice. Arkansas wheat producers are always looking for management practices to reduce production costs and still be able to produce economical high-yielding wheat. Corn acreage harvested in 2006 decreased to 180,000 acres, which is approximately equal to the 10-year average state acreage. Average state corn yield was 146 bu/acre, an increase of 15 bu/acre compared to 2005. This was a state record average yield. Hot, dry conditions persisted for much of the summer, but with 80 percent or more of the crop irrigated, exceptional yields were realized in many fields. Corn acreage will greatly expand in 2007 due to improved grain prices. Grain sorghum acreage remained relatively low at 60,000 harvested acres in 2006, which was a 2,000-acre decline from 2005. Grain sorghum yields were good considering the very dry summer that was experienced. State average yield was 85 bu/acre with approximately 50 percent of acreage being irrigated. Educational programs addressing cultivar/hybrid selection, soil fertility requirements, production practices, timing of inputs, crop rotation benefits and irrigation timing were key factors involved with profitable production of wheat, corn and grain sorghum in 2006.

Stakeholder Input

County educational meetings are planned based on input from county agriculture councils, county Extension agents, and wheat, corn and grain sorghum producers in the county. County research and demonstrations are planned with input from producers and county Extension agents and are designed to provide information on aspects of production where information is needed. In addition, Extension was called upon to deal with emerging issues of 2006 that were unforeseen and had to be dealt with through impromptu educational programming as the crop season progressed.

Overview

The most significant issues facing our clientele include:

- **Variety/Hybrid Selection:** Proper **v**ariety or hybrid selection is very critical for profitable crop production. Producers are often challenged by the large volume of varieties/hybrids available on the market to find varieties/hybrids that will perform well on their farm. Selection of varieties/hybrids should center on disease

resistance, stalk quality, along with multiple location yield averages. Decisions will need to be made on whether new technology such as Roundup Ready corn and insect resistant hybrids will be utilized.

- **Fertility and Tillage System Management:** Fertilizer accounts for approximately 33 percent to 50 percent of total inputs for crop production in wheat corn, and grain sorghum in Arkansas. Fertility practices need to be evaluated to ensure maximum efficiency. Many producers are reducing tillage to keep input costs down with rising fuel prices. Research addressing fertility needs in reduced tillage cropping systems needs to be evaluated. Micronutrient fertility in corn, specifically zinc and sulfur, needs evaluation.

- **Weed Management:** Economical weed control is very important for profitability in any crop. Italian ryegrass, the number one problem grassy weed in wheat in Arkansas, continues to challenge economical wheat production in some areas of the state. Emerging resistant weeds in all crops will force producers to evaluate current herbicide programs, which may not be as economical as current weed management systems.

- **Irrigation Management:** Irrigating in a timely manner is very critical for optimum corn yields. Producers must be able to supply water in a timely manner to produce optimum yields of corn and grain sorghum.

- **Ways to Reduce Production Expenses:** Inputs such as diesel and nitrogen have drastically increased this year. Techniques to reduce input costs without sacrificing yield will be needed to maintain profitable crop production.

Extension Program Results and Accomplishments

Output Indicators

12 Wheat fields enrolled in the Wheat Research Verification Program.

6 Wheat field tours of demonstrations and/or varieties.

9 Wheat county production meetings.

1 Publication on wheat variety selection.

1 Arkansas Wheat Newsletter.

8 Corn fields enrolled in the Corn and Grain Sorghum Research Verification Program.

8 Corn field tours of demonstrations and/or hybrids.

21 Corn county production meetings.

1 Publication on corn hybrid selection.

2 Grain sorghum fields enrolled in the Corn and Grain Sorghum Research Verification Program.

12 Grain sorghum county production meetings.

1 Publication on grain sorghum hybrid selection.

9 Popular press articles or interviews.

3 County Extension agent trainings.

Applied Research:
14 Corn production practices.
2 Corn and wheat fertility.
8 Grain sorghum production practices.
1 Wheat weed control.
10 Wheat production practices.

Outcome Indicators

- **Wheat:** Arkansas continues to be a leader in production of soft red winter wheat in the United States. Arkansas wheat producers averaged 61 bu/acre in 2006. This was nearly 20 bu/acre greater than the United States winter wheat average yield. Proper variety selection, timely fertilizer applications and herbicide inputs contributed to high yields. The Wheat Research Verification Program (WRVP), a program which demonstrates to producers that by using Extension recommendations they can grow high-yielding, profitable wheat, was conducted on 13 producer fields during the 2005-06 growing season. The fields were located throughout the state in major wheat-growing areas. Fields enrolled in the WRVP averaged 73 bu/acre, yielding 12 bu/acre greater than the state average wheat yield. Proper variety selection and timely inputs were the keys to success. The WRVP fields served as sites for several county field days and demonstrations. These field days and demonstrations helped researchers, specialists and agents focus on problems associated with wheat production in Arkansas.

- **Corn:** Nationally, Arkansas was ranked 26th in production of corn in the United States, producing over 23 million bushels in 2006. The Corn Research Verification Program demonstrates to producers that current Extension recommendations can produce high-yielding, profitable corn on their farm. The program focuses on selection of adapted corn hybrids with high yield potential and good stalk strength. In 2006, 8 fields were enrolled in the program, which was conducted in major corn-growing areas of the state. The average yield was 167 bu/acre in the program, 21 bu/acre greater than the state average yield. The keys to success were optimum irrigation and fertility management. The Corn Research and Verification Program fields served as an educational tool for many people including county agents, producers and research and extension personnel from many disciplines, including Plant Pathology, Entomology, Agronomy and Bio-systems and Agriculture Engineering. Corn borer moth traps were located at several fields to help monitor and implement control measures. In addition, weather-monitoring stations were located at verification fields that supplied critical data to the irrigation-scheduling program to determine when irrigation water was needed.

- **Grain Sorghum:** Arkansas grain sorghum producers harvested 60,000 acres with an average yield of 85 bushels per acre in 2006. Arkansas was the 8th leading state in the production of grain sorghum in the United States with nearly 5 million bushels produced. The Grain Sorghum Research Verification Program demonstrates to grain sorghum producers that grain sorghum can be a profitable crop using current Extension recommendations. The grain sorghum verification program was established in two fields in 2006 in eastern Arkansas. The fields with proper fertility, hybrid selection and irrigation produced an average of 103 bu/acre, which was 18 bu/acre greater than the state average of 85 bu/acre. Throughout Arkansas, grain sorghum is an attractive crop for many producers who are looking for a drought-tolerant crop to grow on dryland acres and in fields with root-knot or soybean cyst nematode levels that are high enough to cause yield losses to other row crops.

Source of Funds

County programs are funded by IPM and Smith-Lever Act funds. The Arkansas Wheat and Arkansas Corn and Grain Sorghum Promotion Boards fund the Wheat Research and Verification and Corn and Grain Sorghum Research Verification Programs. Funding for the verification programs was approximately $150,000 for 2006. Funding for applied research in corn and grain sorghum was supplied by the Arkansas Corn and Grain Sorghum Promotion Board and totaled over $40,000. In-kind support for the Wheat and Feed Grains project from industry was approximately $10,000 in 2006.

Scope of Impact

Dissemination – Information is disseminated to any interested party through e-mail, personal communication, producer meetings, postal mail, conferences, seminars and field tours. Newsletters were distributed to update clientele on crop status and current problems occurring in the crops. Hybrid/variety performance information collected from variety/hybrid testing programs is distributed yearly. Arkansas Wheat and Corn and Grain Sorghum Promotion Board reports were also made available through the Extension web site.

2	Presentations/posters at professional meetings
1	Arkansas Wheat Newsletter
1	Corn and Grain Sorghum Newsletter
6	Articles submitted to popular press
8	Television or radio interviews
26	County production meetings

Scope of Program – All wheat-, corn- and grain sorghum-producing counties in Arkansas.

Program Response:
Technology Transfer for Sustainable Rice Production

Contact: Charles E. Wilson, Jr., Extension Agronomist – Rice, 870-673-2661, cwilson@uaex.edu

Situation

In 2006, rice was grown on 1.4 million acres with an estimated average yield of 6,850 lbs/A (152 bushels per acre). Rice acreage decreased 14 percent from the 2005 record acreage. The 2006 state acreage was the lowest it has been since 1997, but the yield was second best average yield on record, nearing the mark established in 2004. The near-record yields can be attributed to improved varieties, improved management practices and favorable weather during critical times during the growing season. The 2006 crop saw reasonably good prices matched with excellent yields. However, Arkansas rice producers continue to face many challenges in order to produce a profitable crop and maintain sustainability of the land. The most significant issue of 2006 was the discovery of trace amounts of genetically-engineered rice (Liberty Link rice) in the commercial long grain rice supply. This single issue has handicapped certain export markets and has created a sense of urgency to restore the marketability of the U.S. rice supplies. The most significant production issues include costs of production (particularly fuel and fertilizer), optimum variety selection, diminishing irrigation water quantity, integrated pest management issues, nutrient management and soil conservation.

Stakeholder Input

County educational meetings are planned based on input from county councils made up of rice producers in each county, to ensure that the topics that are covered are relevant to the producers in each particular county. Planning sessions were conducted with consultants and other industry personnel to discuss educational issues relevant to their needs. Research and demonstration projects are coordinated similarly, by implementing projects geared to the needs of the producers for each county. A survey was conducted among growers, consultants and county Extension agents regarding the priorities for rice research and extension programs.

Overview

Arkansas rice producers continue to face many challenges in order to produce a profitable crop and maintain sustainability of the land. The most significant issues facing our clientele include:

Variety Selection and Cultural Management – While conventional varieties continue to dominate the rice acreage in Arkansas, new technology, such as hybrid rice and herbicide-resistant rice, is entering the market and may be a significant contributor to overall productivity. Production decisions must be addressed to economically produce these varieties. Variety selection programs are being developed to assist growers in making better decisions based on field-specific situations. Improved cultural management decisions include optimum seeding rates, optimum seeding dates and tillage practices.

Soil and Water Conservation – Rice production accounts for the majority of groundwater used for agricultural production in Arkansas. Decisions should be made in order to continue to produce rice profitably and conserve the valuable water supply necessary for production of this crop. Educational and research programs aimed at helping producers utilize means of conserving water while maintaining productivity are ongoing. Conservation tillage continues to be a valuable tool and focus program for rice producers.

Integrated Pest Management –

- New technology has been released for controlling red rice, the number one weed problem in Arkansas rice fields, directly in the rice crop. Clearfield rice was produced on approximately 22 percent of the rice acreage in Arkansas and is expected to exceed 30 percent of the acreage in 2006. New challenges such as outcrossing that results in Newpath-tolerant red rice will be a significant issue.
- Icon, the only registered product for grape colaspis, is now unavailable. Grape colaspis larvae will cause a significant amount of stand loss in the Arkansas rice crop if uncontrolled. While new products are under development, education is underway to help growers utilize cultural management strategies to reduce the risk of this pest.
- Discovery of a new insect in south Arkansas could potentially become a major yield-limiting factor for Arkansas rice producers. Sugarcane borer, previously only observed in Louisiana and Texas, was observed in rice fields in south Arkansas, potentially resulting in excess of 30 percent yield losses.
- Rice disease problems, particularly sheath blight, panicle blight and rice blast, continue to be a problem, causing yield and quality reductions. Variety selection, best production management practices, field scouting, and informed decisions regarding fungicide applications are all part of the educational approach to managing these diseases. Field observations and subsequent research has confirmed that a race of rice blast may compromise the utility of our current blast-resistant rice varieties. Management decisions become increasingly important until better blast-resistant varieties can be developed. Other diseases, such as narrow brown leaf spot, were observed to reduce yields in a number of fields during 2006. This suggests the need for further research on this particular disease.

Nutrient Management –

- Nitrogen fertilization, one of the most expensive inputs into the rice crop, has been a problem in much of the state but particularly in areas where rice is produced on clay soils. Improving preflood nitrogen efficiency is a challenge to maximize yields and balance disease development. Continued work on a nitrogen soil test can vastly improve recommendations and reduce potential problems associated with nutrient runoff.
- Refining optimum K fertilizer recommendations for rice production in Arkansas continues to be a significant issue. Late-season symptoms continue to be observed in highly productive rice fields. Also, yield losses from potassium deficiency have been observed without distinctive deficiency symptoms, suggesting that hidden hunger is anonymously robbing some producers' yields.
- Increasing the understanding of best management practices for utilizing poultry litter in production rice fields as a nutrient source is needed. With the need to dispose of several thousand tons of poultry litter in Northwest Arkansas, much interest has been expressed in utilizing the litter as a fertilizer source for row crops in eastern Arkansas.
- Strengthening the current database of soil test calibration experiments to support current fertilizer recommendations is a current need.

Extension Program Results and Accomplishments

Output Indicators

In efforts to meet the needs of clientele, the following were implemented in 2005:

Demonstrations:

Number	Description
22	Rice Research Verification
23	Variety performance
8	Seeding rates
3	Potassium fertilization
3	Phosphorus fertilization
20	Nutrient diagnosis/fertilizer response
4	Rice disease management

Educational Meetings:

Number	Description
51	County production meetings
6	IPM meetings
12	Field days/crop tours
>120	Field visits with producers

Applied Research Studies:

Number	Description
2	DD50 threshold development
3	Seeding date studies
4	Optimum row spacing
10	Seeding rate studies
3	Irrigation termination timing

Outcome Indicators

Arkansas harvested 152 bushels of rice per acre from 1,400,000 acres for a total production of 95.9 million cwt in 2006. Arkansas is consistently among the leaders in the U.S. in rice production, ranking first in acreage and production. Arkansas also ranked third in average yield in 2006, behind California and Texas.

Arkansas ranks first in acreage and total production, producing just under 50 percent of the U.S. crop. Arkansas' rice is generally valued at over $765 million annually.

Approximately 4,000 farms in Arkansas produce rice, 94 percent of which was dry seeded, 39 percent utilizing conservation tillage and 33 percent utilizing multiple inlet rice irrigation. Conservation tillage practices have increased slowly over the last 10 years. Adoption of multiple inlet rice irrigation has increased about 5 percent each year for the past 5 years. Precision leveling continues to increase each year, with approximately 40 percent of the rice produced on precision-leveled soils. These shifts benefit producers by reducing costs and conserving soil and water. Thus, it improves productivity as well as the environment.

The University of Arkansas Cooperative Extension Service rice educational program provided farmers with current recommendations on variety selection, fertility management, pest control (disease, insect and weed), cultural practices, water management and stored grain management. Rice educational information was disseminated through county and area production meetings, county field days and turn row meetings, the DD50 rice management computer program, fact sheets, the Rice Production Handbook (MP192), soil testing and fertilizer recommendations and county and Agricultural Experiment Station field days. Production demonstrations and replicated applied research studies were conducted in grower fields and at four Agricultural Experiment Stations. Extension rice publications and applied research results were available on the Extension Crop, Soil, and Environmental Sciences section web site in 2006 allowing growers to review information at any time from their homes. A rice newsletter (*Arkansas Rice*) was distributed via e-mail to approximately 400 contacts each week during the growing season, approximately 15 weeks.

A summary of county Extension programs during the 2005-2006 year showed that in excess of 20,000 contacts were made in the dissemination of information from county grower meetings, field days and Extension publications/newsletters.

Rice producers are using the Rice DD50 Program and other tools in an IPM program to better time cultural practices ranging from herbicide timing, fertilization timing, flood management, insect scouting and insecticide application timing, disease scouting and fungicide application timing, as well as irrigation timing and harvest timing. The 2006 Rice DD50 program was used by 1,252 producers on 7,753 fields representing 559,051 acres. The DD50 program was updated to include information for 10 new varieties and hybrids and was updated to include several new research-based recommendations concerning fertilization and disease control to growers. The DD50 now supports 73 varieties and hybrids, 27 management decisions, and includes disease susceptibility ratings for each rice variety. The program was converted to a web-based program in 2003 to allow producers direct access at their convenience. The RICESEED computer program was updated in 2006 to include five new varieties, updated seed weights, and can be run from the Internet. This program was utilized by 156 producers to determine seeding rates on 29,021 acres.

Rice production in Arkansas is currently dependent upon public breeding programs. Wells, a cultivar released by the University of Arkansas Agricultural Experiment Station, was grown on 31 percent of the state's acreage. Rice varieties developed by the University of Arkansas were planted on over 40 percent of the acreage in Arkansas, including Wells (31.0 percent), Francis (9.6 percent), Banks (0.9 percent) Cybonnet (1.7 percent), Medark (0.3 percent), LaGrue (0.1 percent), Spring (0.09 percent), Ahrent (0.03 percent) and Drew (0.02 percent). New herbicide technology, specifically the Clearfield rice production system, has allowed producers to grow rice that had previously been unprofitable due to heavy infestation of red rice. Clearfield rice was produced on

approximately 27 percent of the Arkansas rice acreage, contributing to increased yields and quality by reducing the negative yield and quality impact of red rice. This acreage primarily consisted of one variety (CL 131, 13.1 percent) and two hybrids (Rice Tec CL XL8, 5.6 percent and Rice Tec CL XL 730, 4.8 percent). Other varieties supported by the DD50 program that were grown in Arkansas, including the percentage of the 2006 rice acreage, were Bengal (6.2 percent), Cheniere (10.6 percent), Cocodrie (4.4 percent) and CL 161 (6.7 percent).

Soil testing is a fundamental aspect of sound nutrient management. Soil samples analyzed by the University of Arkansas Soil Testing Laboratory for rice soils totaled 9,785 representing 1,092,203 acres from 2,628 producers. This represents 78 percent of the rice acreage in Arkansas in 2006. Water analysis is provided to farmers who are potentially facing problems with water quality. During 2006, 46 producers used water testing to determine the impacts of using this water for irrigation. This represented approximately 27,000 acres. Plant analysis was performed for 120 clients representing 26,400 acres.

Applied research was conducted on new conventional varieties (Banks, Trenasse, Cybonnet, Medark, Spring, Cheniere), conventional hybrids (XL 723) and with herbicide resistance technology (CL 131, CL 151, CL 171AR, CL XL8, CL XL730, CL XP729) to develop DD50 thresholds for the 2005 DD50 program and University recommendations for production practices.

The RRVP was implemented in 1983 to verify the recommendations of the University of Arkansas Cooperative Extension Service in commercial rice. The program is implemented by cooperating with producers in the county who are willing to allow Extension personnel to make management decisions based on conditions in the field. This program worked directly with producers in 22 counties during 2006. Multiplier fields were also conducted by agents in several counties, involving several producers. Yields in the Rice Verification Program averaged 170 bushels per acre in 2006, approximately 22 bushels better than the statewide average of 148 bushels per acre.

Source of Funds

County programs are funded by IPM and Smith-Lever 3b and 3c funds. The Rice Research Verification Program, applied research and demonstrations and seminars/meetings are funded by external sources such as industry grants and Rice Grower Check-off Funds administered by the Arkansas Rice Research and Promotion Board. Direct external funding totaled more than $350,000, and in-kind contributions totaled more than $5,000 for the rice Extension program.

Scope of Impact

Dissemination – Information is disseminated to any interested party through mail, Extension web sites, personal communications, Extension publications, news media and producer meetings, seminars and conferences. Publications and Extension support materials developed include:

Number	Educational Materials
6	Rice Information Sheets
1	Fact sheets
15	Newsletters
7	Web-based educational materials
16	Articles in research bulletins
5	Other educational materials
7	Individual articles
26	Article interviews
2	Television and radio interviews

2 Computer software
3 Teaching aids

Program Adoption – The majority of the rice program is state specific and directed to Arkansas rice producers. The program impacts at least 35 of the counties in Arkansas. Rice-producing counties include Arkansas, Ashley, Chicot, Clark, Clay, Conway, Craighead, Crawford, Crittenden, Cross, Desha, Drew, Faulkner, Greene, Independence, Jackson, Jefferson, Lafayette, Lawrence, Lee, Lincoln, Little River, Lonoke, Miller, Mississippi, Monroe, Philips, Poinsett, Pope, Pulaski, Prairie, Randolph, St. Francis, Woodruff and White counties. This program impacts all counties in Arkansas where rice is produced.

Multi-state Integrated Research and Extension efforts exist between Mississippi, Missouri, Louisiana and Texas for variety testing, integrated pest management recommendations and nutrient management.

Programs of Excellence

Scouting Equals Success

Grower Adopts RRVP Recommendations to Increase Yields

A RRVP field was established on the Stuart Bundrick farm in 2006. The grower used rice production information on this field to manage other fields on his farm. Also, a neighbor followed Extension recommendations on his fields based on RRVP recommendations. Weed control costs were $28.00 per acre as compared to $54.00 on other adjacent fields. The Rice Research Verification Program and Disease Monitoring Plot Demonstration were carried out on the Stuart Bundrick and Dale Seiler farms near Gin City, Arkansas. The goals were to increase rice yields and reduce input costs where possible.

In Lafayette County, the agent was able to advise 15 rice growers on results of the program and made production recommendations throughout the year on 6,500 acres. Ten rice growers adopted Extension recommendations on weed and grass control to improve timing of treatments and better scouting of fields to apply recommended herbicides. Weed control cost savings of $26.00 per acre were made on 1,640 acres on three farms. Improved rice water weevil scouting and control measures were made on 2,400 acres. Ten growers treated rice stinkbugs on 4,400 acres to reduce rice milling yield and quality discounts. Growers were able to reduce grade discounts by $0.80 per cwt on 216,000 cwt for a savings of $172,000.00. Growers now are doing a better job selecting varieties to grow. They are scouting fields for better and more timely pest management decisions and utilizing Extension recommendations such as the DD50, rice disease monitoring plots, RRVP and other methods used by Extension.

Contact – Joe Vestal, 870-921-4744, jvestal@uaex.edu.

Rice Research Verification Program

Rice yields have averaged about 140-160 bushels per acre in Randolph County. The producer involved in the Rice Verification Program has been harvesting approximately 160 bushels per acre. The Rice Verification has increased producers' rice yields to an average of 188 bushels per acre (190 in 2005 and 186 in 2006). The Rice Research Verification Program has the goal to produce rice at a level that is most economical for rice producers utilizing timely management decisions. The program was delivered on one producer's farm, and information is shared with all rice producers in the state. The Randolph County verification program was delivered in Randolph County. The information and management decision making utilized in the RRVP was utilized throughout the county with all rice producers. The changes that occurred are mainly in the timeliness of management decisions. By utilizing Integrated Pest Management (IPM), the decisions made are based upon sound research. By utilizing the RRVP, the producer was able to increase rice yields from approximately 160 bushels to a two-year average of 186 bushels, an increase of 26 bushels due to making timely decisions and carrying them out during the growing

season. All producers in Arkansas and other states benefit from the information gained in the RRVP. The producer now utilizes information gained in RRVP on all rice acres.

Contact – Mike Andrews, 870-892-4504, mandrews@uaex.edu.

Rice Verification Improves Yields

This past growing season was a very difficult one for most Craighead County producers. Cool, wet weather slowed rice development and caused numerous problems. Producer Joe Christian was in the second year of the verification program and had a severe red rice problem. Using a variety recommended by the Extension staff, following planting rate recommendations, fertility considerations and harvest suggestions, he was able to harvest 213 bu/A (dry weight basis) for the first time in his farming career with no dockage from red rice contamination. Goals of the program were to maximize yield while using the minimum of inputs. Over 300 people toured the field area during two field days.

Joe was able to increase his yields dramatically while reducing deductions from red rice. We were able to prove that superior rice yields may be achieved by using reduced seeding rates and monitoring fertility needs. Variety selection can help producers overcome known problems in a field.

Contact: Branon Thiesse, 870-933-4565, bthiesse@uaex.edu.

General Program Information – The RRVP was implemented in 1983 to verify the recommendations of the University of Arkansas Cooperative Extension Service in commercial rice. The program is implemented by cooperating with producers in the county who are willing to allow Extension personnel to make management decisions based on conditions in the field. The producer agrees to carry out the recommendations and the Extension personnel scout the field at least twice per week. A rice agronomist visits the fields weekly with the county agent and the producer to scout the field, educate the agents and producers and determine the best management options for the field. Management decisions are based on field conditions, Extension IPM recommendations and input from researchers and Extension specialists.

Counties Involved – 20 counties, including Arkansas, Chicot, Clark, Clay, Craighead, Crittenden, Cross, Desha, Lafayette, Lawrence, Lee, Lonoke, Mississippi, Phillips, Poinsett, Pope, Prairie, Randolph, St. Francis and Woodruff.

Impact Numbers – Yields in the fields enrolled in the program ranged from 20 to 51 bushels per acre better than the state average of 152 bushels per acre, indicating that under recommended practices, the program can improve productivity. In spite of high production costs, many of these fields were able to result in a positive net return.

CES Section Contact Person – Charles E. Wilson, Jr., Professor/Extension Agronomist – Rice, 870-673-2661, cwilson@uaex.edu.

KEY THEME:
ANIMAL HEALTH

Program Response:
Poultry Disease Prevention

Contact: Dr. F. Dustan Clark, Extension Poultry Veterinarian, Poultry Science, 479-575-4375, fdclark@uark.edu

Situation

Disease outbreaks almost always involve economic losses due either to mortality or to impairments in production. Diseases that are not treated can spread to other flocks, causing greater economic losses. Therefore, disease outbreaks must be quickly diagnosed and treated to prevent further losses. However, the most effective strategy for disease control is to teach clientele disease prevention principles. Thus, the following three components comprise disease control education efforts: disease prevention programs, disease diagnoses and disease treatment efforts.

Stakeholder Input

Because of the economic consequences and suffering experienced by the animal, controlling disease has always been a priority among producers. Nevertheless, a brief survey of poultry production personnel and county Extension personnel confirmed the need for this program.

Overview

Effective disease control education efforts in Arkansas have been addressed through disease prevention programs as well as disease diagnosis and treatment efforts. Educational efforts to prevent diseases included one-on-one consultations, presentations at local, regional, state and national meetings, regional disease prevention workshops, statewide in-service training for Cooperative Extension Service agents, fact sheets aimed at poultry producers and pet bird owners, newsletter articles and farm visits.

Extension Program Results and Accomplishments

Output Indicators

32 Presentations at local, regional and state meetings.

118 Farm visits.

11 Fact sheets, newsletter articles and popular press articles.

121 Training sessions and one-on-one consultations.

16 Newspaper, radio and television interviews.

Outcome Indicators

0 Outbreaks of major poultry diseases in Arkansas.

303 Industry leaders who improved disease prevention practices.

295 Individuals who improved disease prevention practices.

Source of Funds

Smith-Lever.

Scope of Impact

Dissemination – This program is available to all poultry producers in the state.

Scope of Program – Multi-state Extension: Arkansas, Virginia, Texas, Missouri, Oklahoma.

KEY THEME: ANIMAL PRODUCTION EFFICIENCY

Program Response: Arkansas Beef Improvement Program

Contact: Dr. Tom R. Troxel, Associate Department Head - Animal Science, 501-671-2188, ttroxel@uaex.edu

Situation

Approximately 30,000 farms in Arkansas produce beef cattle. Arkansas is the home of 1.9 million head of cows and calves, with the number of beef cows and heifers reaching over 1.0 million head in 2006. The average cow herd size is 37 head with 80 percent of the farms having less than 50 head. The gross income from Arkansas' beef cattle industry reached $555 million with a total economic impact over $850 million annually.

Stakeholder Input

Beef production makes up a major part of Arkansas livestock agriculture. Production of these grazing animals is dependent on forages. Hay production is also significant, and many producers sell hay as a cash crop. County agents work with a wide range of clientele who are stakeholders in beef and forage production. Stakeholders include, but are not limited to, producers, youth, county agents, agricultural advisors and agribusiness representatives. Stakeholders provide input regarding the need for educational programs through several means including planning meetings, surveys, informal discussions and electronic methods. Educational programs are developed to reach stakeholders in various ways including, but not limited to, formal educational meetings, field meetings, demonstrations, newsletters and development of educational materials distributed through traditional as well as electronic means.

Overview

The goal of the Arkansas Beef Improvement Program (ABIP) is to demonstrate cost-effective management practices. The program focused on the beef cattle enterprise using an integrated resource management team approach to solving problems. Problems related to animal health, nutrition, genetics, forage production, reproduction and record keeping were addressed. An ABIP team of Extension specialists, the local county Extension agent and the producer reviewed production practices, which led to the development of a farm plan of work.

The ABIP implemented special projects to educate and provide technical assistance to producers who need help in a particular production area. Project areas included controlled breeding seasons, cow herd performance, hay quality and quantity management, pasture improvement, replacement heifer development, estrous synchronization/artificial insemination and wheat pasture grazing.

The ABIP workshop consisted of two nights for two and a half hours each night and taught the principles learned from the ABIP demonstrations. The workshop covered enterprise budgets, supplemental feeding, mineral supplementation, forage production planning, cow herd performance testing and management calendars. Attendance ranged from 25 to 40 participants per workshop.

ABIP field days and activities were conducted across the state on ABIP farms to demonstrate how implementing cost-effective management practices helped participating producers reach their goals.

The ABIP published newsletters and a monthly article featured in *Arkansas Cattle Business* (a publication of the Arkansas Cattlemen's Association) to relay knowledge gained from ABIP farms to producers, county Extension faculty and specialists. Information gained through the program was also used in developing Extension fact sheets, PowerPoint presentations and miscellaneous publications. During the past 14 years, many beef cattle producers contacted their county Extension agents to help them develop an ABIP approach to their cattle operations. The ABIP demonstrations continuously work to enhance the credibility and image of the Cooperative Extension Service.

Extension Program Results and Accomplishments

Output Indicators

3	Farms enrolled in five-year ABIP whole farm program.
17	Farms enrolled in ABIP special projects.
4	County-level ABIP workshops conducted.
23	Counties involved with ABIP activities.
125	Number of producers attending ABIP workshops.
4	ABIP newsletters.
12	ABIP news releases.

200 Number of producers attending ABIP field days, county or regional programs.

10,000 Number of producers reading the monthly ABIP articles in *Arkansas Cattle Business*.

Outcome Indicators

- Herd break-even decreased 42 percent from $0.53 to $0.31 per pound from year three to year four of the program.
- The average 205-day adjusted weaning weight and pre-weaning average daily gain increased by 10 percent and 16 percent, respectively, from year one to year three resulting in approximately $83.75 increased income per weaned calf.
- The crude protein and TDN percentage improved from 12.0 percent to 13.1 percent and 61.0 percent to 64.0 percent, respectively, from one ABIP producer.
- The internal rate of return for purchasing and paying more for better quality bulls was 39.4 percent.
- An ABIP cooperator improved white clover stands by 17 percent.
- After attending the area ABIP workshop, 91 percent and 89 percent attendees were going to reevaluate their mineral and supplemental feeding program, respectively. Seventy-two percent planned to implement a cow-calf budget.

Source of Funds

Arkansas Beef Improvement Grant (USDA-CSREES).

Scope of Impact

Dissemination – Program activities were available statewide as well as regionally through *Arkansas Cattle Business*, ABIP newsletters and the UAEX web site.

Scope of Program –
1) State Specific – 23 counties: Calhoun, Cleburne, Cleveland, Conway, Craighead, Faulkner, Franklin, Fulton, Hempstead, Howard, Izard, Johnson, Lawrence, Lincoln, Madison, Montgomery, Perry, Pope, Saline, Sevier, Sharp, Van Buren, White and Yell.
2) Multi-State – Alabama, Kentucky, Louisiana, Missouri, Mississippi, Oklahoma, Tennessee and Texas.

Programs of Excellence

ABIP Whole Farm Demonstrations

General Program Information – The Arkansas Beef Improvement Program (ABIP) helps producers become more efficient, thus more profitable. The ABIP whole farm program covers every aspect of the farm to make it more efficient. It is a five-year commitment for the producer and Extension personnel. The first part of the program is to establish benchmark data. From this data, management plans are set into place to help producers reach their goals.

Number and Names of Counties Involved – Madison, White and Yell.

Impact Numbers – The 205-day adjusted weaning weight and pre-weaning average daily gain improved 54 pounds (10 percent) and 0.34 pounds per head per day (16 percent) in three years. This was a result of purchasing the breed and type bulls that complemented the cows. Because of increased body weight and producing a more desirable calf phenotypically, the additional income per calf was estimated at $83.75. Assume the newly purchased bull sires 25 cows over three years, it was estimated the internal rate of return for purchasing and paying more for better quality bulls was 39.4 percent.

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Breeding and Calving Season Project

General Program Information – This project's goal is to implement the beef cattle management changes necessary and measure the impact of those changes when changing from a year-long breeding program to a short (90 day) breeding season. The rising cost of beef cattle management and the increased returns due to selling a uniform group of calves makes a shortened breeding and calving season very cost effective.

Number and Names of Counties Involved – 7: Howard, Lawrence, Lincoln, Montgomery, Sevier, Van Buren and Yell.

Impact Numbers – The Montgomery County farm started with a breeding and calving season of 320 days. Their goal was a 90-day breeding season from February 1 to April 30. The 2005 breeding season was January 15 to July 22. The actual calving season was October 1, 2005 to May 15, 2006. This resulted in a calving season of 225 days, which is 95 days shorter than the first year. The breeding season for 2006 was March 1 to July 22, resulting in a projected calving season of December 2006 to April 2007. This would reduce the calving season to 142 days.

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ABIP Cow Herd Performance Project

General Program Information – This project's goal is to improve cow herd genetics. Recording and analyzing cow/calf data allows producers to cull low productive cows and select replacement heifers from high-producing cows.

Number and Names of Counties Involved – 1: Izard.

Impact Numbers – The 205-day adjusted weaning weight for the first year's (2004) Izard County cow herd performance demonstration was 496 pounds. The second year's 205-day adjusted weaning weights did not change (494 pounds). It was speculated that weather (drought conditions) in 2005 had a major impact on these weights. The third year's data documented some improvements. The 205-day adjusted weaning weight increased to 516

pounds, cow efficiency increased from 45.1 percent (year 1) to 46.1 percent and average muscle score improved from 1.9 (year 1) to 1.6.

CES Section Contact Person – Carroll Prewitt, County Extension Agent - Staff Chair, 870-368-4323, cprewett@uaex.edu; Dr. Brett Barham, Assistant Professor - Breeding and Genetics, 501-671-2162, bbarham@uaex.edu; and John Richeson, Program Associate -ABIP, 501-671-2180, jricheson@uaex.edu.

Estrous Synchronization/AI

General Program Information – The Estrous Synchronization and Artificial Insemination project is to demonstrate estrous synchronization with the use of timed artificial insemination to improve beef cattle genetics. This information can be used to guide other cattle producers who wish to obtain quality genetics (maternal traits or growth traits) for their cow herd.

Number and Names of Counties Involved – 3: Izard, Johnson and Saline.

Impact Numbers – The Izard County producer enrolled in 2005, and 31 fall calving mature cows were synchronized and artificially inseminated in December 2005. Thirty of the 31 cows calved (97 percent). Because the breed of the AI sires and the clean up bull were the same, it was impossible to determine the AI conception rate. The 2006 calving data was broken down to the percentage of cows calving the first, second and third 21-day periods of the calving season. Eighty-three of the cows calved in the first 21-day period. An additional 13 percent calved during the second 21-day period, and 3 percent (one cow) calved in the third 21-day period. This compares to 68 percent of these cows that calved in the first 21-day period in 2005. The improvement from 68 percent to 83 percent calving in the first 21-day period tended to be significant ($P < 0.10$). This fall calving herd was synchronized and artificially inseminated in late November-early December to calve the fall 2007.

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Program Response: Beef Cattle Management

Contact: Dr. Tom R. Troxel, Associate Department Head - Animal Science, 501-671-2188, ttroxel@uaex.edu

Situation

Approximately 30,000 farms in Arkansas produce beef cattle. Arkansas is the home of 1.9 million head of cows and calves, with the number of beef cows and heifers reaching over 1.0 million head in 2006. The average cow herd size is 37 head with 80 percent of the farms having less than 50 head. The gross income from Arkansas' beef cattle industry reached $555 million with a total economic impact over $850 million annually.

Stakeholder Input

The Arkansas Beef Audit was conducted to determine the current strengths and weaknesses and future opportunities and threats for five segments of the Arkansas cattle industry. The segments included small cow-calf herds (≤ 50 cows), large cow-calf herds (≥ 50 cows) stocker cattle, purebred cattle and support industries. As a

result of determining the current strengths and limitations and future opportunities and threats, educational needs were identified.

The different segments were asked to indicate their level of preference for a variety of educational methods to receive beef-related educational information. Seven educational methods were preferred across categories. They included and are listed in highest to lower preference: newsletter, printed material, on-farm, one-on-one consultation, Experiment station field day, group meeting/workshop and newspaper articles. The educational methods least preferred were on-line web-based information, radio program, display/poster, e-mail and distance education.

Overview

The programs that address beef cattle management education include Arkansas Beef Quality Assurance Program, Arkansas Steer Feedout Program, Reducing Winter Feed Cost Focus Program and Arkansas Cattle Growers' Conferences.

The overall goal of the Arkansas Beef Quality Assurance Program (BQA) is to encourage the consistent production of high quality cattle in Arkansas, enhancing the reputation of Arkansas cattle and assuring their health and wholesomeness. Educational efforts center on cow-calf management practices that affect the overall value and quality of the cattle product (both cows and calves). In 2004, the Arkansas BQA program began certifying producers. The producers had to successfully take a 50-question exam and pledge to follow BQA guidelines.

The Arkansas Steer Feedout Program provides cow-calf producers with information about the post-weaning performance and carcass characteristics of their calves. It creates an opportunity for producers to determine how their calf crop fits the needs of the beef industry and provides the information needed to determine if changes in genetics and/or management factors are warranted to compete in beef production.

Calves were placed on feed at Wheeler Brothers Feedyard in Watonga, Oklahoma. Performance data generated from the feedlot included average daily gain, feed efficiency, cost of gain, break-even cost and net return. Carcass data included dressing percentage, carcass weight, ribeye area, back fat thickness, percentage of kidney-pelvic-heart fat and USDA yield and quality grade.

The Arkansas Beef Improvement Program identified that four of the top five cost items related to calf production are associated with the cost of feeding the cow herd. That cost makes up nearly half of the total expenses of production. The Reducing Winter Feed Cost Focus Program was developed to address these concerns and was continued in 2006. The program's objective was to demonstrate cost-effective beef cattle and forage management practices to reduce winter feed cost. This program focused on stockpiled forages, forage testing and determining supplemental feeding needs, planting winter annuals and rotational grazing. Production and economic data were collected to document production practice success.

In 2000, *Livestock Market News* conducted a survey to determine the factors affecting the selling price of weaned calves sold in Arkansas livestock auctions. That study was repeated in 2005 and the results reported in 2006. This information will be used to help cattle producers avoid discounts and possibly receive premiums at sale time.

Three cattle growers' conferences were conducted in 2006 (Boone, Clark and Yell counties). Producers, Extension and allied industry personnel planned these day-long programs. Speakers from across the south central United States presented the latest information available for stocker cattle management and retained ownership. The list of topics is a mixture of pasture management, cattle health, nutrition, marketing and food safety issues.

Extension Program Results and Accomplishments

Output Indicators

1,872	Number of clientele enrolled in the Beef Quality Assurance Program.
120	Number of clientele who are Beef Quality Assurance Certified.
139	Number of calves enrolled in Arkansas Steer Feedout Program.
16	Number of producers who enrolled steers in the Arkansas Steer Feedout Program.
425	Number of producers attending the Arkansas Cattle Growers' Conference.
11,757	Number of producers attending Extension educational programs.
172	Number of producers cooperating with reducing winter feed cost demonstrations.
6,455	Number of cows and 9,578 number of acres enrolled in reducing winter feed cost demonstrations.

Outcome Indicators

$27.26	Average dollar loss per calf due to misused cow-calf management practices.
$1.8 million	Possible savings to the Arkansas beef cattle industry because of producers enrolled in the Arkansas Beef Quality Assurance Program.
$63,231	Total amount saving from bermudagrass stockpiled forage demonstrations over 4 years.
$37,475	Total amount saving from fescue stockpiled forage demonstrations over 4 years.
88	The average number of days grazing per acre for rotational grazing compared to 35 days of continuous grazing.
488	Producers that adopted utilizing winter annuals to reduce winter feed costs.
97	Producers that adopted stockpiling forages to reduce winter feed costs.
279	Producers that adopted forage testing to reduce winter feed costs.
61	Producers that adopted rotational grazing to reduce winter feed costs.
3,041	Number of producers that changed beef cattle and forage management practices to improve efficiency.

- The total savings for the 4-year stockpile demonstrations was $63,231 for stockpiled bermudagrass and $37,475 for stockpiled fescue, with a total savings of $100,706.
- The average reduction in winter feed costs due to stockpiling forages was $1,119 per farm.

- Steers enrolled in the Arkansas Steer Feedout Program graded 40 percent Choice, had an average daily gain of 3.47 pounds per head per day and had a feed cost of gain of $0.38 per pound. The beef cattle industry standards are grade Choice, yield grade 3.5 or better and hot carcass weight between 550 and 950 pounds. Thirty-five percent of the steers fit the combined standards. Steers that met the industry standards averaged $171 per head more than those not fitting the industry standards.

Source of Funds

Smith-Lever, state grants (Beef Council), Arkansas Beef Improvement grant (USDA-CSREES) and Farm Credit Services of Western Arkansas.

Scope of Impact

Dissemination – Program activities were available statewide as well as regionally through *Arkansas Cattle Business*, newsletters and the UAEX web site.

Scope of Program –

1) State Specific: 61 counties: Ashley, Baxter, Benton, Boone, Bradley, Calhoun, Carroll, Clark, Clay, Cleburne, Cleveland, Crawford, Conway, Dallas, Desha, Drew, Faulkner, Franklin, Fulton, Garland, Grant, Greene, Hempstead, Hot Spring, Howard, Independence, Izard, Jefferson, Johnson, Lincoln, Little River, Lafayette, Lawrence, Logan, Lonoke, Madison, Marion, Miller, Montgomery, Nevada, Newton, Ouachita, Perry, Pike, Polk, Pope, Pulaski, Randolph, Saline, Scott, Searcy, Sebastian, Sevier, Sharp, St. Francis, Stone, Union, Van Buren, Washington, White and Yell.
2) Multi-State: Alabama, Kentucky, Louisiana, Missouri, Mississippi, Oklahoma, Tennessee and Texas.

Programs of Excellence

Factors Affecting the Selling Price of Calves

Data was collected on over 105,000 head of cattle sold through Arkansas livestock auction barns. The data included gender, color, breed type, horn status, body condition, fill, health, weight, selling price, lot size, muscle score, frame score and age. This data will be analyzed to determine the significant factors affecting the selling price. Once complete, Arkansas producers can better manage their calf crop so that they don't suffer discounts and possibly experience premiums.

Number and Names of Counties Involved – 15 – Dallas, Drew, Faulkner, Independence, Lawrence, Little River, Marion, Pulaski, Randolph, Searcy, Union, Van Buren, Washington and White.

CES Section Contact Person – Dr. Tom R. Troxel, Associate Department Head - Animal Science, 501-671-2188, ttroxel@uaex.edu, and Dr. Brett Barham, Assistant Professor - Breeding and Genetics, 501-671-2162, bbarham@uaex.edu.

Drought Management

Much of Arkansas suffered a second year of below average rainfall levels and drought. The drought problems were not limited to the lack of pasture; they also included overstocking issues, shortages of hay, ponds going dry, increased feed costs and many other issues that compounded the situation. Educational efforts throughout the state were to assist livestock producers to make the most of their limited resources while saving production costs. Educational methods included meetings, workshops, farms demonstrations, drought web page, newspaper articles

and newsletters. Educational topics included sprayer and litter truck calibration, production drought management for pastures, grazing management, supplemental feeding, hay quality, alternative sources of feed, etc.

Number and Names of Counties Involved – 12: Columbia, Faulkner, Hempstead, Lonoke, Madison, Marion, Pike, Pope, Pulaski, Sevier, Union and White.

CES Section Contact Person – Danny Walker, County Extension Agent – Staff Chair, 870-235-3720, dwalker@uaex.edu; Darrin Henderson, County Extension Agent – Staff Chair, 479-738-6826, dhendersonr@uaex.edu; Mike McCarter, County Extension Agent – Staff Chair, 870-285-2161, mmccarter@uaex.edu; Dr. John Jennings, Professor – Forages, 501-671-2350, jjennings@uaex.edu; and Dr. Shane Gadberry, Assistant Professor - Ruminant Nutrition, 501-671-2169, sgadberry@uaex.edu.

Cow Herd Performance

After a producer decided to return to the farm and raise livestock, he recognized the need to improve the genetics and performance of his herd of registered Hereford cattle. He looked to Extension to see what programming was available to assist with his production goals. He knew his Hereford herd had inherent performance traits that were both good and bad. His goal was to maximize the good traits and select against the negative traits.

The producer enrolled in Cow Herd Performance Testing (CHPT) in the spring of 1998. CHPT helps producers index their calves and cows to identify several traits in the production system. Calves are weighed at birth and at weaning. Cows are grouped into a fall calving herd and a spring calving herd. Cows and calves are processed at weaning where weights, hip heights, muscle score and body condition scores are collected. The producer currently has 55 head of cows enrolled in the CHPT. They are evenly divided into a fall and spring calving herd.

In the eight years since the producer enrolled his herd in CHPT, he has decreased his average frame score size in the cow herd from 5.7 to 5.1. Average cow efficiency has increased from 39.6 to 42.0 percent. The average weaning weight on his calves has increased from 453 pounds to 586 pounds. He has made genetic selections to increase milk production, scrotal development and decrease frame size while increasing muscle scores. The producer is working towards 50 percent efficiency in his herd and is collecting ultrasound data on his bulls to determine carcass quality.

Number and Names of Counties Involved – 1: Polk.

CES Section Contact Person – Carla Vaught, County Extension Agent – Staff Chair, 479-394-6018, cvaught@uaex.edu.

Breeding Soundness Exams

Bull soundness evaluations are the important part of a successful breeding and calving operation. A breeding soundness exam (BSE) performed 30-60 days prior to the breeding season can identify bulls with an obvious reproductive problem. Failure to do this could cost a grower an entire calf crop. The purpose of this program was to educate producers about the importance of a breeding soundness exam. Producers from several counties brought bulls to have a breeding soundness exam performed at a clinic held in Poinsett County. An additional workshop was held in Greene County. Twenty bulls from four different counties had BSE performed, with 19 of the bulls testing sound. Growers realize the value of BSE testing as a way to help insure calf crop, at a potential value of $4,500-$18,000 per bull depending on marketing age of calves.

Number and Names of Counties Involved – 2: Greene and Poinsett.

CES Section Contact Person – Craig Allen, County Extension Agent – Agriculture, 870-578-4490, callen@uaex.edu, and Allen Davis, County Extension Agent – Agriculture, 870-236-6921, ardavis@uaex.edu.

Program Response: Dairy Cattle Management

Contact: Dr. Jodie Pennington, Professor - Dairy, 501-671-2190, jpennington@uaex.edu

Situation

The total annual economic impact of the dairy industry with heifers and dairy products is $400 million. Approximately 200 dairies with 22,000 dairy cows are located in Arkansas. With an average milk production per cow of 13,500 pounds in commercial herds, the Arkansas dairy industry produces 300 million pounds of milk per year. Income from dairy production totals $40-$50 million per year. Fluctuation in milk prices, quality milk production and efficiency of milk production continue to be major concerns of the Arkansas dairy industry. New developments during the year include the transition of dairy farms from conventional dairy farming to organic production and interest in legislation to improve milk prices for producers. Arkansas continues to need additional milk production as less than half of the milk processed in the state is produced in the state.

Stakeholder Input

The Cooperative Extension Service worked not only with dairy producers and processors but also with many dairy-related businesses and government agencies, including Arkansas Farm Bureau (whose dairy division serves as an advisory board), feed companies, NRCS, Arkansas Livestock and Poultry Commission and milk marketing cooperatives to identify and assist with their educational needs. E-mail was used more effectively to communicate with the industry, including producers, through a list serve for the Arkansas dairy industry. Extension continues to provide educational opportunities through Heart of America DHI and in conjunction with neighboring states.

Overview

Extension educational programs helped dairy producers and the related industries identify areas to enhance production efficiency and compete in an increasingly competitive national milk market. The number of dairy herds in Arkansas decreased, but herds increased in size. Overall, the dairy industry in the state closely reflected trends in dairying throughout the southeastern U.S. and all of full-time agriculture. Major efforts during the last year included the development of an organic dairy program so that producers could be more knowledgeable of its benefits and challenges and advising groups as they try to improve milk prices so the state's producers could be more competitive in the national milk market. Since low milk prices, especially relative to costs of production and other areas of the country, plague the industry, advisement was provided to groups working to improve milk prices to producers. Legislation is being proposed to stabilize milk prices in Arkansas.

Many factors affect profitability in the industry, but higher milk prices and higher production per cow are associated with greater profits per cow. Efforts continued in assisting producer groups by advising of methods in other states to increase milk prices. Additional producers were assisted in transitioning to organic production and in adding value-added production to stabilize income in different years.

Arkansas dairies need to increase production per cow to be more competitive in the national milk market. The Dairy Herd Improvement Association (DHIA) record-keeping and production testing program remains the primary demonstration and premier production testing program in the U.S. Dairy herds enrolled in DHIA increased milk production and profits. DairyMetrics, a benchmarking tool from DHIA, allowed various genetic,

reproductive, feeding and health parameters to be related to income-over-feed costs, thus allowing the documentation of the results of following recommended management policies. For example, herds on DHIA with a rolling herd average of greater than 16,000 lbs cow/year had greater income-over-feed costs (IOFC$) of $1.17/day/cow than herds producing less than 16,000 lbs milk/cow/year. The information, as a result of the Memorandum of Understanding with the Dairy Herd Improvement Association (DHIA) record-keeping and production-testing program, remains the primary data to demonstrate the importance of increased milk production and other recommended management practices on income-over-feed costs. This is highly correlated with profits. This data is distributed yearly to dairy producers in the Dairy Digest monthly newsletter.

Since many agents are relatively new and have had limited exposure to large dairy farms, an in-service training was conducted at a large dairy farm with modern technology. Additionally, topics included organic dairy production, management of heat stress and a tour of a nearby value-added dairy venture.

Demonstrations were continued to show producers how to improve milk quality in hopes they might receive a financial quality premium. Udder singeing improves cleanliness and preparation time for milking according to demonstration data. However, somatic cell count (SCC) was not affected in the preliminary data, and we have increased the number of demonstration herds in hopes of clarifying the data regarding the effects of singeing on SCC.

As financial incentives develop for milk producers to produce more milk in the fall, demonstrations were continued to show that heat detection aids and estrous synchronization can improve fertility and tighten the calving season. Early results were mixed, and the solution is challenging.

Multi-disciplinary demonstrations with pest management involved fly control on dairies using parasitoids. Parasitoids offer a method of fly control that appears to be beneficial, especially on clean dairies, with the opportunity to decrease the likelihood of pesticides in the milk supply. Now in their seventh year, these demonstrations have provided much assistance with fly control as well as making producers more aware of the importance of proper sanitation and limited use of insecticides.

Another major concern of the dairy industry is the fluctuation in milk prices. Almost all dairy programs have included information related to current milk prices, predictions of milk prices and the Milk Income Loss Contract Extension (MILCX). The last year has had relatively low milk prices, but high prices preceded the low prices before production expanded nationally. The variation in prices makes budgeting difficult, and the uncertainties of a reasonable price for milk add stress to dairy producers. The fluctuation in milk prices has resulted in greater interest in value-added ventures so that profits might be more evenly distributed throughout the year. Additionally, legislation is being proposed to stabilize milk prices.

Additional emphasis is needed on quality forages in the summer and early fall so that producers may increase their opportunity of obtaining the higher milk prices. The drought has made demonstrations with forages difficult for the past two or three years. Recent rains have increased the likelihood of good yields in spring forages, and a demonstration with intensive grazing has been initiated on a transitioning organic dairy farm. Because of the high costs of purchased feeds on organic dairies, quality forage production is essential for a profitable enterprise. Similar demonstrations are planned in other areas of the state. They will serve to put greater emphasis on forages to improve milk production efficiency for both organic and conventional producers.

Extension Program Results and Accomplishments

Output Indicators

16,183 Number of producer and contacts attending educational programs, field days, etc., and receiving educational materials.

95 Number of educational events.

10 Number of demonstrations and/or field days held to educate clientele.

12 Number of educational newsletters produced, with 7,528 contacts.

52 Number of herds involved in DHIA program, 26 percent of all herds.

14 Number of dairies farms signed up to transition to organic production.

21 Number of youth or open dairy shows for dairy cattle and goats conducted at the Arkansas State Fair and Livestock Show.

1,100 Number of fourth grade students participating in the Domino's Pizza Ranch educational activity.

Outcome Indicators

- In 2005, the average milk production per cow for DHIA herds was 17,402 pounds, compared to the state average of 13,500 pounds, or about 12,000 pounds for non-DHIA herds.

- Greater milk production from DHIA herds amounted to increased income of about $700 per cow, or $80,000 annually, in a 120-cow herd or over $4 million for all DHIA herds.

- DairyMetrics was used to educate producers on the financial benefits of using management practices that are routinely recommended. Examples from May 2006 indicate that herds averaging 20,170 lbs milk/cow/year (over 16,000) had greater IOF$ of $1.17/cow/day compared to lower producing herds. Herds averaging 225,000 SCC had greater IOF$ of $0.99/cow/day compared to herds with SCC averaging 432,000, which is about the state average. Similar benefits from other recommended management were also documented.

Source of Funds

Smith-Lever, 319 Projects, Southern Region SARE Projects, cooperative efforts with Ark-Tenn Dairy Economic Development of Arkansas Fund Commission.

Scope of Impact

Dissemination – Program activities were provided county and statewide through one-on-one contacts, educational meetings, demonstrations and field days as well as regionally through dairy newsletters, a dairy list serve and the UAEX web site.

Scope of Program – State Specific: 26 Counties: Baxter, Benton, Boone, Carroll, Columbia, Conway, Faulkner, Franklin, Fulton, Grant, Greene, Izard, Logan, Madison, Marion, Pike, Pope, Pulaski, Saline, Scott, Searcy, Stone, Van Buren, Washington, White and Yell.

Program Response:
Forage Production and Management

Contact: Dr. John Jennings, Professor - Forages, 501-671-2350, jjennings@uaex.edu

Situation

Arkansas' climate and most of its soil and terrain are suited for the production of grasses and legumes necessary to support the livestock industries. Primary forages include tall fescue, clover and bermudagrass. Over 4.6 million acres of pastureland and 1.4 million acres of hay land (total 6 million acres) are managed to enhance livestock production and land stewardship.

Stakeholder Input

Beef, dairy and horse production make up a major part of Arkansas agriculture. Production of these grazing animals is dependent on forages. Hay production is also significant, and many producers sell hay as a cash crop. County agents work with a wide range of clientele who are stakeholders in forage production. Stakeholders include, but are not limited to producers, youth, county agents, agricultural advisors and agribusiness representatives. Stakeholders provide input regarding the need for educational programs through several means including planning meetings, surveys, informal discussions and electronic methods. Educational programs are developed to reach stakeholders in various ways including, but not limited to, formal educational meetings, field meetings, demonstrations, newsletters and development of educational materials distributed through traditional as well as electronic means.

Overview

The Forage Analysis Database, containing results from forage and poultry litter samples that were analyzed from 1985 to 2006 by the University of Arkansas Agricultural Services Laboratory, is being used throughout the state at cattle field days and other cattle producer meetings and conferences. Information on nutrient composition of forages can be sorted by type (hay, pasture, silage); species; poultry litter; county or statewide; laboratory ID number; analysis date; and the number and percentage of samples in the database that have composition values above a specified level for a single nutrient or a combination of nutrients. The database has been used to generate average forage nutrient values by county and statewide. The forage database will continue to be updated as analysis results are received from the laboratory.

The Arkansas Grazing Management School (AGMS) program was designed to teach management options to improve efficiency of forage utilization. The school's primary premise is to teach producers to match forage, soil, livestock and water resources with goals, abilities and resources. Schools conducted in 2006 emphasized a seasonal approach to planning and managing forage to reduce winter feed costs and to gain more grazing days per year.

The Arkansas Forage and Grassland Council (AFGC) was organized 33 years ago as a cooperative effort between the University of Arkansas Extension Service, agricultural agency groups and agribusiness groups to promote Arkansas forage research and educational programs. Educational programs are conducted annually.

Bermudagrass and alfalfa hay are valuable cash crops for many producers. Both forages are recognized for quality and yield. Bermudagrass is the dominant hay crop in the state. It is grown for all classes of livestock, and the horse hay market is especially emphasized. Alfalfa acreage in Arkansas is increasing, and recent producer interest has shown a need for an educational program on alfalfa management. Improved forage fertility recommendations and production schedules have improved yield and persistence of these forages.

Winter feed costs are a major expense for beef cattle production. Since 2002, Extension Animal Science faculty has conducted a statewide demonstration program that emphasized practices that can help producers reduce these costs. Reducing Winter Feed Costs is an Extension focus program that includes four focus areas: stockpiled forages, winter annual forages, supplemental feeding based on hay quality and rotational or strip grazing. This information allows other producers across the state to see how effective these practices are in reducing winter feed costs. Producers grazing forage growth stockpiled during fall have significantly reduced winter hay feeding days and cost per animal unit.

Rotational grazing improves forage usage. The practice of strip grazing employs portable electric fencing to limit cattle access to only enough pasture for two to three days at a time. Strip grazing has more than doubled grazing usage of stockpiled forages.

Balancing rations for livestock based on quality of hay being fed can reduce costs and improve animal performance. Producers who developed feeding programs based on the quality of their hay had more effectiveness in their feeding programs. The program demonstrated the value of harvesting good quality hay. Producers with good quality hay that did not require supplementation reduced their average feed cost, whereas producers whose hay quality was low and needed supplementation had higher average feed costs.

Forage and grassland management education for youth is being addressed through the Grassland Evaluation Contest. This program emphasizes proper grassland management for both livestock and wildlife production. Students compete by assessing the condition of a selected pasture area, its suitability for wildlife habitat, the soil at the site, forage production and livestock needs and plant identification. In-service training was conducted in 2005 for county agents interested in training youth for this program. Agents have found that the information has also been very useful for working with producers due to its applied format. Arkansas 4-H teams have competed at the state and national level for the past four years. The top five teams earned the right to compete at the Mid-America Grassland Evaluation Contest. Arkansas 4-H teams have placed in the top group each year of the competition.

Extension Program Results and Accomplishments

Output Indicators

1,995	Number of educational meetings, demonstration farm visits and/or field days held to educate clientele on forage production and grazing management.
5	Number of grazing schools conducted during 2006.
215	Number of participants in grazing schools for 2006.
58	Number of Reducing Winter Feed Cost farm demonstrations conducted in 2005-2006.
33	Number of producers using strip-grazing for their stockpiled forages.
9	Number of youth teams that competed in the 2006 State Grassland Evaluation Contest.
31	Number of youth participants in the State Grassland Evaluation Contest.

Outcome Indicators

1,257 Number of participants who changed their forage and grazing management production practices for beef, dairy and horses.

- In the winter of 2005-2006, 31 producers saved an average of $23.76 and $29.07 per head when grazing stockpiled bermudagrass and stockpiled fescue, respectively, in winter instead of feeding hay and supplement.

- Thirty-three producers used strip grazing for their stockpiled forages, thus gaining an additional 35 and 34 animal-unit grazing days on stockpiled bermudagrass and stockpiled fescue, respectively, than those that allowed cattle unlimited access to the stockpiled pasture. This increase was worth an average of $788 and $805 per farm for the fescue and bermudagrass projects, respectively.

Source of Funds

Smith-Lever and Arkansas Grazing Lands Advisory Committee funds.

Scope of Impact

Dissemination – Program activities were available at county level and statewide as well as regionally through UAEX web site.

Scope of Program – State Specific. 49 Counties: Baxter, Benton, Boone, Calhoun, Carroll, Clark, Cleburne, Conway, Crawford, Dallas, Faulkner, Franklin, Fulton, Garland, Grant, Hempstead, Hot Spring, Howard, Independence, Izard, Johnson, Lawrence, Lincoln, Little River, Logan, Lonoke, Madison, Miller, Montgomery, Nevada, Newton, Perry, Polk, Pope, Pulaski, Randolph, Saline, Scott, Searcy, Sebastian, Sevier, Sharp, St. Francis, Stone, Union, Van Buren, Washington, White and Yell.

Programs of Excellence

Forage Yields and Quality Improved with Weed Control

Pasture weeds impact forage yields and quality on 90 percent of all pasturelands in Lafayette County. Major pasture weed problems include musk thistle and horsenettle. Johnsongrass continues to be a problem in high quality bermudagrass hay production in Johnson County. During 2006, Extension established on-farm demonstrations to show producers how to control these weeds. Forty producers provided information on how to control problem pasture weeds through proper herbicide selection, timing of application and stage of plant growth. Growers treated weeds on 6,500 acres of improved pasturelands in Lafayette County for an improvement in forage yields of at least 1,100 pounds per acre. This is estimated to have a value of $45 per acre. In Johnson County, six producers demonstrated new products for johnsongrass control on approximately 1,100 acres. Control of this weed improved the value of the hay produced by $1 per bale for small square bales and $10 per bale for large square bales.

In Searcy County, a producer saved $600 by changing to Extension recommendations for pasture weed control.

In Marion County, 1,500 acres received improved weed control management, which increased the value of the forage production by $63,000.

Number and Names of Counties Involved – 4: Lafayette, Johnson, Marion and Searcy.

CES Section Contact Person – Joe Vestal, County Extension Agent - Staff Chair, 870-921-4744, jvestal@uaex.edu; Blair Griffin, County Extension Agent - Staff Chair, 479-754-2240, bgriffin@uaex.edu; Sean Milliken, County Extension Agent – Agriculture, 870-448-3981, smilliken@uaex.edu; Terry Davis, County Extension Agent - Staff Chair, 870-449-6349, tdavis@uaex.edu

Pasture Fertilization and Poultry Litter Comparison

Use of poultry litter as a fertilizer for forages has increased with the increased availability of litter and the rising cost of commercial fertilizer. A project was developed in Randolph County to compare poultry litter and commercial fertilizer in regard to economics and forage production and determine best management practices to protect the environment. Producers are following University recommendations of soil testing and applying poultry litter in amounts that are needed for the production of forages with economics and environmental considerations. Once the program has been completed in four years, there will be additional information for producers to use in determining the best use of poultry litter.

In White County, producers were considering using pelletized poultry litter to decrease fertilizer expenses. A program was designed to educate producers on how to compare fertilizer sources by calculating nitrogen content and cost per unit. An article was developed and presented in the Beef Newsletter and presented at the Beef Clinic. Pelletized chicken litter was found to be a good product, but it had low nitrogen content and high cost per unit of nitrogen as compared to ammonium nitrate. Producers learned that they were saving $2.13 per unit of nitrogen by using ammonium nitrate versus pelletized chicken litter. Although the ammonium nitrate cost more per ton, it was five times cheaper than pelletized chicken litter per unit of nitrogen. Many producers indicated they are making better decisions regarding nitrogen fertilization as result of this educational program.

Number and Names of Counties Involved – 2: Randolph and White.

CES Section Contact Person – Mike Andrews, County Extension Agent - Staff Chair, 870-892-4504, mandrews@uaex.edu, and Brian Haller, County Extension Agent - Staff Chair, 501-268-5394, bhaller@uaex.edu.

Managing Forages Affected by Drought

Severe drought in Madison, Garland and Pike counties was the focus of Extension educational efforts. Drought-related problems of limited pasture growth, overgrazing, shortages of hay, lack of livestock water and increased feed costs were addressed through these programs. Presentations were delivered to many agricultural groups, on-farm demonstrations were conducted, and newspaper and newsletter articles were prepared. In Madison County, 352 producers attended 23 educational events. More producers are rotational grazing pastures, others have started feeding alternative feed stuffs, and others are implementing better weed control practices to control competition in their pastures. Producers are storing their hay inside or under cover to reduce losses from weather damage. More producers are sampling and weighing their hay to determine how much they actually need to feed during the winter feeding period. There were 785 soil samples representing 14,395 acres submitted this program year to determine soil fertility.

In Garland County, six producers who stockpiled bermudagrass and fescue to graze in winter in place of feeding hay extended the grazing period an extra 25-45 days. In Pike County, 280 producers participated in programs directed at managing drought-affected forages. Five producers installed irrigation systems for hay production, 14 have planted recommended warm season forage varieties, and the results of the cool season forage variety demonstration have been shared with producers. Producers are more aware of the options available for them to increase forage production and are better able to determine the options that are best suited to include in their operations.

Number and Names of Counties Involved – 3: Madison, Garland and Pike.

CES Section Contact Person – Darrin Henderson, County Extension Agent - Staff Chair, 479-738-6826, dhenderson@uaex.edu; Jimmy Driggers, County Extension Agent - Staff Chair, 501-623-6841, jdriggers@uaex.edu; Mike McCarter, County Extension Agent - Staff Chair, 870-285-2161, mmccarter@uaex.edu.

Multi-County Forage Short Course

The Forage Short Course was developed as an educational tool to teach Arkansas cattle producers the techniques that enhance the efficiency and profitability of forage production. This is achieved by demonstrating the importance of the decision-making process. Management practices vary from farm to farm and from region to region, but the decision-making process remains the same. Goal setting, evaluation of resources and selection of management practices that complement those goals are foundations for the development of the decision-making process. The Forage Short Course is designed to be an intensive two-night study on specific forage management issues which all producers deal with such as fertility, fertilizer and cost efficiency, timing of fertilizer, growing forages on rocky soils, weed/brush identification and control, bermudagrass varieties, seeding versus sprigging and factors affecting hay production. The Forage Short Course was a combined effort between Cleburne, Stone and Van Buren counties. Thirty participants were involved in the program. Participants are better able to understand soil test reports and fertilizer ratios to maximize yield potential. Participants also learned to maximize yield for stockpiled fescue, which bermudagrass varieties are best suited for the area and how to properly identify and control weeds.

Number and Names of Counties Involved – 3: Cleburne, Faulkner and Van Buren.

CES Section Contact Person – Kenny Simon, County Extension Agent – Agriculture, 501-362-2524, ksimon@uaex.edu.

Improved Hay Production

Many producers have low quality hay which requires large amounts of supplement for cattle to prevent negative impact on reproductive performance. Quality hay will reduce cost of cattle production. The goals were to improve the nutritive value and yield of hay on a farm in Franklin County. Four years ago, a local producer's hay quality was generally 9-11 percent protein and 50-60 percent TDN. His hay yield increased greatly, and presently the analysis of his hay is between 14-19 percent and TDN is 60-70 percent.

Number and Names of Counties Involved – 1: Franklin.

CES Section Contact Person – Robert Rhodes, County Extension Agent - Staff Chair, 479-667-3720, brhodes@uaex.edu.

Reducing Winter Feeding Costs With Stockpiled Forages

General Program Information – The Reducing Winter Feed Cost Focus Program addresses the key management problems of the high cost of feeding beef cattle during the winter. The program used on-farm demonstrations and educational activities to demonstrate and illustrate cost-effective winter beef cattle feeding options. Stockpiling either warm- or cool-season forages and incorporating strip grazing to harvest the stockpiled forages was demonstrated. Rate of nitrogen applied was 50 to 60 pounds per acre for fescue and bermudagrass and 30 to 50 pounds per acre for bahiagrass. Forage samples were collected to document nutrient value, and yield estimates were determined. Budget information was collected to determine the cost effectiveness of stockpiling.

When available, forages provide the cheapest and most economical feed for livestock. Providing forages in the form of hay is an accepted practice but is more expensive than grazing. The purpose of the program was to demonstrate that stockpiled forages could provide extra grazing days for livestock and lessen the amount and the number of days that hay is fed to livestock. By allowing livestock to harvest the stockpiled forages, producers escape the cost of cutting, drying, baling and transporting the forage from the field and back to the field when it is fed.

For the fall 2006 season, the cooperator applied nitrogen fertilizer in late August and early September to fields that had been harvested for hay earlier in the year. Cattle were pulled from the field, and the forage was allowed to grow until October 15. Electric fences were used to manage access of livestock to the stockpiled forage to improve utilization. Stockpiling reduced hay feeding by 83 days and saved $55.00 per animal unit (AU). Additionally, other producers have heard of the cooperator's success, and they have begun their own stockpiled forage program this year. With the lack of hay in the area, stockpiling forages is a viable way to survive times when forage supplies are tight.

In Yell County, four producers involved in stockpiled forage demonstrations saved an average of $58.47 per AU or a net increase in income of $7,818 through reduced feeding costs. Twenty-five other producers adopted the practice and saved an estimated $48,863 through reduced winter feed costs.

A beef cattle producer in White County stockpiled bahiagrass on 15 acres and saved $14.35 per AU.

Three producers in Pope County saved $12.00 per animal unit by grazing stockpiled forage.

One producer was able to more than double forage yield by fertilizing on September 1 with 50 pounds of nitrogen, as opposed to no fertilizer. This yielded an additional 15 days of grazing. By increasing the number of days cattle spent grazing, the producer was able to save $3.81 per AU as opposed to feeding hay plus supplemental feed.

A producer grazed 38.75 animal units for 45 days with a savings of $14.40 per AU. The total savings for the project was $558.

A producer was able to get an additional 55 grazing days from stockpiled fescue.

A producer extended the grazing season 41 days and saved $29.28 per AU.

Number and Names of Counties Involved – 11: Baxter, Cleburne, Franklin, Greene, Hempstead, Montgomery, Pope, Sharp, Van Buren, White and Yell.

CES Section Contact Person – Gerald Alexander, County Extension Agent - Staff Chair, 870-777-5771, galexander@uaex.edu; Kenny Combs, County Extension Agent – Agriculture, 479-229-4441, kcombs@uaex.edu; Kenny Simon, County Extension Agent – Agriculture, 501-362-2524, ksimon@uaex.edu; Danny Griffin, County Extension Agent - Staff Chair, 501-745-7117, dgriffin@uaex.edu; Dr. John Jennings, Professor-Forages, 501-671-2350, jjennings@uaex.edu; Lisa Martin, 870-867-2311, lmartin@uaex.edu; Mark Keaton, 870-425-2335, mkeaton@uaex.edu; Brian Haller, 501-268-5394, bhaller@uaex.edu; Phil Sims, 479-968-7098, psims@uaex.edu; Bob Rhodes, County Extension Agent – Staff Chair, 479-667-3720, brhodes@uaex.edu; Allen Davis, County Extension Agent – Staff Chair, 870-236-6921, ardavis@uaex.edu; Joe Moore, County Extension Agent – Staff Chair, 870-994-7363, jjmoore@uaex.edu.

Winter Annual Demonstration

A producer saved over $1,050 in hay cost. The producer cut 42 days off of his normal hay feeding period and increased the cows' BCS by an average of 1.5.

Number and Names of Counties Involved – 4: Greene, Howard, Lawrence and Pike.

Impact Numbers – Winter feed costs were reduced an average of $20 per head.

CES Section Contact Person – Sherry Eudy, 870-845-7517,seudy@uaex.edu; Dr. John Jennings, Professor-Forages, 501-671-2350, jjennings@uaex.edu; Rex Dollar, Program Associate-Forages, 501-671-2179, rdollar@uaex.edu; John Richeson, Program Associate-ABIP, 501-671-2180, jricheson@uaex.edu.

Program Response: Horse Management

Contact: Steve Jones, Associate Professor-Equine Science, 501-671-2067, sjones@uaex.edu

Situation

The horse industry is growing in Arkansas. Approximately 63,000 households own 160,000 to 170,000 horses. Although recreation is the number one reason for horse ownership, the horse industry is a $4 billion industry.

Stakeholder Input

The horse industry is a major part of Arkansas agriculture. The combination of maintenance costs, capital investment and support costs is a factor in the agricultural economy. County agents work with a wide range of clientele who are stakeholders in equine activities. Stakeholders include, but are not limited to producers, youth, county agents, agricultural advisors and agribusiness representatives. Stakeholders provide input regarding the need for educational programs through several means including planning meetings, surveys, informal discussions and electronic methods. Educational programs are developed to reach stakeholders in various ways including, but not limited to, formal educational meetings, field meetings, demonstrations, newsletters and development of educational materials distributed through traditional as well as electronic means.

Overview

Arkansas has an approximate equine population of 160,000 to 170,000. Approximately 63,000 households have horses. A combination of horse maintenance costs, capital investment and support costs makes this a $4 billion industry. Recreation is the number one reason for horse ownership with trail riding, weekend horse shows and rodeo events the leading pastimes. Although a thoroughbred racetrack contributes to the economy seasonally through training facilities and on-site wagering, a number of thoroughbred breeding farms operate year-round in the state.

The Horsemen's Short Course continues to be a popular educational delivery system for Arkansas horse owners. The three-session curriculum includes nutrition, horse health, safety, hoof care, tack, equipment and horsemanship principles.

The Positive Reinforcement for Excellent Performance (PREP I) Training Program was developed to show horse owners how to utilize horse psychology, behavior and social structure in training young horses as well as

correcting faults of older horses. PREP II, an advancement of PREP I, continues to be offered. This program teaches advanced horsemanship skills and incorporates clientele instruction with their horses.

The Arkansas Department of Correction requested a number of different equine educational programs in 2006. An eight-hour program, which included basic horsemanship, bits and their functions, saddle fit, firearm safety while on horseback and working with problem horses, was delivered to all officers who ride horses. An advanced horse-training class was prepared for officers responsible for supervising employees who ride horses. This program was a five-day, 40-hour curriculum. Each officer started a two-year-old from first handling to basic riding. It was intended that all horses would be ridden with some basic horsemanship principles applied by week's end. The program for horse barn supervisors was an eight-hour in-service that emphasized horse nutrition, hoof care and horse health. In 2006, a 40-hour curriculum was developed for officers who had been assigned or potentially assigned to ride horses. This program instructed participants on horse behavior and training principles, riding exercises to develop balance and confidence, tack care, selections, function, security while on horseback and firearms instruction while on horseback. This program was offered through the Arkansas Department of Correction Training Academy as a required class for new officers. In addition to Corrections officer, several students were from police and sheriff departments with horse divisions.

To meet the need for equine education programming for adults and non-4-H audiences, programs in horsemanship, nutrition, health, pasture management and general management were conducted. The Horsemen's Short Courses are popular and effective means of program delivery. The most demanded program is basic horsemanship. Two delivery methods that have been successful are 1) live demonstration using one or two speakers and 2) clientele bringing their own horses and getting one-on-one or small group instruction.

In 2006, the Arkansas Horsemen of Excellence program was initiated. The Arkansas Horsemen of Excellence Program targets the horse owner who wishes to improve his or her knowledge of horse science and horsemanship skills. The program consists of six, three-hour sessions that will cover the science of horse management and the concepts of riding and training. Each class was approximately one hour of lecture or demonstration and two hours of riding and training skill development. The science portion was adjusted to the interest and needs of the group.

Extension Program Results and Accomplishments

Output Indicators

18 PREP training sessions conducted.

1,200 Number of clientele attending PREP courses.

6 Number of Horsemen's Short Courses taught.

220 Number of clientele attending Horsemen's Short Courses.

2 Number of Horsemen of Excellence Programs conducted.

24 Number of clientele participating in Horsemen of Excellence Program.

12 Arkansas Department of Correction horsemanship in-service sessions for officers.

150 Number of participants in the Arkansas Department of Correction horsemanship in-service sessions.

30 Number of Arkansas Department of Correction barn supervisors attending horse training classes.

4 Arkansas Department of Correction New Rider Classes for corrections and police officers.

45 Number of participants in the Arkansas Department of Correction New Rider Classes for corrections and police officers.

3,500 Number of producers attending educational programs (including Extension-related industry meetings), field days, etc., and receiving educational material.

86 Number of educational meetings, demonstrations, farm visits and/or field days held to educate clientele on general horsemanship and equitation.

27 Number of educational meetings, demonstrations, farm visits and/or field days held to educate clientele on horse nutrition.

109 Number of educational meetings, demonstrations, farm visits and/or field days held to educate clientele on pasture management and hay quality.

29 Number of educational meetings, demonstrations, farm visits and/or field days held to educate clientele on horse health.

377 Number of staff days dedicated to equine.

Outcome Indicators

1,500 Number of participants who improved their equitation and horsemanship skills.

500 Number of participants who changed their horse nutrition management practices.

68 Number of participants who changed their horse grazing management practices and improved hay quality.

24 Number of participants who changed their horse health management practices.

100 percent of participants in the Arkansas Department of Correction horse training in-service were successful in applying horsemanship riding principles.

Source of Funds

Smith-Lever, Arkansas Livestock and Poultry Commission, and industry sponsorship.

Scope of Impact

Dissemination – Program activities were available county and statewide as well as regionally through UAEX web site.

Scope of Program – State Specific. 33 Counties: Arkansas, Baxter, Boone, Carroll, Clark, Clay, Cleburne, Conway, Craighead, Crittenden, Desha, Drew, Faulkner, Hot Spring, Izard, Jackson, Jefferson, Lincoln, Logan, Madison, Marion, Newton, Pike, Polk, Pope, Pulaski, Randolph, Saline, Stone, Union, Van Buren, Washington and Yell.

Programs of Excellence

Forages for Horses

General Program Information – The majority of horse owners have only an elementary knowledge of proper pasture management, often resulting in overgrazed conditions. Farm visits during the year have resulted in providing proper pasture management recommendations, including weed control, fertilization, stocking rates and rotational grazing. A stockpiled forage for horses demonstration was conducted to decrease winter feed costs. The objective of this study was to evaluate animal performance and potential economic advantage of grazing stockpiled fescue pasture for light horses. The horse and pasture management program goals are to advise horse owners on how to manage and better use their pastures. This program enabled horse owners to manage their horses in a more sustainable manner that provides economical and healthy pasture for their horses. Horse owners who have been served with this program are able to manage their horses in a more responsible manner.

Number and Names of Counties Involved – 3: Van Buren, Pulaski and Izard.

Impact Numbers – Over 35 farm visits during the year have resulted in providing proper pasture management advice, including weed control, fertilization, stocking rates and rotational grazing. Bermuda pastures and hay fields were sprayed to control weeds, and some fescue was replaced with bermuda to have a healthy and more productive horse population. In the stockpiled forage demonstration, the horse owner saved $14.40 per head of supplemental feed costs and produced 45 days of forage to graze that had not previously been available.

CES Section Contact Person – Steven M. Jones, Associate Professor – Equine Science, 501-671-2067, sjones@uaex.edu; Danny Griffin, County Extension Agent - Staff Chair, 501-745-7117,dgriffin@uaex.edu; Carroll Prewitt, County Extension Agent - Staff Chair, 870-368-4323, cprewett@uaex.edu; Allan Beuerman, County Extension Agent - Agriculture, 501-340-6650, abeuerman@uaex.edu.

Hoof Prints

General Program Information – The current Agriculture Census ranks Polk County seventh in the state in the number of horses. The agriculture subcommittee of the County Extension Council has identified the need for education in all areas of equine production as a major concern in the county. Programming in FY06 was designed to begin compiling an accurate interest and mailing list for horse enthusiasts in the county. Working with the local equine veterinarian, a mailing list with 124 people was developed. A newsletter called *Hoof Prints* was designed to begin to address the educational needs of the county. The newsletter was published one time in 2006, and it received rave reviews. Several readers expressed their gratitude and volunteered to serve on a horse subcommittee to develop programming and promote programs related to equine. This committee will begin work to plan and implement programming to address the concerns of the equine community. The mailing list serves trainers, breeders, boarders, horse sanctuary operators, farriers, 4-H horse club members and parents, trail riders, rodeo participants and showmen from all over Polk County. The horse community is excited to have been recognized as a legitimate industry in Polk County. They are asking questions about ways to become better educated about all aspects of horse production.

Number and Names of Counties Involved – 1: Polk.

Impact Numbers – Current number on the mailing list is 124 people. Because of the efforts in developing this interest list, horse enthusiasts are more informed of management practices to conduct a more effective and efficient horse program. They are aware that Extension offers programming on horse production and are looking forward to participating in educational efforts offered from the U of A Division of Agriculture Cooperative

Extension Service. The horse community is excited to have been recognized as a legitimate industry in Polk County. They are asking questions about ways to become better educated about all aspects of horse production.

CES Section Contact Person- Carla Vaught, County Agent, 479-394-6018, cvaught@uaex.edu.

Equine Health and Nutrition

General Program Information – Due to the increasing popularity of horse-related activities in the area, many horse owners are first time owners. There is non-factual information concerning equine health and nutrition passed from owner to owner. Simply because a person owns a horse does not mean they are experts. In fact, many of these so called experts are the ones that spread non-factual information. The goals of the program were to dispel myths and improve overall health of horses in this area. Information was presented on equine health, first aid and nutrition at several meetings. An equine section was included in Livestock and Forage newsletters that are mailed every other month. An equine health and nutrition section was included in the *Ozarks Bootstraps* newsletter that is sent out every quarter. Comments have been received on the timeliness of the information, the fact that there are many myths floating around in this area and that the information presented was very helpful in clearing up questions the owners had. This program has enlightened horse owners in this area on common feeding mistakes and basic health issues. This program was delivered to 4-H groups and adults in Boone, Searcy and Newton counties.

Number and Names of Counties Involved – 3: Boone, Newton and Searcy.

Impact Numbers – Three counties were involved in the program. The total number served by this program is approximately 715 people. Feedback from producers indicated they were going to change feeding practices and that they were more aware of signs to look for when health problems arise. Horse owners who participated in the program have gained information that, if applied, will improve the overall health of their horses.

CES Section Contact Person – Steven M. Jones, Associate Professor – Equine Science, 501-671-2067, sjones@uaex.edu; Scott Squires, County Extension Agent - Agriculture, 870-741-6168, ssquires@uaex.edu; Jack Boles, County Extension Agent - Staff Chair, 870-446-2240, jboles@uaex.edu; Sean Milliken, County Extension Agent - Agriculture, 870-448-3981, smilliken@uaex.edu.

Program Response: Impact of Water Quality on Poultry Production

Contact: Dr. Susan Watkins, Extension Poultry Specialist, 479-575-7902, swatkin@uark.edu

Situation

Earlier surveys suggested that the quality of water consumed by poultry could affect their health and growth rate. Field and applied studies confirmed these earlier findings. In addition, these studies suggested that producers could control the quality of water delivered to the birds by their watering systems.

Stakeholder Input

Poultry producers are interested in management tools that will help them produce birds more efficiently and cost effectively. Informal discussions about field and applied water quality studies with poultry companies and poultry producers indicated that water quality management was a subject of intense interest.

Overview

Applied and field water quality studies documented management techniques. Newsletter and popular press articles provided the program initial visibility among production personnel. Presentations at local, regional, state and national meetings informed interested parties of the program and its progress. Troubleshooting and one-on-one consultations provided producers experiencing water quality problems with timely guidance. Also, by working with the service technicians for the poultry companies, it has been possible to educate them so that they can also identify and correct water quality issues.

Extension Program Results and Accomplishments

Output Indicators

10 Field and applied research trials.

5 Popular press or newsletter articles.

28 Presentations at local, regional or state meetings.

3 Training workshops for area poultry producers.

76 Farm visits and one-on-one consultations.

1,501 Poultry producers were instructed on water quality management.

Outcome Indicators

1,258 Water samples submitted for microbial and mineral analysis.

301 Poultry producers changed their water quality management practices.

7 Poultry production complexes improved bird performance, saving and average of $750,000 in production costs annually.

Source of Funds

Smith-Lever.

Scope of Impact

Dissemination – This program is available to all poultry producers and poultry company production personnel within the state.

Scope of Program – Multi-state Research: Arkansas, Oklahoma, Texas, Missouri, Kentucky, Pennsylvania, Ohio, Indiana, Virginia, West Virginia, Minnesota, Iowa and Tennessee.

Program Response:
Poultry Breeder Management Training

Contact: Dr. Keith Bramwell, Extension Poultry Specialist, 479-575-7036, bramwell@uark.edu

Situation

The management of breeder birds determines in large part whether or not a poultry complex is successful. Yet annual genetic improvements ensure that management requirements for breeder birds are in constant change. In addition, few individuals fully understand current management requirements and supply information to poultry producers and production personnel.

Stakeholder Input

A breeder management seminar was established in 1998 at the request of industry production personnel. The seminar sparked interest in more intensive training, which let to the establishment of breeder roundtable meetings in three locations within the state. Roundtables continue to meet quarterly to provide program input.

Overview

Extension poultry specialists developed an intensive two-day breeder workshop that presented the latest research-based information as well as hands-on experience with current evaluation procedures. Presentations at local, regional, state and national meetings highlighted the program and its accomplishments. Newsletter and popular press articles outlined the progress of the project. Breeder roundtable meetings were established to keep in touch with the educational needs as well as the impact of the training. Follow-up visits to facilities addressed specific or unusual breeder problems.

Extension Program Results and Accomplishments

Output Indicators

4 Intensive workshops conducted.

29 Meeting presentations.

33 Follow-up visits.

5 Breeder roundtable meetings.

128 Breeder managers received training.

Outcome Indicators

18 Problems were corrected during follow-up visits, saving each company an average of $51,000 per occurrence.

Source of Funds

Smith-Lever.

Scope of Impact

Dissemination – Breeder workshops are available to any breeder producer interested.

Scope of Program – Multi-state Extension: Arkansas and Texas.

Program Response:
Poultry Hatchery Management Training

Contact: Dr. Keith Bramwell, Extension Poultry Specialist, 479-575-7036, bramwell@uark.edu

Situation

Hatchery management is increasingly complex because of the changing genetics of breeder birds, increased automation and hatchery size. Yet poultry complexes can not operated efficiently if hatcheries are poorly managed.

Stakeholder Input

The need for additional training was identified during informal discussions with hatchery managers. The identification of this need let to the formation of a quarterly hatchery managers' roundtable, which provides on-going guidance to the program.

Overview

An intensive two-day breeder workshop that presented the latest research-based information as well as hands-on experience with current evaluation procedures was developed. Presentations at local, regional, state and national meetings highlighted the program and its accomplishments. Newsletter and popular press articles outlined the progress of the project. Hatchery roundtable meetings were established to keep in touch with the educational needs as well as the impact of the training. Follow-up visits to facilities addressed specific or unusual hatchery problems.

Extension Program Results and Accomplishments

Output Indicators

3 Intensive workshops conducted.

9 Meeting presentations.

11 Follow-up visits.

4 Hatchery roundtable meetings.

153 Hatchery managers received training.

Outcome Indicators

5 Problems were corrected during follow-up visits, saving each company an average of $35,000 per occurrence.

Source of Funds

Smith-Lever.

Scope of Impact

Dissemination – Hatchery workshops are available to any hatchery worker interested.

Scope of Program – Multi-state Extension: Arkansas and Texas.

Program Response: Poultry Producer Education Program

Contact: Dr. Susan Watkins, Extension Poultry Specialist, 479-575-7902, swatkin@uark.edu

Situation

As the U.S. poultry industry meets the challenge of being competitive in a highly competitive global market, it will rely more on educational opportunities provided by the Extension Service to choose wise investments and develop better production strategies. Global competition has resulted in profit margins that are very narrow, and the poultry industry has cut costs by increasing the responsibilities of live production personnel. This makes it difficult for production personnel to have the time and resources to learn and understand the value of the latest technologies. Extension has developed a crucial role in providing unbiased and sound technology through quality educational programs. Since the role of Extension is education and not selling products, the clientele served has a high level of trust and confidence in the information provided.

Stakeholder Input

Poultry company personnel meet with Extension personnel to plan programs for contract growers. Program participants provide feedback through surveys. Overall survey response has rated the educational value of programs as high, and company personnel and growers have unanimously agreed that programs should be continued.

Overview

Poultry Expo programs presented the latest production information, while trade shows featured equipment and services utilized by producers. A quarterly newsletter provided producers with up-to-date information, and farm visits assisted producers who were having difficulties. Farm visits and one-on-one consultations provided producers with the technical information necessary to solve difficult management problems.

Extension Program Results and Accomplishments

Output Indicators

4 Poultry Expo Programs.

18 Management related newsletter or popular press articles published.

58 Farm visits or one-on-one consultations.

374 Producers received the latest production information.

Outcome Indicators

63 Producers learned proper bird management techniques.

Source of Funds

Expo registration fees and Smith-Lever.

Scope of Impact

Dissemination – This program is available to all poultry producers within the state.

Scope of Program – All counties in Arkansas.

KEY THEME: DIVERSIFIED/ALTERNATIVE AGRICULTURE

Program Response: Ornamental Horticulture Business Development

Contact: James A. Robbins, Extension Horticulture Specialist, 501-671-2307, Horticulture

Situation

Ornamental horticulture is one of the fastest growing segments of agriculture in the United States. The majority of our county agents are not technically trained in horticulture and need assistance in their county 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.

Stakeholder Input

Input is collected as a standard operating procedure at all programs and events.

Overview

The commercial ornamental industry in Arkansas consists of a vast array of businesses that represent production, sales and service sectors. General classes of business include garden center/retail, nursery production, greenhouse production, landscape installation and maintenance, irrigation installation and maintenance, arborist, florist, sod production, sports turf and golf. Turfgrass-related business is estimated at over $200 million, nursery retail (not including mass merchants) at $125 million and landscape services at $175 million. Nursery production, 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. Estimates indicate that 75 percent of plant material in Arkansas is imported from other states. Arkansas nursery products could also be exported to many states.

CES programs are designed to focus efforts on enhancing current ornamental horticulture businesses and to start new businesses. Programs, written materials and web materials are designed to support this goal. Nineteen 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. A statewide plant evaluation program initiated in 1999 is designed to evaluate and help market "new" plant material for the Arkansas market. Reports and sources for this plant material are available on the CES web site. A statewide survey has been conducted to document the economic impact of the ornamental horticulture component of agriculture in Arkansas.

Extension Program Results and Accomplishments

Output Indicators

19 Number of educational publications, mass media and other materials produced as a means to disseminate new technologies to commercial clientele and other interested parties.

148 Number of educational meetings, demonstrations, nursery and greenhouse visits or field days held to educate commercial clientele and other interested parties.

2 Number of workshops on fertility, production, post harvest, marketing and/or breeding and selection conducted to educate commercial clientele and other interested parties.

4,560 Number of individuals attending educational meetings, field days, demonstrations or workshops and receiving educational materials.

Outcome Indicators

196 Number of participants who adopted new production technologies.

9 Number of new commercial operations.

190 Number of participants who reduced their chemical and fertilizer inputs.

Source of Funds

Smith-Lever 3b and 3c.

Scope of Impact

Dissemination – Available statewide through web, publications and media releases.

Scope of Program –7 counties: Clay, Poinsett, Washington, Craighead, Clark, Jackson and Pulaski.

Programs of Excellence

Diversified/Alternative Agriculture Through a Horticulture Business

Success Story – 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 Poinsett County, has planted a total of 120 acres of ornamental trees since the spring of 2002 with an estimated wholesale value of $2.5 million.

Number and Names of Counties or Locations Involved – 1 county; Poinsett County.

Impact Numbers – A total of 120 acres of ornamental trees since the spring of 2002 with an estimated wholesale value of $2.5 million.

CES Section Contact Person – James A. Robbins, Extension Horticulture Specialist, 501-671-2307, Horticulture.

KEY THEME: ORNAMENTAL/GREEN AGRICULTURE

Program Response: Ornamental Plant Evaluation

Contact: James A. Robbins, Extension Horticulture Specialist, 501-671-2307, Horticulture

Situation

New plants are a major driving force in the ornamental plant industry. Not only do nursery and greenhouse producers need to know about how ornamental plants perform in Arkansas, so do consumers. The plant evaluation program focuses on evaluating woody ornamental plants.

Stakeholder Input

Contact with industry leaders through attendance at state and regional trade shows and conferences, periodic visits and personal contacts provide information on the pulse of the industry. Contact with consumers through the Master Gardener program, the flower and garden shows and various county meetings provide feedback from this segment.

Overview

The ornamental industry in Arkansas is primarily composed of small, single location firms that service a local clientele base. The retail nursery/greenhouse base has an estimated value of $125 million, not including mass-market sales. Texas has estimated that 80 percent of the ornamentals found in that state move through mass-market outlets. If this were true in Arkansas, mass-market sales would amount to $500 million and total ornamental retail sales at $625 million. The landscape services industry, which uses the ornamental plants being evaluated, has a retail sales value estimated to be $175 million. Wholesale production figures have been estimated at around $50 million. Providing ongoing evaluation of new plants as they enter the market stream is a way of providing direct support for the producer, the retail ornamental industry and the consumer.

Extension Program Results and Accomplishments

Output Indicators

- The University of Arkansas Plant Evaluation program, initiated in 1999, has evaluated over 90 woody ornamental plants at three trial locations across Arkansas representing the three climatic zones.

- Results from these evaluations are reported at state, regional and national meetings and in trade publications. Annual reports are distributed to participants in the trial. Annual reports, plant growth data and photographs are maintained on a University web site.

- Annually, the industry is provided with a brief written program summary and list of potential nursery sources. This summary provides an efficient means for the wholesale industry to obtain this plant material.

18 Number of different plant related articles distributed for use in newspapers, trade publications and the Extension web site.

1,029 Attendance at talks given during the plant discussing plant selection.

Outcome Indicators

179 Number of garden centers who adopted new plant material evaluated in the evaluation program.

112 Number of garden centers who reduced the sale of plants determined to be of low landscape value or invasive based on information generated by the evaluation program.

Source of Funding

Smith-Lever 3-b and 3-c, plant contributions from green industry firms.

Scope of Impact

Dissemination – Arkansas and surrounding states; nationwide through articles and web site.

Scope of Program 4 counties: Pulaski, Washington, Hempstead and Van Buren.

KEY THEME:
OTHER

Program Response:
The Arkansas Master Gardener Program

Contact: Janet B. Carson, Extension Horticulture Specialist, 501-671-2174; jcarson@uaex.edu

Situation

Gardening continues to rank as the number one hobby in the United States and in Arkansas. The majority of the county agents are not technically trained in horticulture and need assistance in their county in handling horticulture issues. In additions, our horticulture consumer population is becoming more urbanized. University of Arkansas horticulture specialists are establishing a base of trained volunteers to support our statewide programs, reaching an expanding and diverse audience. Gardeners are always looking to find more education on their favorite subject. Consumers are also looking for ways to make a meaningful contribution to their communities through volunteerism. The Master Gardener program fulfills both missions. Through this strong program, volunteers are given university research-based instruction and in return give back 40 hours of volunteer horticulture work to their local county program.

Stakeholder Input

Feedback and requests are received from Master Gardener Programs and County Agents. A statewide advisory board was formed to give guidance to the program, and help in the maintenance of the program.

Overview

The Arkansas Master Gardener program began in 1988. Over 6,000 Master Gardeners have trained to date. They are making a difference in county programs statewide. These volunteers are making a strong impact on county programming, as well as county beautification. Volunteers help plant and maintain county property, libraries, schools and hospitals. They are active participants on county boards and commissions. They also work with consumers in their counties in various aspects, including working in the county office handling consumer calls, teaching workshops, working in demonstration gardens and participating in plant therapy programs, plant sales and school programs. In addition, most counties also produce excellent newsletters that are shared with county leaders in addition to the Master Gardener clientele.

In 2006, many Master Gardeners have been volunteering time to serve on committees as Arkansas prepares to host the 2007 International Master Gardener Conference. This conference will be held in Little Rock May 2-5, 2007. Master Gardeners have been involved in all aspects of the conference planning including meal coordination, seminar topics, attendee tote collection, monthly newsletters, trade show promotion, garden tours, pre and post conference tours and special events.

Extension Program Results and Accomplishments

Output Indicators

In 2006, 498 Master Gardener volunteers were trained with 2,665 active Master Gardeners returning, giving us a total of 2,665 Master Gardener volunteers in Arkansas sharing their talents statewide. These Master Gardeners volunteered 101,430 hours in the state and accrued 101,928 in educational hours. In dollar terms, using a $17.55 per hour rate, this had an impact of $3,568,932.

Individual	Group	Events	Method
575	2348	23	Annual training (40 hours)
463	593	55	Committee meetings
1871	5023	500	Monthly meetings
27	458	25	Newsletter
148	20	24	Planning sessions
625	3	1	State MG Meeting
3,709	8445	628	Total

151 Programs conducted for leader and volunteers.

4,694 Individuals participating in these programs.

Outcome Indicators

274 Master Gardener projects in the state.

52 New projects in the state.

2,647 Phone calls answered by Master Gardeners.

Source of Funds

Smith-Lever 3b and 3c.

Scope of Impact

Dissemination – Arkansas. Available through web and e-mails.

Scope of Program –
State specific: Master Gardener programs are in the following counties: Arkansas, Baxter, Benton, Boone, Calhoun, Carroll, Chicot, Clark, Cleburne, Columbia, Craighead, Crawford, Crittenden, Cross, Desha, Drew, Faulkner, Fulton, Garland, Grant, Greene, Hot Spring, Independence, Izard, Jefferson, Johnson, Lawrence, Logan, Lonoke, Madison, Marion, Miller, Montgomery, Nevada, Ouachita, Perry, Pike, Polk, Pope, Prairie, Pulaski, Randolph, Saline, Searcy, Sebastian, Sharp, St. Francis, Stone, Union, Van Buren, Washington, White and Yell.

Multi-state Extension: Arkansas, Oklahoma, Louisiana, Mississippi, Florida, Tennessee, Kentucky, Minnesota, Alabama, Georgia, Texas, Rhode Island, North Carolina, Pennsylvania,

Programs of Excellence (Success Stories)

Master Gardener Program

Master Gardeners have landscaped and maintained the Craighead County Courthouse and have landscaped the new Extension Office and Health Department.

Master Gardeners have dramatically improved the appearance of the Craighead County Courthouse with a number of patriotic events such as Veterans Day, Memorial Day and others held on the grounds next to the grounds landscaped by Master Gardeners. County officials requested the Master Gardeners landscape the new Extension and Health Department Offices after having many favorable comments on the courthouse.

Craighead County and Jonesboro. All individuals who come to the courthouse or Extension Office or Health Department.

County officials continue to be impressed with another volunteer group that is part of Extension that provides a visible positive impact.

All of these locations have dramatically improved landscapes that are maintained by Master Gardeners.

CES Section Contact Person – Steve Culp, 870-933-4565, sculp@uaex.edu.

Pulaski County Extension Service

The Pulaski County Master Gardener Program has grown to 361 active volunteers. In the past year these volunteers have served 13,000 hours of volunteer service valued at over $240,000 to the Cooperative Extension Service and residents of Pulaski County. These volunteers work on 25 public gardening projects as well as answering over 2,500 homeowner Horticulture calls at the Extension Office.

The goals of the Pulaski County Master Gardner Program are to train volunteers to help the Extension Service extension educational program and information to residents of the county. The program also involves continuing education for the volunteers.

The population of Pulaski County is over 300,000 and includes the cities of Little Rock, North Little Rock, Jacksonville, Sherwood and Maumelle.

13,000 hours of volunteer service valued at over $240,000 to the Cooperative Extension Service and residents of Pulaski County. These volunteers work on 25 public gardening projects as well as answering over 2,500 homeowner Horticulture calls at the Extension Office.

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CES Section Contact Person – Elisabeth Phelps, 501-340-6650, bphelps@uaex.edu.

Master Gardener Organize Lecture Series

There is an increasing demand from home gardeners for more information on landscaping their homes. Providing this information presents an opportunity for more do-it-yourself at home projects and increases the demand for horticulture products.

A series of three lectures were presented in February on a weekly basis at the local community college, EACC, by experts in their field.

Advertising was done locally and regionally that resulted in a total of 150 adults coming from at least 60 miles away to hear the presentations.

A total of 150 adults learned tips to help them improve their landscape at home and encourage them to get out and try something new for themselves.

The strong demand for information from homeowners has resulted in the continuation of this spring lecture series with other qualified speakers being recruited for future presentations. The Extension Service is a source of valuable information that the homeowner can use.

CES Section Contact Person – Richard Klerk, 870-238-5745, raklerk@uaex.edu

A Great Working Relationship

Having an expanded program is tough for three agents in a large county. With the many programs each agent does comes tons of "grunt" work preparing for and cleaning up after an engagement. Volunteers are necessary to make everything happen. In Union County, one of our greatest resources is our Master Gardeners. The MG volunteers help us with EVERYTHING! They are so great we could not make it without them. Always with a smile and a joke or two, they troop their way to the county fair, 4-H meetings, Farm Fair and just about everywhere you can think of.

To educate the community about their love, horticulture, and be ambassadors for the local Extension staff – they are happy to assist with anything they have time to commit to.

We can get a lot more accomplished in a lot shorter time because of the MG volunteer help. This is the only Extension Office I have worked in, but I would hate to be where this type of solid volunteer infrastructure is not there. While being helpful at getting things accomplished, they serve as ambassadors for our office. We cannot see every single person, so they help spread the good word about our work.

CES Section Contact Person – Jerri Lephiew, Union County, 870-864-1916, jlephiew@uaex.edu.

Program Response: Consumer Horticulture Program

Contact: Janet B. Carson, Extension Horticulture Specialist, 501-671-2174; jcarson@uaex.edu

Situation

Gardening is the number one hobby in the United States. Consumers want information that is easy to find and pertinent to their state. Attendance at horticultural events in the state is growing.

Stakeholder Input

Feedback and requests are received from county agents, County Councils and consumers across the state. A horticulture survey was also conducted.

Overview

To help spread the educational message, various mass media outlets are used. The Extension web site contains vast amounts of horticultural information. The annual consumer horticulture CD, which contains horticulture information, was updated and has been selling successfully. Weekly newspaper articles and features, magazine articles and radio shows all add to the community outreach.

Some type of garden exhibition or fair is held throughout the state monthly. From the largest, the Arkansas Flower and Garden Show, to smaller seminars and field days, Extension is taking horticulture to the people of the state.

Extension Program Results and Accomplishments

Output Indicators

Individual	Group	Events	Method
7	115	18	Board meetings
0	705	126	Civic programs
0	117	3	Demonstrations
0	522	19	Educational workshops
66	34	18	Farm visits
250	145	2	Field days
31	19079	18	Flower and garden shows
0	70	3	Garden tours
415	346	31	Horticulture education
0	1010	2	Media
108	59	185	News articles
806	160	9	Office consultations
80	1819	12	One on one
127	965	72	Other
0	1360	55	Radio
221	47	33	Site visits
4	12	65	TV
14	50	5	Work days
222	473	13	Workshops
3047	27058	689	Total

Outcome Indicators

16,208	Number of participants who improved their home garden or landscape.
23,065	Number of participants who participated in leisure gardening activities.
10,292	Number of participants who report improved satisfaction from leisure gardening activities.

Source of Funds

Smith-Lever 3b and 3c.

Scope of Impact

Dissemination – Arkansas. Available through web, publications, media releases and e-mails.

Scope of Program –
State Specific: All 75 counties in Arkansas.
Multi-state: Arkansas, Oklahoma, Louisiana, Mississippi.
Multi-state Extension: Arkansas, Oklahoma, Louisiana, Mississippi, Florida, Minnesota and Tennessee.

Programs of Excellence (Success Stories)

Home Landscaping Workshop

With the increasing interest of homeowners to be able landscape their own property and save money, the Cleburne County Extension Service and Cleburne County Master Gardeners offered a one-day seminar on Home Landscaping.

"Home Landscaping Seminar"
Participants will have an understanding for designing a landscape as well as how to properly install and maintain plants. Participants will be able to identify common ornamental insects and know how to control them. Participants will also have increased knowledge of plant propagation and how to design a water garden.

The seminar was conducted at the Municipal Building in Heber Springs using PowerPoint presentations, hands-on demonstrations and tours of local Master Gardener projects to present the information. The program was advertised in Cleburne, Stone and Van Buren counties. Fifty-three participants attended the seminar, all from Cleburne County.

Participants are able to design their own landscape and be able to choose which plants are best suited for each area. Participants are able to properly install the plants as well as how to maintain them properly. Participants are also able to properly identify common insects and how to control them.

As a result of the program, residents of Cleburne County have an increased knowledge of horticulture skills and are able to practice the skills in there own landscape, which in turn is saving them money because they are now able to properly care for the landscape instead of hiring professionals.

CES Section Contact Person – Kenny Simon, 501-362-2524, ksimon@uaex.edu.

Horticulture Brown Bag Lecture Series

Oftentimes the summer months are too hot to encourage real gardening outside. So an effort was made to target individuals in the Beebe area during the month of August to encourage horticulture interests to be cultivated. Many times meetings and workshops are held in Searcy, and it was decided to change the normal location for an event to better target the residents at the south end of the county.

The Brown Bag Lecture Series was designed for the working person to come to a horticulture seminar over their lunch hour. Participants were encouraged to bring their own lunch; however, light snacks, fruit and drinks were provided.

The event was held at the ASU-Beebe farm. For three consecutive Wednesdays, participants enjoyed a variety of topics. Janet Carson spoke on "Making Summer Color Last," Jerry Sites, ASU Horticulture professor, demonstrated air layering a rubber plant and Sherri Wesson discussed "Companion Planting in a Vegetable Garden."

Forty-seven individuals from eleven different towns attended the event.

Based on the evaluations, many participants enjoyed the hands-on demonstration and the comfortable atmosphere of the room. Many people returned their evaluations with many positive comments included. Several people indicated that they would like for this to turn into an annual event.

Plans are to develop this into a yearly program and many ideas were given for horticulture topics in the future.

CES Section Contact Person – Sherri Wesson, 501-268-5394, swesson@uaex.edu.

"Developing a Green Thumb in the Ozarks" Gardening Seminar

Baxter County is a retirement area, and many people move here who haven't gardened in this area before. To help these people, an annual garden seminar is conducted. Entitled "Developing a Green Thumb in the Ozarks," the seminar's purpose is to assist gardeners to improve their gardening knowledge in the Ozarks. It is held in Mountain Home.

Baxter County; 140 attended plus 55 Master Gardeners.

The attendees improved their gardening knowledge.

Attendees are better gardeners and are also more aware of the Cooperative Extension Service and the Master Gardener program.

CES Section Contact Person – Mark Keaton, 870-425-2335, mkeaton@uaex.edu

Goal 2 – A safe and secure food and fiber system.

While the American food supply is among the safest in the world, each year millions of people are stricken by illness caused by the food they eat. After eating contaminated food, people can develop anything from a short, mild illness, often mistakenly referred to as "food poisoning," to life-threatening disease. CDC estimates that 76 million Americans get sick, more than 325,000 are hospitalized and 5,000 people die from foodborne illnesses each year.

Arkansas agricultural producers play a key role in supplying food for the state, nation and world. The largest segment of livestock produced in the state is poultry and eggs, contributing over $5.3 billion to the economy. Cattle and hog production are the most widespread segments of livestock enterprise and contribute $850 million. Field crop production is also a vital contributor to the state's economy, with Arkansas being the leading rice-producing state. The total impact of agriculture on the gross state product is over $15 billion and accounts for 19 percent of the state's total payroll. A single disease outbreak could drastically affect our ability to keep our animals and plants healthy. Furthermore, an outbreak, even on a very limited scale, could undermine consumer confidence in the food supply, leading to economic disaster for agricultural producers and the state's economy.

Livestock and crops produced in the state are stored, handled and further processed in state, and a significant portion are shipped out of state for storage and/or further utilization. Livestock auctions, grain elevators and mills, feed lots and the trucking industry are allied industries associated with the storage, handling and movement of crops and livestock. In addition, some on-farm storage and handling of livestock and crops occurs, and the industries involved in further processing of crops and livestock in state also have some degree of local on-site storage and handling methods.

Food processing plays an integral role in the Arkansas economy, but incidents of foodborne diseases pose a major threat to food processors and the general public. Food processing companies share a cost burden for food safety because of market loss due to sales of contaminated products, lawsuits by consumers and government regulations. The future prosperity of the Arkansas food processing industry is contingent on delivering a safe and secure food supply.

As the dollar amount spent by Arkansas consumers on food eaten away from home has increased, so too has the extent to which restaurants and other food service establishments impact the health and well-being of our residents. The restaurant industry's share of the food dollar is currently 47 percent and is estimated to rise to 53 percent by 2010. In 2005, restaurants provided more than 70 billion meal and snack occasions nationwide. The impact of foodborne diseases on health in the United States is considerable. According to the CDC, the percentage of people in industrialized countries suffering from foodborne diseases each year has been reported to be as high as 30 percent.

Emerging pathogens and hazards in the food chain, a growing awareness and threat of bioterrorism, and food contamination as a result of increased utilization of imported foods are public concerns that are being addressed by the University of Arkansas Division of Agriculture - Extension through continued research and consumer education.

To ensure that the food supply is safe and secure for Arkansans, research and education are critical at each step of the food chain from the farm to the table. Specifically, educational efforts have been focused in four areas: production, post-harvest storage and handling, processing and consumption.

Arkansas' Cooperative Extension faculty and staff work to ensure and support an adequate and safe food and fiber supply through implementation of science-based detection, surveillance, prevention and education. Outreach

educational programs are tailored to benefit all economic and education levels throughout the state. Utilization of the Internet and other broad scale broadcasting techniques has assisted with increasing contacts.

Total FTEs
3.96

Total Budgetary Amount
$272,433.13

KEY THEME: FOOD SAFETY

Program Response: Food Safety Education Programs/ServSafe

Contact: Dr. Russ Kennedy, Health and Aging Specialist, 501-671-2295, Family and Consumer Sciences, rkennedy@uaex.edu

Situation

The reported incidence of foodborne illness from pathogenic bacteria is increasing. Centers for Disease Control estimates foodborne pathogenic bacteria cause 76 million illnesses, 325,000 hospitalizations and 5,200 deaths in the United States each year. Known pathogens account for an estimated 14 million illnesses, 60,000 hospitalizations and 1,800 deaths annually. Changing patterns of consumption, an aging population, more variation in food handling and preparation practices are contributing to increased vulnerability of the population to foodborne disease. A key to reversing the trend of increased disease is education for consumers and food handlers throughout the food production and marketing system.

Stakeholder Input

County faculty identify and build linkages with other organizations in an effort to plan and deliver educational programs. Input on programming is also received from the County Extension Councils.

Overview

Programming in food safety education is focused on at-risk individuals such as pregnant women, parents of infants, older adults, limited resource youth and adults, home food preservers/preparers and commercial food handlers. ServSafe provides food handlers with the knowledge every food server must know to keep food safe for consumers in an establishment/restaurant.

Extension Program Results and Accomplishments

Output Indicators

724	Number of consumers participating in educational short courses or meetings related to sanitation and safety in food handling.
18,485	Number of people reached through food safety awareness programs, demonstrations or displays.
59	Number of media articles produced on food safety issues.
1,527	Number of participants in educational programs leading to certification for food handlers (i.e., ServSafe programs and Better Process schools).
16	Number of noncertified programs for food handlers.
11	Number of growers, producers, distributors or retailers attending food safety educational programs.

Outcome Indicators

1,596	Number of consumers who report improved sanitation in food handling.
1,320	Number of food handlers certified.
80	Number of food service managers who report improved food handling practices within a commercial establishment.
80	Number of growers, producers, distributors or retailers implementing one or more practices to minimize food safety hazards.

Source of Funds

Smith-Lever and cost recovery fees collected for ServSafe.

Scope of Impact

Dissemination – Program available statewide. Food safety information is available on University of Arkansas Extension Service web site: www.uaex.edu.

Scope of Program – Counties conducting Food Safety Education/ServSafe programs in 2006 included Benton, Boone, Carroll, Columbia, Conway, Crawford, Faulkner, Garland, Greene, Hempstead, Independence, Izard, Jackson, Johnson, Lafayette, Lawrence, Little River, Lonoke, Mississippi, Nevada, Polk, Pope, Pulaski, Sebastian, Union, Washington and White. Additional food safety programs are likewise conducted statewide.

Programs of Excellence

ServSafe Training

Success Story – Food managers and employees need food safety training and certification to operate their food establishments. ServSafe has provided the required training for the managers and employees. ServSafe training

trains managers and employees how to receive, store, prepare and serve food safely. ServSafe classes were held twice in Walnut Ridge and once in Paragould.

The ServSafe cluster involves Randolph, Clay, Lawrence, Craighead, Greene, Craighead and Poinsett counties.

201 Participated in this class.
175 Food managers and employees received their ServSafe certification. Employees are required by most establishments to pass the ServSafe exam to retain their employment.
175 Have received their certification and retained their employment.

ServSafe Training

Success Story – ServSafe training had not been offered in this area in four years. Food service managers began calling the Extension office to find out when classes would again be offered. Health Department environmental agents were encouraging all food service establishments to become trained.

ServSafe classes were offered to the three counties (Little River, Sevier and Howard) that were under the supervision of the local sanitarian. The eight-hour training was offered with 35 participants; 34 people passed the exam to become ServSafe certified. Food establishments where these people work will have more emphasis on food safety, thus creating a safer place for people to eat out.

ServSafe Program to Certify Food Service Workers in Safe Food Handling

Success Story – Classes offered in Ashdown for three-county area.

Little River, Howard and Sevier counties had most of the participants. Fifteen were from Little River County. At least one person came from each of these counties: Miller, Hempstead, Lafayette and Nevada.

35 people in the class.
34 people became certified in ServSafe food safety.

Restaurants where the certified employees work will have a healthier environment for food safety.

Food Safety for Seniors

Success Story – Home health aides through the White River Area Agency on Aging need proper food safety training. Seven seminars were held at the WRAAA building on a quick consumer's guide to food safety. Participants are shown examples of food thermometers and told their importance. Area counties are represented at the Batesville seminars.

Fifty home health aides are taught U of A Extension recommendations for food safety in buying, preparing, cooking, storing and serving. The U of A Extension Service is viewed as an expert in food safety information. The aides feel confident in buying and preparing food for their elderly clients.

Number and Names of Counties or Locations Involved

ServSafe – Throughout the country there is an increased need for Food Safety training for persons employed in the food service industry. The goal of the ServSafe program is to educate food service providers on information related to food safety. Three classes were conducted during FY06 with a total of 201 persons participating. Counties involved were Mississippi, Clay, Lawrence, Crittenden, Jackson, Craighead, Randolph, Greene, Newton and White.

Two hundred and one persons have participated in ServSafe during FY06. Of these, 175 persons have passed the course. One hundred seventy-five persons have passed the ServSafe exam and thus been able to maintain their employment. Local Health Department sanitarians have stated that due to participation in the ServSafe course they have seen a marked improvement in food safety practices in the establishments they inspect.

Impact Numbers

ServSafe Is Keeping the Public Safe – With the high number of deaths and hospitalizations from foodborne illnesses throughout the nation, many people are concerned with the safety of their food. Northwest Arkansas is growing at an extremely fast rate with many new restaurant chains moving in and daycares and senior centers opening. Many of the workers in these new establishments need food safety training. This is especially important with the new laws requiring at least one person who is food safety certified to be in the food service establishment during all times of business. ServSafe meets these needs and provides food safety training for many individuals in different situations that require food safety knowledge.

ServSafe is conducted to provide food safety training and certification to those who serve food to the public or are concerned with sanitation. ServSafe is held at the Boone County Extension office or the Boone County Health Department. Dates of the training included October 13, 20 and 27 and March 9, 16, 23 and 30.

Trainings are offered for anyone in Arkansas. Most participants are from Boone, Newton, Marion and Baxter counties, but individuals from other counties have also participated in the trainings. The Cooperative Extension Service and the Health Department of DHHS are involved in conducting the trainings and giving exams.

Including participants from both trainings, a total of 34 individuals were trained, given exams and certified. The most significant difference is that all of the 34 participants in ServSafe are now food safety certified as a result of the training. They usually learn a lot of information they were not previously aware of that can be used in their place of business or work. Also, members of the FCS Committee requested that the Extension Service would continue to provide such training for the reason that the public felt safer eating at food service establishments when they see the ServSafe certificate hanging on the establishment's wall.

KEY THEME: FOOD SECURITY

Program Response: Soybean Rust Management

Contact: Rick Cartwright, Department of Plant Pathology, 501-837-9643, rcartwright@uaex.edu

Situation

During November 2004, Asian soybean rust was discovered in the southern United States, including Arkansas, on late maturing soybean plants. The pathogen was brought here from South America by Hurricane Ivan and since has managed to survive along the Gulf Coast in frost-free zones and move north each year. The disease was limited in 2005 and 2006 by major drought conditions in the south central and southeastern states but remains a major threat to soybean production.

Stakeholder Input

Cooperating soybean county agents, growers, industry personnel, researchers and specialists, and government agency personnel in Arkansas and many other states provided input.

Overview

The Soybean Rust Management Program combines sentinel plot monitoring, spore trap information and education to inform the Arkansas and U.S. soybean industry about the recently introduced exotic disease – Asian soybean rust – and its movement over time. Since the only defense against the disease at present is the use of fungicides, it is imperative to stay in front of disease development and provide maximum early warning to potentially affected soybean production personnel. Sentinel plots are established in cooperation with the Extension soybean specialist and monitored by first detectors – mostly trained county agents in 20 or more selected counties scattered across the soybean growing region of the state. Spore traps are installed in 11 locations and monitored by cooperators, with results provided by University of Arkansas Department of Plant Pathology researchers. Numerous presentations, training sessions, publications and newsletters were used to inform and educate first detectors, growers and others regarding this new threat.

Extension Program Results and Accomplishments

Output Indicators

- 16 seasonal electronic newsletter alerts.
- 21 soybean sentinel plots.
- 10 kudzu sentinel plots.
- 11 spore traps monitored.
- Weekly data entry to www.sbrusa.net, national soybean rust warning map.
- 31 presentations to growers and industry.
- 7 workshops.
- More than 2000 fungicide test plots.
- 1 multistate first detector field training session.

Outcome Indicators

- Growers and industry remain on high alert as a result of this program.
- Numerous questions and calls suggest the high visibility of program efforts.
- Growers have avoided blanket fungicide applications, sometimes advocated by industry, based on the results of the sentinel program – saving $35 per acre the past two years.

- First detectors have demonstrated much higher plant pathology knowledge as a result of training on soybean rust, and have provided excellent feedback on future training needs.

Source of Funds

Arkansas Soybean Promotion Board; State of Arkansas Special Appropriation; USDA CSREES SPDN Funding; USDA CSREES and USB Sentinel Plot Funding; Company Gifts; Smith Lever.

Scope of Impact

Dissemination – This program is open to all soybean farmers and other clientele in Arkansas and supports similar programs in other soybean states. Educational materials have included the Soybean Rust Fact Sheet; numerous articles in the *Soy Notes* electronic newsletter, www.sbrusa.net, the Soybean Rust web page on the Extension website; the annual report to the Arkansas Soybean Board.

Scope of Program

1) State Specific – soybean counties.
2) Multistate – Arkansas, Louisiana, Mississippi, Texas, Alabama, Georgia, Florida, South Carolina, North Carolina, Tennessee and Virginia.
3) Multistate Research – Arkansas, Louisiana, Mississippi, Texas, Alabama, Georgia, Florida, South Carolina, North Carolina, Tennessee and Virginia.
4) Integrated Research and Extension – Arkansas, Louisiana, Mississippi, Texas, Alabama, Georgia, Florida, South Carolina, North Carolina, Tennessee and Virginia.
5) Multistate Integrated Research and Extension – Arkansas, Louisiana, Mississippi, Texas, Alabama, Georgia, Florida, South Carolina, North Carolina, Tennessee and Virginia.

KEY THEME: HACCP

Program Response: HACCP and Sanitation Training for the Poultry Industry

Contact: Dr. John Marcy, Extension Poultry Food Scientist, Poultry Science Section, 479-575-2211, jmarcy@uark

Situation

Poultry companies have always been interested in the safety of the food they produce. However, in 1998 federal law mandated that every poultry plant have and follow a HACCP plan. This regulation created tremendous educational needs within the industry due to high employee turnover in poultry plants.

Stakeholder Input

Federal regulations created tremendous incentive for training, and little input was needed. Nonetheless, an informal survey of processing personnel confirmed the need for employee training. In addition, the HACCP roundtable was formed, which provides continuing guidance.

Overview

A 2.5-day intensive workshop that provided processing personnel with an in-depth understanding of HACCP as well as hands-on experience in developing HACCP plans was developed. Specialists also visited plants having difficulty implementing HACCP plans.

Extension Program Results and Accomplishments

Output Indicators

5 HACCP or sanitation workshops.

29 Plant HACCP implementation visits.

193 Workshop participants learned HACCP principles.

Outcome Indicators

5 Poultry processing plants improved their HACCP plans.

Source of Funds

Smith-Lever and workshop registration fees.

Scope of Impact

Dissemination – This program is available to any poultry processor in need of it.

Scope of Program – Multi-state Extension: Arkansas, Indiana, Virginia.

Goal 3 – A healthy, well-nourished population.

According to the U.S. Department of Health and Human Services, unhealthy eating habits, coupled with physical inactivity, are now the nation's second leading cause of death. Lifestyle factors, such as high-fat diets and physical inactivity, increase the risk of chronic diseases such as heart disease, stroke, certain cancers and diabetes.

Risk factors for Arkansans include:

- Four of the 10 leading causes of death in Arkansas are related to diet (heart disease, cancer, stroke and diabetes).
- Cardiovascular disease is the leading cause of death in Arkansas.
- High blood pressure affects more than one-third of adult Arkansans.
- The adult diabetes rate in Arkansas is 8.1 percent – one of the highest in the U.S.
- Arkansas has one of the highest obesity rates in the U.S. with 65 percent of adults being either overweight or obese.
- Childhood obesity in Arkansas has reached epidemic proportions, where 27 percent of children 0-5 years are at risk for becoming overweight or are overweight. Among school-age children in grades K-12, 37 percent are at risk for becoming overweight or are overweight.
- Annual medical expenditures related to obesity in Arkansas are $663 million. More than half of these dollars come from state and federal government sources.
- Nearly eight out of 10 Arkansans report they are not consuming the recommended five servings of fruits and vegetables a day.
- More than half of adult Arkansans do not get the recommended amount of physical activity.

The U.S. Department of Agriculture, Economic Research Service report using data averages for 2003-2005 revealed that 14.7 percent of all Arkansas households were food insecure. Thousands of Arkansans are at risk of being hungry and malnourished because of the poverty level in the state. Women who are food insecure are at higher risk for obesity-related chronic disease.

The Arkansas Department of Health and Human Services (DHHS) reports that in SFY 2006, 558,586 persons in 193,113 Arkansas households participated in the Food Stamp Program at a cost of $417,256,630. Among Arkansans receiving food stamps, 47 percent were children and 5 percent were 65 years of age or older.

Through research and consumer education on nutrition, the preparation and selection of more nutritious foods, healthy life style choices and food resource management, Cooperative Extension faculty and staff enable Arkansans to improve their overall health and well-being. Programs target low-income families and their children, food stamp recipients, minority audiences and clientele with specific health concerns, including diabetes and hypertension. Programs are primarily delivered through the Expanded Food and Nutrition Education Program (EFNEP), Food Stamp Nutrition Education (FSNE), Eating and Moving for Life (a minority health initiative), Reshape Yourself (a weight reduction and physical activity program), Walk Across Arkansas (a physical activity program) and the BodyWalk (a program targeting youth and overall healthy lifestyles).

All 75 county Extension programs include some type of programming in health and nutrition education.

Total FTEs
68.09

Total Budgetary Amount
$2,948,513.12

KEY THEME: HUMAN HEALTH

Program Response: Reducing Risks for Chronic Disease – Physical Activity

Contact: Dr. Russ Kennedy, Family and Consumer Sciences, (501) 671-2295, rkennedy@uaex.edu

Situation

Regular physical activity substantially reduces the risk of dying of coronary heart disease, the nation's leading cause of death, and decreases the risk for stroke, colon cancer, diabetes and high blood pressure. It also helps to control weight, contributes to healthy bones, muscles and joints, reduces falls among older adults, helps to relieve the pain of arthritis, reduces symptoms of anxiety and depression and is associated with fewer hospitalizations, physician visits and medications. Despite the proven benefits of physical activity, more than 50 percent of American adults do not get enough physical activity to provide health benefits. Almost 36 percent of Arkansans do not engage in any physical activity. Arkansas ranks sixth in the percentage of adults who do not participate in any physical activity (the national average is 28 percent).

Stakeholder Input

County Extension Councils identify specific health issues and programs that should be emphasized in each of their respective counties. The district administrative staff and agents likewise provide consumer feedback to specialists regarding human health and needs for long-range educational programming.

Overview

Walk Across Arkansas is a team-based walking program that persuades and motivates people of all ages to increase their level of physical activity through regular walking. It is inexpensive, safe and all that is necessary is a desire to get moving.

The Strong Women Program is an evidence-based strength training program developed by the staff of the Hancock Center at the Friedman School.

Extension Program Results and Accomplishments

Output Indicators

611	Number of educational programs offered that relate to physical activity.
7,480	Number of participants attending educational programs related to physical activity.
21,462	Number of people reached through awareness programs, exhibits and media outlets based on topics related to physical activity.
58	Number of educational resources prepared related to physical activity.
1,656	Youth participated in Kids Walk Across Arkansas.
2,926	Number of people who participated in the Walk Across Arkansas walking program.
187,264	Number of miles walked by Extension program participants.

Outcome Indicators

1,728	Number of participants who increased walking activities from less that three times per week to three or more times per week as a result of completing an Extension program.
415	Number of participants who increased aerobic exercise activities from less than three times per week to three or more times per week as a result of completing an Extension program.
1,016	Number of participants who increased strength training activities from less than three times per week to three or more times per week as a result of completing an Extension program.
821	Number of participants who reported they now get 30 minutes of moderate physical exercise activity on most days as a result of completing an Extension program.
656	Number of participants who reported an increase in personal exercise as a result of completing an Extension program.

Source of Funds

Smith-Lever funds.

Scope of Impact

Dissemination: The Walk Across Arkansas and Strong Women programs are available to all counties. Information regarding the programs has been disseminated through direct mailing and web available materials to counties. Program information includes recruitment techniques, sample news releases, fact sheets and sample committee agendas. Program information is also available on the University of Arkansas Cooperative Extension Service web site at www.uaex.edu.

Scope of Program: Approximately 67 counties have indicated interest in implementing these programs during FY06. Counties conducting health programs in FY05: Arkansas, Ashley, Baxter, Boone, Benton, Bradley,

Calhoun, Carroll, Clark, Clay, Cleburne, Cleveland, Columbia, Conway, Craighead, Crawford, Cross, Drew, Franklin, Fulton, Garland, Grant, Greene, Hot Springs, Howard, Jackson, Jefferson, Johnson, Lafayette, Lawrence, Lincoln, Little River, Logan, Madison, Montgomery, Mississippi, Ouachita, Perry, Pike, Poinsett, Polk, Pulaski, Randolph, Scott, Searcy, Sebastian, Sevier, Stone, Van Buren, White, Woodruff and Yell.

Programs of Excellence

Strong Women and
Walk Across Arkansas

Strong Women

Success Story – Starting in their mid-forties, women lose one-fourth to one-third pound of muscle per year and gain that much – or more – in fat. Approximately 10 million Americans have osteoporosis, 80 percent of whom are women. One in two women will experience an osteporosis-related fracture.

The White County Strong Women program, based on years of research conducted by scientists at the John Hancock Center for Physical Activity and Nutrition at the Friedman School of Nutrition Science and Policy at Tufts University, is designed to improve bone density, balance and flexibility.

Because of participant interest, the program was extended to 12 weeks. The group started with the Strong Bones program and decided to go with Stay Young for the next session. Participants enjoyed the program so much that they led their own group during the two-week period between the end of Strong Bones and the beginning of Stay Young!

Residents of several towns in the county and one in another county are involved in the program. The class has about ten regular members with more joining at almost every meeting.

All of the participants learned proper strength training techniques and used them at each session. Comments:
- "I really can lift 5-pound weights!"
- "I can tell the difference when I bring my groceries in."
- "Look – see! I have muscles. And I can stand on one foot!"
- "I really am stronger than I thought."

As a result of the program, participants are stronger and increasing their strength. They are sharing their stories with friends and encouraging them to join. This program has been come a positive means of exercising in the community for a group of people who did not necessarily use the services of the Cooperative Extension Service. It is their promotion and belief in the program that causes it to continue on and helps support other Extension programming.

Youth Become More Active with "Walk Across Arkansas"

Success Story – Informal surveys showed that many elementary students are "couch potatoes" or "mouse potatoes." This indicates that they spend most of their time watching television and playing computer games. In an effort to increase physical activity in a fun and challenging way, "Kids Walk Across Arkansas" was conducted in Scranton and Paris elementary schools.

In Scranton, the program ran for eight weeks. Students were rewarded with toe tokens for each week they participated and were given double rewards if their parents joined them walking. Students walked during recess, physical education class, after lunch, and also in the evenings. The students planned a route around Arkansas that totaled 1,119 miles and were challenged to walk the distance. On Monday, miles were tallied and marked on a

state map. Classes competed to see who could walk the most miles each week. The winning class displayed a pair of traveling shoes on their classroom door for the week.

In Paris, students walked for a month in their physical education classes and lunch recess. Weekly totals were marked on a state map.

Since the early 1970s the rate of overweight or obese children between the ages of 6-19 has quadrupled from 4 percent to 16 percent. Type II diabetes, typically acquired in adulthood, now appears in children as young as 10 years old. Children today are at a much higher risk of developing other chronic conditions, such as heart disease, than previous generations. According to the Centers for Disease Control, 60 minutes of moderate or vigorous physical activity most days of the week will greatly reduce children's risk of obesity, diabetes and other chronic conditions. Children who are regularly active at these levels have higher self-esteem, reduced stress, are less likely to smoke or do drugs and have significantly higher academic achievement than those who are inactive. The elementary-age years are a critical time in the development of people's lifelong physical activity habits. Unfortunately, by elementary school as many as one in three children are not participating in the appropriate amount or type of physical activity. A typical child spends four hours a day watching television, playing video games or using a computer. Regular physical education classes are becoming shorter in duration and less frequent, and many schools have eliminated recess. All of these factors have created an environment that is not supportive or accommodating for children to participate in regular physical activity.

- Scranton Elementary School, Scranton, Arkansas, Logan County – 202 elementary students and 15 teachers/staff.
- Paris Elementary School, Paris Arkansas, Logan County – 411 elementary students and 39 faculty/staff.
- Total miles walked – 7,456; average per person – 4.61 weekly.
- Students and faculty are more aware of the importance of physical activity.
- Scranton students response to a verbal survey indicate that the majority are getting at least 60 minutes of physical activity.

Number and Names of Counties or Locations Involved – Approximately 67 counties have indicated interest in implementing these programs during FY06. Counties conducting health programs in FY05: Arkansas, Ashley, Baxter, Boone, Benton, Bradley, Calhoun, Carroll, Clark, Clay, Cleburne, Cleveland, Columbia, Conway, Craighead, Crawford, Cross, Drew, Franklin, Fulton, Garland, Grant, Greene, Hot Springs, Howard, Jackson, Jefferson, Johnson, Lafayette, Lawrence, Lincoln, Little River, Logan, Madison, Montgomery, Mississippi, Ouachita, Perry, Pike, Poinsett, Polk, Pulaski, Randolph, Scott, Searcy, Sebastian, Sevier, Stone, Van Buren, White, Woodruff and Yell.

CES Section Contact Person – Candace Carrié, staff chair, 870-231-1160, ccarrier@uaex.edu; Lisa Gilmore FCS agent, 501-623-6841, lgilmore@uaex.edu; Martha May, staff chair, 870-886-3741, mmay@uaex.edu.

KEY THEME:
HUMAN NUTRITION

Program Response:
Delta HOPE (Healthy Options for People Through Extension)

Contact: Rosemary Rodibaugh, Professor - Nutrition Specialist, FCS, 501-671-2111, rrodibaugh@uaex.edu

Situation

Childhood obesity in Arkansas has reached epidemic proportions, where 27 percent of children 0-5 years are at risk for becoming overweight or overweight. One third of kindergarteners are overweight or at risk. The obesity rate increases to middle school years where approximately 42 percent of children are in the overweight or at risk categories. Among high school students, 36 percent of males and 33 percent of females are in one of the two high risk categories.

Stakeholder Input

County Extension Councils identify specific nutrition issues and programs that should be emphasized in each of their respective counties. The district administrative staff and agents likewise provide consumer feedback to specialists regarding nutrition issues and needs for long-range educational programming. Teachers and child care providers are surveyed to determine nutrition education needs of children with whom they work. Other input that helps shape our program comes from local and statewide coalitions, councils and committees addressing chronic health issues including the Hometown Health Coalitions, Cardiovascular Health Program, Child Health Advisory Committee, Arkansas Nutrition Advocacy Council, and Arkansas Action for Healthy Kids.

Overview

The Delta H.O.P.E (Healthy Options for People through Extension) is a multi-state school-based intervention. The purpose of the project is to reduce the prevalence of overweight among children in participating schools by teaching good nutrition practices and promoting physical activity. Teachers are trained to use the curricular materials and are asked to fit them into their usual classroom routine. The program integrates physical activity and nutrition education into core subject areas. The project expanded to four additional counties in FY06.

Extension Program Results and Accomplishments

Output Indicators

12 elementary schools in 7 counties participated.

127 teachers were trained to deliver the program.

2,068 students were reached with nutrition education programs.

75% of teachers implemented TAKE 10! three or more times a week.

69% of teachers said it was possible to implement TAKE 10! once per day.

79% of teachers said they would continue to implement the program the next semester.

68% of teachers said they would recommend the program to other teachers.

70% of teachers said their students have a better understanding of health after completing the program.

Outcome Indicators

Participating students accumulated an additional 11.7 hours of physical activity during the school year compared to non-participating students.

Source of Funds

Smith-Lever, Kellogg Foundation grant.

Scope of Impact

Dissemination – Because of the Kellogg Foundation's focus on the Delta, this program was limited to schools in the Mississippi River Delta counties. Specific counties were recruited. Materials were purchased from International Life Sciences Institute Center for Health Promotion and Wellness Incorporated and provided directly by the funding source. No Extension publications were produced.

Scope of Program –
State Specific: 7 counties – Ashley, Drew, Woodruff, Desha, Monroe, Phillips and Lafayette.
Multi-state Extension: Arkansas, Louisiana and Mississippi.

Programs of Excellence

Delta HOPE Healthy Portions for People Through Extension

Success Story – Delta HOPE

Healthy eating habits play a large role in the promotion of health, while poor eating habits are directly associated with the development of obesity, high blood pressure, type 2 diabetes and other health-related illnesses. School-based nutrition education has the potential to positively affect the nutritional health and dietary behaviors of children and their families and is included as an important element in comprehensive school health.

Extension collaborated with local schools where 50 percent or more of the student enrollment receive free or reduced-price lunches. A variety of school-based nutrition education interventions were conducted in Lafayette County.

Lafayette County Westside and Lafayette County Eastside elementary schools participated in the FSNE youth program. Educators taught K through fourth graders a series of 30-minute nutrition lessons about making healthy food choices, increasing their physical activity and practicing good food safety habits such as hand washing. Questions were given to students in Lafayette County Westside Elementary testing nutrition knowledge and dietary behavior before and after the program year. Six of nine classes (69 of 92 students) returned both pre and post results. Results indicated nutrition knowledge and dietary behaviors increased 24 percent by the end of the school year.

Lafayette County Westside Elementary School also participated in a FSNE Parent Survey. Ninety-five surveys were sent to parents of Lafayette County Westside Elementary students. Fifty parents responded to the survey. Of the 50 parents who responded, 42 reported that their child asked for more/different fruits, vegetables, milk or yogurt; 40 had talked about healthy food or snacks; 33 talked about being more active. Thirty-one (62 percent of responding parents) reported that their family had made eating/activity changes because of what the child had learned in the FSNE program. Parent comments from the survey included:

"He is eating more vegetables and fruit."
"Thanks to our daughter, we have started eating more healthy food, and we take walks in the evening."
"I give more fruit and milk as snacks."
"She now eats three balanced meals and a snack instead of junk food. This is a result of the program and health problems in our family."

The findings from this survey of parents of elementary school children support nutrition education in schools as a way of reversing and preventing the rise of obesity.

Extension's FSNE program has been a central part of promoting nutrition and physical activity in schools for the past three years. In a recent report (August 2006) by the Arkansas Center for Health Improvement (ACHI), the report stated that "analysis of the third consecutive year of statewide BMI assessments of public school students reveals that the progression of the childhood obesity epidemic has been halted. Although obesity among children and adolescents remains a major public health threat, it's clear that Arkansas' efforts are yielding positive results for the state's children and families. Collaborative efforts, such as FSNE, have contributed to this meaningful difference in the improvement of the health of our children and families.

CES Section Contact Person – Terrie Treadway, 870-921-4744, ttreadway@uaex.edu.

TAKE 10!

Success Story – TAKE 10! was offered to increase the amount of physical activity in the schools.

Five elementary school teachers participated in the program. Students from Fountain Hill School participated in TAKE 10!

Teachers reached 71 youth grades K-6 with the TAKE 10! program, two to three times per week. They also learned about healthy eating practices and, as a result, reported eating more fruits and vegetables, more low-fat dairy products and drinking more water.

Students are aware of what their bodies need to be healthy and have increased the amount of time they are involved in physical activity. An additional 104 hours were spent on physical activity.

CES Section Contact Person – Iris Phifer, 870-853-2080, iphifer@uaex.edu.

Program Response:
Expanded Food and Nutrition Education Program

Contact: Easter H.Tucker, Associate Professor-Family and Consumer Sciences, 501-671-2099, etucker@uaex.edu

Situation

Arkansas is a poor state. The Census Bureau shows Arkansas as one of the poorest states in the nation, with 18 percent of the state's population living in poverty. Low educational attainment levels and poor access to public services exacerbate the problems brought on by poverty.

Too many families in Arkansas are food insecure and lack the ability to access nutritionally adequate and safe food. In a recent report by the U.S. Department of Agriculture, Arkansas is the fifth worst state in the country in the level of food insecurity (14.7 percent of all Arkansas households were food insecure). When food and nutrients needed to sustain physical and mental well-being are chronically inadequate, hunger leads to high medical, educational, psychological, economic and social costs.

Stakeholder Input

County Extension agents identify and build linkages with community agencies and organizations that provide services and other assistance to limited-resource persons. These collaborations help the county staff to determine educational needs of low-income families in their county and to develop, implement and evaluate educational programs. The partnerships enhance nutrition programs in a number of ways including, but not limited to, serving on the county program advisory committee; referring families to the program and assisting in the recruitment of participants; providing space and meeting sites for lessons; providing meals, snacks or food supplies; donating incentives and other supplies for programs.

County Extension agents establish and conduct meetings of county advisory committees, consisting of representatives from other community agencies and organizations interested in promoting health and nutrition for low-income populations, to identify specific needs of the target audience and to establish strategies for reaching the audience, such as a referral system.

Overview

The mission of the Expanded Food and Nutrition Education Program (EFNEP) is to empower individuals and families with limited resources to maximize their food dollars and food stamp benefits and to provide a nutritious, safe and secure meal environment. The mission is accomplished by providing free, informal and easily accessible educational programs in the home and community.

The EFNEP provides food and nutrition education for limited resource audiences in 16 counties in Arkansas. The programs are free, informal and available at convenient locations and times in the home and community. Program assistants, who are indigenous to the target population, deliver intensive, multi-session nutrition education programs. In general, each participating county uses one or more of the methods listed below to deliver nutrition education:

- One-on-one discussions
- Small group, interactive discussions
- Basic meal planning and food preparation demonstrations
- Hands-on learning experiences (experiential learning)
- Videos

- Newsletters
- Educational displays
- Computer programs, such as diet analysis and other nutrition programs

After assessing clientele needs, each county develops its own plan for reaching the target population. The programs focus on developing knowledge and skills related to nutrition and meal planning; food safety and sanitation; food purchasing, storage and preparation; and food budgeting. Eat Well for Less serves as the core curriculum. Every effort, however, is made to address the needs of the client and to deliver meaningful nutrition education.

Extension Program Results and Accomplishments:

Output Indicators

13,913 Total number of EFNEP program families.

4,192 Families participated in nutrition education programs.

1,861 Youth participated in nutrition education programs.

2,175 Participants completed 12 or more lessons of intensive nutrition education.

Outcome Indicators

2,175 Intensive nutrition education program participants were given pre- and post-evaluation instruments, which evaluated behavior changes over the course of the program. The evaluation results are as follows:

Nutrition (Dietary Quality) Practices

1,410 (95%) Participants showed improvement in at least one or more nutrition practices.

977 (65%) Participants thought about healthy food choices more often when deciding what to feed their families.

835 (56%) Participants prepared foods more often without adding salt.

1,163 (78%) Participants used food labels more often to make healthier food choices.

504 (34%) Participants reported that they and their children ate breakfast more often.

Food Safety Practices

1,132 (75%) Participants showed improvement in one or more of the recommended food safety practices.

399 (26%) Participants more often followed the recommended practices of not allowing meat and dairy foods to sit out for more than two hours.

377 (25%) Participants always follow the above recommended practice.

1,097 (72%) Participants more often followed the recommended practice of not thawing foods at room temperature.

714 (47%) Participants always follow the above recommended practice.

Food Resource Management

1,444 (95%) Participants showed improvements in one or more of the recommended food resource management practices.

1,154 (76%) Participants planned meals in advance more often.

966 (94%) Participants compared prices more often.

807 (53%) Participants ran out of food before the end of the month less often.

1,180 (78%) Participants used a list for grocery shopping more often.

Source of Funds

Smith-Lever Funds

Scope of Impact

Dissemination – The core curriculum and other resources, including handouts written at an appropriate reading level, have been made available to each EFNEP county. All program forms are available on-line as templates. Program is available in 16 counties.

Scope of Program – EFNEP was delivered in the following counties: Benton, Chicot, Craighead, Crittenden, Dallas, Desha, Garland, Hempstead, Jefferson, Lee, Ouachita, Phillips, Pulaski, St. Francis, Union and Washington.

Programs of Excellence

Expanded Food and Nutrition Education (EFNEP)

Success Story –

- "EFNEP has helped me with meal preparation, meal planning in advance, and I shop with a grocery list."
- "My husband was overweight and had high blood pressure. I started using the information from the classes and low fat recipes that the EFNEP program assistant had taught me. My husband went from 260 pounds to 210. Plus the food was wonderful."

Program Response:
Food Stamp Nutrition Education (FSNE)

Contact: Rosemary Rodibaugh, Professor – Nutrition Specialist, 501-671-2111, FCS, rrodibaugh@uaex.edu

Situation

The U.S. Department of Agriculture, Economic Research Service report, using data averages for 2002-2004, revealed that 14.8 percent of all Arkansas households were food insecure. Thousands of Arkansans are at risk of being hungry and malnourished because of the poverty level in the state. The most recent statistical report (SFY2005) on the Arkansas Department of Health and Human Services (DHHS) web site reports that 544,752 persons in Arkansas (approximately 20 percent) participate in the Food Stamp Program. Among Arkansans receiving food stamps, 48 percent are children and 4 percent are 65 years of age or older.

As one of the least healthy states in the country, the Centers for Disease Control and Prevention (CDC) has ranked Arkansas:

- 8th among the 50 states in mortality due to heart disease.
- 1st in stroke mortality.
- 9th in cancer overall.
- 6th in deaths due to lung cancer.

In addition, our unhealthy eating habits contribute to the following statistics.

- Arkansas has seen a 77 percent increase in obesity for 1991-2000.
- Nearly 65 percent of Arkansas adults are at an unhealthy weight, and 37 percent of these are obese.
- 10 percent weight reduction can help overweight adults reduce lifetime medical costs between $2,200 and $5,300.
- 38 percent of school age children are overweight or at risk of being overweight,

A balanced diet is important for everyone. Eating right and staying healthy affects your entire life. Poor eating habits are directly linked to the burden of chronic disease in Arkansas and the increased risk of Arkansans.

Stakeholder Input

The activities that take place in support of the Food Stamp Nutrition Education program are community driven and are generated by each county's assessed issues and needs as they relate to nutrition education. County Family and Consumer Science agents develop their own unique plans that reflect the needs of the target audience. Individual county agents work with advisory committees/coalitions consisting of representatives of local and state agencies that provide assistance to food stamp recipients, school personnel and former and current food stamp participants to assess the needs of the target audience in their respective counties. Committee/coalition members provide direction and support for program implementation and assist in the evaluation of the program. District administrators work with county staff to determine feasibility of implementing a program/project in the county, taking into consideration community support for the program, staff work loads and how the program/project will enhance or weaken other county programs.

Overview

The Food Stamp Nutrition Education (FSNE) program goal is to improve the likelihood that persons eligible for the Food Stamp Program (FSP) will make healthy food choices within a limited budget and choose active lifestyles consistent with the current Dietary Guidelines for Americans and USDA Food Guidance System. The program is delivered in conjunction with state and local partners. All 75 counties in Arkansas participated in Food

Stamp Nutrition Education program during FY 2006: 67 through the University of Arkansas Division of Agriculture Food Stamp Nutrition Education (FSNE) and eight through the Families First Nutrition Education and Wellness System (FF-NEWS) at the University of Arkansas at Pine Bluff.

The focus of FSNE is:

- Health promotion (helping people who have risk factors for diet-related lifestyle).
- Primary prevention of diseases (helping people who have risk factors for diet-related chronic disease prevent or postpone the onset of disease by establishing more active lifestyles and healthier eating habits).

Four core elements further outline the topical areas of FSNE: dietary quality, food resource management/shopping behaviors, food security and food safety. County projects focused on these core elements, with special emphasis on dietary quality. Efforts were directed at increasing the consumption of fruits and vegetables in food stamp-eligible populations and interventions and activities that promote healthy weight through the balance of healthy eating and active living.

The likelihood of nutrition education messages successfully changing behaviors is increased when consistent and repeated messages are delivered through multiple channels. Cross-program coordination and collaboration with community partners working toward a common goal reinforce and amplify each other's efforts. County Family and Consumer Sciences agents work with other Food Nutrition Service (FNS) nutrition programs to consistently deliver behavior-focused nutrition messages. FSNE programs were delivered to eligible adult audiences at the Department of Health and Human Service (DHHS) office or through housing authorities, senior centers, commodity sites, Head Start, parent programs in eligible schools or faith-based organizations. School-age children were taught healthy food, nutrition and physical activity practices in schools where 50 percent or more of the students receive free and reduced-price lunches. Newsletters and handouts were sent home to parents with nutrition messages that reinforced or enhanced lessons taught to the children.

Promotion of participation in the Food Stamp Program to eligible nonparticipating persons was a part of the nutrition education program with adult audiences. Educational displays with a companion handout/newsletter were utilized at the local DHHS offices. The displays were changed monthly and addressed a variety of topics related to dietary quality, food safety and food resource management.

Extension Program Results and Accomplishments

Output Indicators:

FSNE contacts for the year numbered 321,908, with 215,186 being direct contacts and 106,722 indirect contacts through educational displays, newsletters and public events. The total number of individuals reached, unduplicated contacts, was 59,879. An additional 148,366 indirect contacts with food stamp recipients were reached through a one-time mailed brochure. Nutrition education was delivered to food stamp eligibles through various sites including DHHS offices and through six (6) approved waivers where 50 percent or more of the population is at or below 185 percent of poverty. Reported contacts included 4,666 through census tracts; 3,979 via commodity sites; 6,280 via sites with a director's documentation eligibility; 32,624 via DHHS office; 5,032 via Head Start; 262,483 via schools where 50 percent or more of students receive free or reduced-price lunch; and 6,844 via Health Department WIC units.

Food stamp eligible contacts numbered 41,702, an increase of 7.6 percent over last year. Nutrition education was delivered in schools where 50 percent or more of the students are receiving free and reduced-price lunch. Most schools have a much higher percentage than 50 percent. Therefore, the number of food stamp eligible contacts reported is underestimated as stated. Assuming half of all the student contacts are food stamp eligible and not

including the brochure mailed to food stamp recipients, then a conservative estimate of the actual number of contacts with food stamp eligibles would be approximately 173,000 contacts.

Of the sixty-seven (67) UACES FSNE counties, all targeted food stamp eligibles through local DHHS offices. Twelve (12) counties had direct contact with food stamp recipients by conducting one to five or more lessons and/or food demonstrations in the DHHS office or other locations where only food stamp participants were reached. These lessons resulted in 602 direct contacts. All counties provided either monthly or quarterly educational displays with accompanying newsletter displayed in the DHHS lobby and/or distributed or mailed the newsletters, with contacts numbering 32,022. In addition, 148,366 contacts were made with all food stamp recipients in the state via a brochure promoting eating five or more fruits and vegetables every day and providing several nutritious, economical recipes. The brochure was included in a statewide mailing by DHHS to food stamp recipients. There were 4,268 reported unduplicated contacts with food stamp recipients excluding the contacts from the brochure. Key messages included eat more calcium-rich foods, eat five fruits or vegetables daily, be more active, lower fat, increase fiber, serving size, portion control, healthy snacks, drink more water, healthy meals in minutes, label reading and food safety practices.

Twelve (12) counties delivered nutrition education to food stamp eligibles or likely eligibles in twenty-four (24) sites in census tracts where 50 percent or more of the residences are at or below 185 percent of poverty. Programs were conducted in three (3) adult education/training sites, eight (8) elderly service sites such as senior citizens centers, four (4) public/community health centers, five (5) housing authorities, two (2) churches, one (1) homeless shelter and one (1) school. The total number of participants reached was 2,156 unduplicated contacts. Direct contacts (1,514) were made with eligible adults using a variety of curricula. Messages focused on using food labels as a tool for making food choices, being physically active to stay healthy and maintain healthy weight and using the MyPyramid when making food choices and determining how much to eat daily. Indirect contacts (3,152) were made via educational displays and newsletters using the Right Bite! table top educational displays and accompanying newsletter (University of Arkansas Extension) with topics related to dietary quality, physical activity and food safety.

Thirteen (13) counties reached food stamp eligibles and likely eligibles at commodity distribution sites where recipients of food meet income criteria. Eight (8) of these counties conducted food demonstrations and provided nutritious recipes using the types of foods distributed to participants. This resulted in 1,047 direct contacts. All thirteen (13) counties provided participants with information on preparation of healthy meals, recipes featuring healthy food choices, food safety information and tips on how to stretch food dollars. Indirect contacts using educational displays and/or newsletters resulted in an additional 2,932 contacts. The total number of participants reached was 2,355 unduplicated contacts.

Twenty-six (26) counties reached food stamp eligibles and likely eligibles at forty-two (42) sites where 50 percent or more of the participants are at or below 185 percent of poverty. These sites included two (2) community sites, twenty-five (25) elderly service sites such as senior citizen centers, five (5) emergency food assistance sites, one (1) health care site, six (6) housing authorities and three (3) youth education sites. Family and Consumer Sciences agents conducted 2 to 12 lessons at each site. Lessons resulted in 3,525 direct contacts. An additional 2,606 contacts were made via educational displays and/or newsletters. The total number of participants reached was 1,457 unduplicated contacts.

Twenty-six (26) counties reached food stamp eligibles or likely eligibles at Head Start centers. Nineteen (19) counties conducted parent sessions at thirty-nine (39) Head Start centers, one (1) county conducted a parent session for an eligible HIPPY program and fourteen of those counties also conducted nutrition education for the Head Start pre-school students, resulting in 1,675 direct contacts. Adults and youth received one to five lessons with messages for adults addressing eating a variety of fruits and vegetables, lowering fat, increasing fiber, serving size, portion control, reading labels, meal planning and stretching the food dollar. Youth messages focused on identifying and choosing healthy foods from the food groups and hand washing. Parent newsletters

and educational displays related to nutrition lessons and food safety issues were utilized, resulting in 3,357 indirect contacts.

Forty-five (45) counties provided nutrition education to students in one hundred thirty-three (133) schools with the majority of contacts in grades K-6. Some counties trained high school FCS students to deliver nutrition lessons to elementary students. Fourteen (14) counties provided training for teachers and other staff such as counselors and nurses from these schools to teach nutrition and food safety curricula provided through the FSNE program. A total of 8,523 hours of third party in-kind match was provided by 1,346 school faculty members. These hours were valued at $219,046. Value was determined by using average hourly salary rates provided by principals and/or superintendents. Lessons ranged from a single session to five or more sessions. The 9,928 lessons resulted in 205,430 direct contacts with students. An additional 56,027 indirect contacts were made with parents via newsletters and other nutrition information sent home with students and through educational displays/newsletters provided to parents at school activities. A variety of age-appropriate curricula was utilized from an approved list of nutrition education materials. Messages to students focused on healthy eating and physical activity, hand washing and eating five fruits and vegetables a day. Messages for adults also focused on lowering fat, serving size, portion control, label reading and food safety.

Twenty-six (26) counties conducted nutrition education at Health units for Women, Infant and Children (WIC) clients. Ten (10) counties conducted one to four educational classes and/or food demonstrations focusing on eating five fruits and vegetables daily, lowing fat, increasing fiber, serving size, portion control, reading labels, food safety, meal planning and stretching the food dollar. Twenty-two (22) counties provided the Right Bite! table top displays and accompanying newsletter either monthly or quarterly for display in the County Health Unit-WIC lobby. One county worked with the WIC nutritionist to provide a monthly newsletter to WIC clients. Direct contacts with WIC clients numbered 218. Indirect contacts via educational displays and/or newsletters resulted in 6,626 contacts. There were 610 total unduplicated contacts with WIC clients through 246 events.

Outcome Indicators

OUTCOMES related to FSNE Objectives: Assist food stamp recipients or applicants to gain knowledge and/or adopt eating lifestyle behaviors consistent with the Dietary Guidelines for Americans and the My Pyramid (Dietary Quality/Physical Activity).

Short-Term Outcomes:

83% (10,018) Participants who **increased knowledge** of healthy food/nutrition practices.

73% (8,869) Participants who **indicated intent to adopt** one or more healthy food/nutrition practices.

79% (6,378) Participants who **increased their knowledge** about physical activity and/or its benefits.

76% (5,687) Participants who **indicated their intent** to begin or increase physical activity.

OUTCOMES related to FSNE Objective: Improve safety of food handling, preparation and storage practices among food stamp recipients and applicants.

98% (2,177) Participants who **increased knowledge** related to practicing **personal hygiene** such as hand washing.

52% (1,141) Participants who **increased knowledge** related to practicing **kitchen cleanliness**.

52% (1,154) Participants who **increased knowledge** related to **cooking foods adequately**.

52% (1,158) Participants who **increased knowledge** related to **avoiding cross-contamination**.

60% (1,317) Participants who **increased knowledge** related to keeping **foods at safe temperatures**.

57% (1,251) Participants who **increased knowledge** related to **avoiding foods from unsafe sources**.

98% (1,712) Participants who **indicated intent to change behaviors** related to practicing **personal hygiene** such as hand washing.

60% (1,050) Participants who **indicated intent to change behaviors** related to practicing **kitchen cleanliness**.

62% (1,091) Participants who **indicated intent to change behaviors** related to **cooking foods adequately**.

62% (1,088) Participants who **indicated intent to change behaviors** related to **avoiding cross-contamination**.

62% (1083) Participants who **indicated intent to change behaviors** related to keeping **foods at safe temperatures**.

60% (1,051) Participants who **indicated intent to change behaviors** related to **avoiding foods from unsafe sources**.

OUTCOMES related to FSNE Objective: Insure that low-income individuals and families receiving food stamps have enough to eat without resorting to emergency food assistance and ensuring that people eligible for the Food Stamps Program but not participating are made aware of its benefits and how to apply for them Food Security).

100% (279) Participants who **increased knowledge** of emergency food program (food pantries, soup kitchens, and food banks).

97% (234) Participants who **intend to adopt** one or more beneficial food security practices.

OUTCOMES related to FSNE Objective: Enhance practices related to thrifty shopping for and preparation of nutritious foods by food stamp households (Food Resource Management/Shopping Behavior).

94% (668) Participants who **increased knowledge** of beneficial shopping/resource management practices (menu planning, shopping price comparisons, coupons, etc.).

97% (646) Participants who **plan to adopt** one or more beneficial shopping behavior/resource management practices.

95% (640) Participants who **increased knowledge** of new low-cost, healthy foods/recipes.

97% (618) Participants who **increased knowledge** of how to select/use food preparation techniques to conserve nutrients, reduce fat, reduce salt, and/or improve taste.

92% (599) Participants who **plan to apply** appropriate food preparation skills (measure food correctly, follow a recipe, use kitchen equipment safely, etc.)

Medium-Term Outcomes:

71% (5,286) Participants who **eat nearer** to the recommendations for salt, fat, sugar and /or calories.

71% (5,796) Participants who **eat nearer** to the recommended number of servings from the Fruit and/or Vegetable Group.

94% (613) Participants who **reported/demonstrated** applying appropriate food preparation skills (measure food correctly, follow a recipe, use kitchen equipment safely, etc.).

86% (615) Participants who **reported/demonstrated adopting** one or more beneficial shopping/resource management practices (menu planning, shopping price comparisons, coupons, etc.).

Long-Term Outcomes:

Changes in Arkansas public policy which include:

- One state faculty member serves on Arkansas Child Health Advisory Committee, which makes nutrition policy recommendations to the Arkansas Board of Education and Board of Health.
- A number of county faculty serve on local school district wellness committees which make nutrition policy recommendations to local school district boards of education.

Youth Program Outcomes

After the food and nutrition lesson, students were asked to raise their hands for an informal count related to knowledge gained or habits they might change. The results were as follows:

<u>Choosing and preparing healthy snacks</u>	
7,994	Learned something new.
7,042	Might change eating habits.
<u>Eating more fruits and vegetables</u>	
9,755	Learned something new.
8,979	Might change eating habits.
<u>Eating fewer high fat/sugar foods</u>	
8,580	Learned something new.
7,720	Might change eating habits.
<u>Eating more calcium-rich foods</u>	
8,603	Learned something new.
7,757	Might change eating habits.
<u>Trying new foods</u>	
6,983	Learned something new.
6,324	Might change eating habits.
<u>Eating breakfast every morning</u>	
7,890	Learned something new.
6,087	Might change eating habits.

Increasing physical activities

6,874	Learned something new.
8,501	Might change eating habits.

Practicing good hand washing techniques

11,013	Learned something new.
8,101	Might change habits.

Implications

Public Policy Implications:

- School nutrition and physical activity rules and regulations approved by the Board of Education, August 2005.
- Implementation of grade-appropriate nutrition education through a comprehensive education program will be included in the school improvement process.
- Comprehensive statewide nutrition standards set for schools.
- Nutrition education provided by UACES supports nutrition education and school nutrition standards.

Parent Survey Implications:

UACES FSNE Parent Survey informed us that:

- 2nd and 3rd grade students are the most likely to talk to parents about what they learned.
- More parents of 2nd and 3rd grade students reported making changes.

Key dietary and health changes reported by parents included:

93.2%	Less high fat/fried foods
90.5%	More/different vegetables
86.6%	More water
86.1%	More/different fruits
77.8%	More dairy
76.1%	More activity
76.8%	Less fast food

Reasons most frequently reported by parents for NOT changing dietary habits:

28.4%	Child not said anything.
14.5%	I have a hard time changing my habits.
13.9%	Would like to know more.
32.9%	Time (limited time due to work/life/family commitments).

Summary

The Arkansas FSNE evaluation findings suggest that sustained investments in school-based FSNE programming, expansion of targeted outreach educational efforts to parents and a commitment to ongoing evaluation of program efforts are implicated to continue progress to stem the rise in child heath problems experienced in Arkansas, particularly for the highest-risk food stamp eligible populations. Public policy involvement by Extension faculty has proven effective in providing scientifically sound, research-based recommendations to the Governor and Arkansas Department of Education, which has shaped Arkansas law, educational policy and school-based nutritional practices, which has likewise stimulated some minor but encouraging initial results in BMI trends among school-age children.

Source of Funds

The Food Stamp Nutrition Education (FSNE) program is a reimbursable, federally funded program through the Food Nutrition Service (FNS). The University of Arkansas Division of Agriculture contracts with the Department of Health and Human Services (DHHS) to provide nutrition education.

Scope of Impact

Dissemination – Counties are invited to prepare and submit a plan proposal including goals and objectives for reaching the target audience and a proposed budget annually. Plans are reviewed at the state level and then compiled and submitted to the Department of Health and Human Services for review and approval by July 15. The plan is then sent to the SW regional Food Nutrition Service (FNS) office for final approval. A statewide training is held in the spring to provide counties with program requirements, training on program resources and an overview of the plan proposal process. Additional training is held in the fall to provide training on evaluation and reporting. Program guidelines, resources, forms and other supporting documents are posted on the FSNE web site located on the Extension Intranet under the Family and Consumer Science Department page. Program information is available on the FSNE web page http://www.arfamilies.org/FSNE/.

Scope of Program – Sixty-seven counties participated in FSNE, coordinated through the University of Arkansas Division of Agriculture, and eight counties participated in FF-NEWS, coordinated through the University of Arkansas at Pine Bluff. FSNE counties included Arkansas, Baxter, Benton, Boone, Bradley, Calhoun, Carroll, Chicot, Clark, Clay, Cleburne, Cleveland, Columbia, Conway, Craighead, Crawford, Crittenden, Dallas, Faulkner, Franklin, Fulton, Garland, Grant, Greene, Hempstead, Hot Spring, Howard, Independence, Izard, Jackson, Johnson, Lafayette, Lawrence, Lee, Little River, Logan, Lonoke, Madison, Marion, Miller, Mississippi, Monroe, Montgomery, Nevada, Newton, Ouachita, Perry, Phillips, Pike, Poinsett, Polk, Pope, Prairie, Pulaski, Randolph, Saline, Scott, Searcy, Sebastian, Sevier, Sharp, Stone, Union, Van Buren, Washington, White, and Yell. FF-NEWS counties include Ashley, Cross, Desha, Drew, Jefferson, Lincoln, St. Francis and Woodruff.

Programs of Excellence

Baxter County Youth Learn to Eat Healthy

Success Story – Youth in Baxter County who participate in the Food Stamp Nutrition Education (FSNE) program learn to make healthier food choices. Younger children start with learning about the different food groups, the importance of nutrients in those food groups and how much of each food group they need.

Kindergarten students (87) participated in five sessions of Pyramid Between the Pages where materials link nutrition and physical activity education with literacy and reinforce positive reading, eating and health habits that can potentially last a lifetime. First grade students (84) participated in five sessions of Food, Fun and Reading in which students learn about food and nutrition by reading children's storybooks with food-related themes and then participate in hands-on nutrition activities. Second grade students (68) participated in five sessions of Professor Popcorn in which helps students develop into healthy adults by gaining an interest in eating healthy foods and adopting fitness as part of their lifestyles. The curriculum focuses on MyPyramid, the Dietary Guidelines for Americans, the four Fight BAC! Rules and being physically active. Third grade and self-contained students (40) participated in five sessions of lessons featuring the Organ Wise Guys, a group of characters who teach healthy eating and physical activity practices. The topics addressed are low-fat, high-fiber eating, drinking plenty of water and the importance of exercising.

General Program Information – Childhood obesity is a growing problem in our nation. In Baxter County, 36.2 percent of students were found to be overweight or at risk for overweight. The rising levels of overweight and

obesity have a negative effect on the health and quality of life in our youth. Childhood obesity is linked to a dramatic rise in the number of children who suffer from type II diabetes, formerly known as adult-onset diabetes. If the current trends of childhood obesity continue, adolescents with type II diabetes may begin to experience heart trouble as young as 30 or 40. Being overweight or out of shape makes the heart work harder. Overweight children are more likely to grow up to be overweight adults and more likely to develop heart problems. There may be a link between the rise in childhood obesity and the rise in childhood asthma. Extra weight can make it harder to breathe and can inflame the respiratory tract. Children with serious asthma are more likely to be overweight.

Educators in Baxter County taught 279 elementary students in Cotter and Norfork Elementary schools a series of five 30-minute nutrition lessons about making healthy food choices, increasing their physical activity and practicing good food safety habits such as hand washing. Students were asked to raise their hands for an informal count related to knowledge gained or habits they might change.

Locations – Baxter County. (Similar programs were conducted in 45 counties and 133 schools.)

Impact Numbers –

234 (of 240)	Students indicated they will change their eating habits to include more fruit.
160 (of 199)	Students indicated they will change their eating habits to include more calcium rich foods.
83 (of 87)	Students indicated they will increase physical activity.
22 (of 22)	Students indicated they will eat breakfast every morning.

First grade students participated in a written evaluation from the Food, Fun and Reading curriculum. Of the 83 participants:

69.8%	Could identify food from the grain group.
89.1%	Could identify food from the fruit group.
78.3%	Could identify food from the vegetable group.
77.1%	Could identify food from the milk group.
45.7%	Could identify a meat-alternative food from the meat and beans group.
77%	Chose pretzels over chips for a healthy snack.
100%	Chose a banana over apple pie for a healthy snack.
93.9%	Chose yogurt over ice cream for a healthy snack.

Second grade students participated in a written evaluation from the Professor Popcorn curriculum. Of the 61 participants:

63.9%	Could identify foods from the bread group.
86.8%	Could identify foods from the vegetable group.
78.6%	Could identify foods from the milk group.
65.5%	Could identify the number of food groups in a combined food.

Extension's FSNE program has been a central part of promoting nutrition and physical activity in schools for the past three years. In a recent report (August 2006) by the Arkansas Center for Health Improvement (ACHI), the report stated that "analysis of the third consecutive year of statewide BMI assessments of public school students reveals that the progression of the childhood obesity epidemic has been halted. Although obesity among children and adolescents remains a major public health threat, it's clear that Arkansas' efforts are yielding positive results for the state's children and families." Collaborative efforts, such as FSNE, have contributed to this meaningful difference in the improvement of the health of our children and families.

CES Section Contact Person – Tanya Yates, County Extension Agent - Family and Consumer Sciences, 870-425-2335, tyates@uaex.edu.

Fulton County Residents Enjoy Healthy Foods

Success Story – The Food Stamp Nutrition Education (FSNE) program through Fulton County Extension Service partners with low-income service providers, such as Department of Health and Human Services (DHHS), Women, Infant and Children (WIC) Health Unit and Head Start centers to help families evaluate their nutrition habits and gain knowledge to improve these habits. To address obesity in Fulton County, monthly exhibits are displayed at DHHS that focus on key nutrition messages and emphasize the importance of incorporating healthy eating and physical activity into daily life. Along with the exhibits, families take home information that includes recipes, shopping tips, menu planning and cost cutting helps. Preschool families in the Head Start program receive nutrition newsletters. Family Food Fest was hosted at the local health department to teach WIC families how to prepare low-cost meals. Families were sent invitations to attend the event and healthy, low cost foods were prepared. Recipes and newsletters were given to each participant. After the Family Food Fest, participants were eager to prepare the recipes from WIC cereals and were pleased to see different ways to incorporate fruits and vegetables into their diets in ways acceptable to all family members.

General Program Information – According to recent statistics, approximately 65 percent of Americans are overweight/obese. The Fulton County Cooperative Extension Service and the Healthy Arkansas Coalition are working to address the needs of the local residents by offering nutrition classes taught by a registered dietitian/county Extension agent. Since research has shown food stamp recipients to be at increased risk for obesity, the Women, Infant and Children (WIC) clinic and Department of Health and Human Services (DHHS) who serve low-income families partnered with Fulton County Cooperative Extension Service to focus on combating obesity.

An Extension agent provided nutrition education to over 650 families through educational displays, newsletters, parent meetings and WIC demonstrations. A variety of methods, including monthly educational exhibits, monthly newsletters to Head Start parents and a food demonstration focused on increasing fruits and vegetables in the diet, promoting physical activity and using low-cost, healthy recipes helped Fulton County families improve lifestyles. Sessions were conducted in partnership with DHHS, Head Start and WIC.

Locations – Fulton County. (Similar programs were conducted in 26 counties.)

Impact Numbers – At the conclusion of the lesson series, participants reported the following:

Dietary Quality

100% Increased knowledge of healthy food/nutrition practices.
88% Indicated intent to adopt one or more healthy food/nutrition practices.
88% Eat nearer to the recommendations for salt, fat, sugar, and/or calories.
65% Eat nearer to the recommended number of servings from the fruit and/or vegetable group.
51% Increased knowledge about physical activity and/or its benefits.
35% Indicated their intent to begin or increase physical activity.

Food Shopping/Resource Management

91% Increased knowledge of beneficial shopping/resource management practices.
91% Plan to adopt one or more beneficial shopping behavior/resource management practices.
98% Increased knowledge of new low-cost foods/recipes.
91% Plan to apply appropriate food preparation skills (measure food correctly, follow recipe, use kitchen equipment safely, etc.).

CES Section Contact Person – MaLinda Coffman, County Extension Agent - Family and Consumer Sciences, 870-895-3301, mcoffman@uaex.edu.

Program Response:
Healthy Weight for Arkansans – Reshape Yourself

Contact: Rosemary Rodibaugh, Professor - Nutrition, FCS, 501-671-2111, rrodibaugh@uaex.edu

Situation

According to the U.S. Department of Health and Human Services, unhealthy eating habits, coupled with physical inactivity, are now the nation's second leading cause of death. Lifestyle factors, such as high-fat diets and physical inactivity, increase the risk of chronic diseases such as heart disease, stroke, certain cancers and diabetes.

Risk factors for Arkansans include:

- Four of the 10 leading causes of death in Arkansas are related to diet (heart disease, cancer, stroke and diabetes).
- Cardiovascular disease is the leading cause of death in Arkansas.
- High blood pressure affects more than one-third of adult Arkansans.
- The adult diabetes rate in Arkansas is 8.1 percent – one of the highest in the U.S.
- Arkansas has one of the highest obesity rates in the US with 65 percent of adults being either overweight or obese.
- Childhood obesity in Arkansas has reached epidemic proportions, where 27 percent of children 0-5 years are at risk for becoming overweight or are overweight. Among school-age children in grades K-12, 37 percent are at risk for becoming overweight or are overweight.
- Annual medical expenditures related to obesity in Arkansas are $663 million. More than half of these dollars come from state and federal government sources.
- Nearly eight out of 10 Arkansans report they are not consuming the recommended five servings of fruits and vegetables a day.
- More than half of adult Arkansans do not get the recommended amount of physical activity.
- The U.S. Department of Agriculture, Economic Research Service report using data averages for 2003-2005 revealed that 14.7 percent of all Arkansas households were food insecure. Thousands of Arkansans are at risk of being hungry and malnourished because of the poverty level in the state. Women who are food insecure are at higher risk for obesity-related chronic disease.
- The Arkansas Department of Health and Human Services (DHHS) reports that in SFY 2006, 558,586 persons in 193,113 Arkansas households participated in the Food Stamp Program at a cost of $417,256,630. Among Arkansans receiving food stamps, 47 percent were children and 5 percent were 65 years of age or older.

Through research and consumer education on nutrition, the preparation and selection of more nutritious foods, healthy life style choices and food resource management, Cooperative Extension faculty and staff enable Arkansans to improve their overall health and well-being. Programs target low-income families and their children,

food stamp recipients, minority audiences and clientele with specific health concerns, including diabetes and hypertension. Programs are primarily delivered through the Expanded Food and Nutrition Education Program (EFNEP), Food Stamp Nutrition Education (FSNE), Eating and Moving for Life (a minority health initiative), Reshape Yourself (a weight reduction and physical activity program), Walk Across Arkansas (a physical activity program) and the BodyWalk (a program targeting youth and overall healthy lifestyles). All 75 county Extension programs include some type of programming in health and nutrition education.

Stakeholder Input

County Extension Councils identify specific nutrition issues and programs that should be emphasized in each of their respective counties. The district administrative staff and agents likewise provide consumer feedback to specialists regarding nutrition issues and needs for long-range educational programming. Teachers and child care providers are surveyed to determine nutrition education needs of children with whom they work. Other input that helps shape our program comes from statewide councils and committees addressing chronic health issues including the Cardiovascular Health Program, Child Health Advisory Committee, Arkansas Nutrition Advocacy Council, and Arkansas Action for Healthy Kids.

Overview

Overweight and obesity, which increase the risk of many chronic diseases, are increasing among Arkansans of all ages. Approximately 65 percent of Arkansas' adults are overweight or obese.

There is strong evidence that weight loss in overweight and obese individuals reduces risk factors for cardiovascular diseases and diabetes by lowering blood pressure, blood lipids and blood glucose levels. In FY06, the emphasis of the human nutrition program was on helping Arkansans achieve or maintain a healthy weight.

The goal of the Healthy Weight for Arkansans program is to reduce obesity-related risk factors among Arkansans. Objectives include:

1) Participants will adopt recommended practices that assist with achieving and maintaining a healthy weight.
2) Participants will decrease or maintain weight.
3) Participants will improve blood pressure and blood laboratory values related to increased risk of weight-related chronic disease.

These were accomplished through offering the 15-week Reshape Yourself healthy weight program in 38 counties. The program focuses on helping participants make lifelong behavioral changes including healthier food choices, limiting portion sizes and exercising regularly.

Extension Program Results and Accomplishments

Output Indicators

435 Educational sessions were related to healthy weight.

21,389 Contacts participated in programs related to healthy weight.

127 Newsletters included information on healthy weight.

8,897 People received newsletters with healthy weight information.

81 Print media articles related to healthy weight.

11 Radio spots related to healthy weight.

1 Television spot related to healthy weight.

597 Participants in 15-week healthy weight program

255 Participants finished the 15-week healthy weight program (60% retention rate)

Outcome Indicators

As a result of participating in Extension Healthy Weight Programs:

81% of participants reported increasing average daily consumption of fruit and vegetable from less than 3.5 cups a day to 3.5 or more cups a day.

88% of participants reported increasing average daily consumption of whole grain foods from less than 3 ounce equivalents a day to 3 or more ounce equivalents a day.

85% of participants reported increasing average daily consumption of low fat or fat-free dairy foods from less than 3 cups a day to 3 or more cups a day.

96% of participants were able to correctly identify standard servings of foods from each of the MyPyramid food groups.

93% of participants reported they altered their behavior to follow standard serving sizes of one or more of the MyPyramid food groups.

69% of participants lost weight.

28% of participants maintained weight.

2,294 Pounds were lost by program graduates.

11,727 Miles were walked by program participants.

9,954 Miles were walked by program graduates.

67% Percentage of graduates who improved blood pressure.

47% Percentage of graduates who improved blood cholesterol.

58% Percentage of graduates who improved blood glucose.

23% Percentage of graduates who were able to reduce medication because of changes in lifestyle after completing Reshape Yourself.

Comments from participants include:

- I lost my goal of 5 pounds during the class. I am more aware of what I am eating and try to limit my calorie intake. I am going to start an exercise program after New Years. I also read labels now. *Pulaski County Participant*

- I really enjoyed the program. I lost 23.5 pounds, 25 inches and lowered my blood sugar level by 5 points and cholesterol by 7 points. I am getting more exercise and watching fats, serving sizes and sweets. I eat healthier now! *B. Stephenson, Crawford County*

- I am eating different things and not eating as big of portions. *White County Participant*

- This program made me more aware of my eating pattern and portions. *White County Participant*

- I have learned that all carbs are not bad. I have tried to eat more veggies. *White County Participant*

- Reshape Yourself participants report feeling better about themselves as a result of the pounds lost. Many reported they could wear clothing they could not wear prior to the course. One client was able to discontinue five prescription medications after he lost weight. This has been a large financial gain for his family's disposable income. *Donna Frances, County Extension Agent – Family and Consumer Sciences, Drew County*

- I have lost 10 pounds and kept it off. I now look at labels and watch my calorie intake and try to combine that with exercise. I have tried to change my lifestyle. My BMI has decreased as well as my waist measurement! Yeah! *Cleveland County Participant*

Source of Funds

Smith-Lever Funds.

Scope of Impact

Dissemination – This program is available to adult Arkansans. All County Extension Agents – Family and Consumer Sciences have a copy of the curriculum. The curriculum was revised in 2005. Upon request, state and county faculty will train volunteers from other agencies to deliver the program.

Scope of Program – Statewide availability. Materials are provided to counties in a number of ways including curricula (purchased and internal), leader's guides, web sites, e-mail listserv, brochures, fact sheets, newsletters.

Thirty-eight Family and Consumer Sciences agents in 38 counties reported conducting programs on healthy weight in FY06: Arkansas, Ashley, Benton, Bradley, Carroll, Cleburne, Cleveland, Conway, Crawford, Crittenden, Cross, Dallas, Desha, Drew, Faulkner, Fulton, Grant, Hot Spring, Howard, Jefferson, Johnson, Lafayette, Lawrence, Lee, Madison, Perry, Phillips, Polk, Pope, Pulaski, Scott, Searcy, Union, White, Woodruff and Yell (Ozark = 12, Delta = 14 and Ouachita = 12).

Programs of Excellence

Reshape Yourself – Howard County

Success Story – Sixteen participants completed the program for a 50 percent retention rate. An additional 15 people attended at least seven of the fifteen sessions. The graduates lost a total of 122.6 pounds. This is an

average of 7.7 pounds per person. The most weight lost by one person was 23.4 pounds. The graduates walked over 665 miles, which averages to 44.36 miles per graduate. Nine of the graduates were screened at the beginning and end of the program for blood pressure, cholesterol and blood glucose. Seven (78 percent) of the graduates lowered their blood glucose. Four (44 percent) of the graduates lowered their cholesterol levels. Five (63 percent) of the graduates lowered their blood glucose.

General Program Information – Reshape Yourself, a fifteen-week program, was advertised through the local media and enrolled 32 people. Screening tests were conducted at the beginning and end of the program. Evaluation results were obtained by pre-post screenings, weekly weight-in, weekly reports and post-evaluation.

Location – Howard County.

Impact Numbers –
- 32 participants.
- 16 graduates.
- 122.6 pounds lost by the graduates.
- Average of 7.7 pounds per person.
- Most lost was 23.4 pounds.
- Graduates walked 665.4 miles.
- 100% improved health and lost weight.
- 78% of the graduates lowered blood pressure.
- 44% lowered cholesterol.
- 62% lowered blood glucose levels.

CES Section Contact Person – Jean Ince, County Extension Agent - Staff Chair, Howard County, 870-845-7517, jince@uaex.edu.

Reshape Yourself – White County

Success Story – The Reshape Yourself program resulted in 100 percent of graduates improving health through weight loss, lowering risk factors and exercise. Forty participants began the program and fourteen graduated.

Participant Comments:
- I am eating different things and not eating as big of portions.
- I've started exercising more and watching what and when I eat.
- I've changed eating red fried meat to baked chicken. And I take the stairs.
- I learned that all carbs are not bad. I have tried to eat more veggies.
- This program made me more aware of my eating pattern and portions.
- Made me more aware of what to look for in labels and in portions.

General Program Information – Many Arkansans are overweight in Arkansas. Reshape Yourself is a 15-week weight loss/management course that helps people who have at least 10 pounds to lose learn how to successfully lose the weight and keep it off.

The program was delivered at the White County Medical Center in Searcy, Arkansas. The goal of the program was to assist the participants in gaining their weight loss goal. The Medical Center was a great partner in this program – they provided a meeting location, guest speakers, allowed employees to attend on lunch breaks, provided materials and helped advertise.

Locations – White County residents from several towns participated in the program.

Impact Numbers –
- Graduates lost a total of 112 pounds.
- As a result of the classes, 100 percent of respondents limit foods high in saturated fat most of the time (post test). Pre test – 44 percent.
- On average, 77 percent of respondents now eat three or more low-fat or fat-free dairy foods each day (post test). Pre test – 44 percent.
- As a result of the classes, 100 percent of respondents make healthy choices when eating out (post test). Pre test – 33 percent.
- As a result of the classes, 100 percent of respondents choose smaller portions (post test). Pre test – 11 percent.

CES Section Contact Person – Katie Cobb, County Extension Agent – Family and Consumer Sciences, White County, 501-268-5394, kcobb@uaex.edu.

Reshape Yourself – Drew County

Success Story – Reshape Yourself participants report feeling better about themselves as a result of the pounds lost. Many reported that they could wear clothing that they could not wear prior to the course. One client was able to discontinue five prescription medications after he lost weight. This has been a large financial gain for his family's disposable income.

General Program Information – Five of the leading causes of death in Arkansas are diet-related chronic diseases. The cost of caring for people with the leading diet-related illnesses is estimated to be approximately $4 billion each year. The Drew County Cooperative Extension Service offered seven sessions of Reshape Yourself to residents, which has helped them to make the necessary changes in their lifestyles to improve their health. The Reshape Yourself program is a 15-week intensive education short course which teaches participants how to select and prepare foods in a healthy way, how to read food labels and the importance of physical activity. Seven sessions were taught in Monticello.

Location – Drew County.

Impact Numbers –

70 Graduates lost a total of 845 pounds for an average of 12 pounds per graduate.
37 Graduates increased their average daily consumption of fruits and/or vegetables to the recommended 3.5 cups per day.
57 Graduates increased their daily consumption of low-fat or fat-free dairy foods to 3 cups daily.
31 Indicated that they can now correctly identify standard serving sizes.
65 Also reported that their average daily consumption of whole-grain foods has increased.

CES Section Contact Person – Donna Francis, County Extension Agent – Family and Consumer Sciences, Drew County, 870-460-6270, dfrancis@uaex.edu.

Goal 4 – Greater harmony between agriculture and the environment.

Integrated pest management is an important aspect of agriculture in Arkansas. Pest management is an essential part of cotton production in the state in helping producers farm more efficiently and reduce reliance on pesticides. Stink bugs and the plant bug complexes have emerged as primary pests of cotton as a result of the use of transgenic cotton and boll weevil eradications which have reduced insecticide use that previously controlled these pests. The addition of herbicide-tolerant crops has increased weed management options, requiring increased education on weed control. Extension information delivery systems educate growers, county agents, consultants and industry representatives on transgenic cotton, cultural practices, nematode management strategies, aphid fungus, moth trapping, weeds, diseases and utilization of pesticides. Soybeans are an intensively managed crop requiring timely irrigation, fertilizer and pesticide applications. An Extension Soybean IPM Education Program was initiated in 1999 as an effort to teach producers how to better manage soybeans using pest management methods that improve production efficiency. Soybean IPM programs had approximately 45 percent Arkansas soybean farmers in attendance.

Arkansas is the largest producer of rice in the United States. Weeds, insects and diseases in the rice crop are more efficiently controlled with pesticides if scouting and decision thresholds are used. The Rice IPM Education Program was initiated in 1998 to encourage adoption of integrated pest management principles in Arkansas rice production. To achieve its goals, the program provides support to county Extension agents through a grant system, and all major rice counties have consistently participated. Several demonstrations, including disease monitoring plots and stinkbug management demonstrations, were utilized to address current pest management problems.

Agricultural production, outside of the traditional row crop systems of the Delta in Arkansas, is very diverse. These agricultural systems have a unique complex of pest problems. Pest problems range from several species of flies that impact dairy production in Arkansas to grape producers dealing with green June beetle and, now, Japanese beetle. Retailers will not buy grapes that have insect damage and, therefore, it is essential for producers to maintain control of pests. Pasture weed management education is an important aspect of livestock production 7since nutrition of livestock is directly related to the quality of hay and forage. A pecan IPM program has been conducted for four years involving surveillance and trapping of major pecan pests, and understanding how insect pests move through the agricultural landscape.

Agricultural chemicals, pesticides and plant nutrients comprise a major portion of the money spent by producers of all Arkansas crops. The primary focus of Extension IPM programs has been reducing pesticide use where possible, using pesticides more effectively when needed and placing the needed pesticides at the optimal time and place to be most effective and reduce environmental impacts. Extension has also provided many additional government agencies with guidance and assistance concerning chemical application problems. Federal and state laws require education and training of applicators of restricted use pesticides. Private and commercial applicators must be periodically recertified by attending educational programs on pesticide safety, integrated pest management, endangered species protection, groundwater protection, the Worker Protection Standard and other topics. Training programs are a part of county programs, and 1,436 commercial and 2,039 private applicators were trained in 2005. The scope of Urban Integrated Pest Management in Arkansas is very diverse, involving insect pests that can directly impact all citizens of the state. The Urban Integrated Pest Management program was developed to focus programs toward protecting the health and property of the citizens of Arkansas. These programs use innovative methods to educate, detect and protect Arkansans from threatening pest species. Programs include pesticide applicator certification in termite, structural pests, household and rodent pests, food processing and storage pests, ornamental, tree and turf pest control, etc., and awareness education regarding Africanized Honey Bees. Fire ant management is also a critical aspect of pest management because of the serious

health threat they present. Extension activities in Arkansas target the fire ant with some of the best educational aids in the nation including materials for adult and youth audiences.

The forest products industry in Arkansas contributes millions of dollars annually in salaries to employees, in value-added dollars and in stumpage prices to private landowners. Private non-industrial forest landowners own more than half of the state's 18,778,660 acres of forestland. Many landowners are unfamiliar with sustainable forest management practices, timber marketing, reforestation incentives and other vital information. Oak sustainability after several years of drought, overcrowding, poor soils, inadequate management, insect damage and declining vigor are severely affecting the oak forests. Extension is addressing the most critical information needs and issues including forest management and natural resource education for county agents and other professionals and a continuing education program. The forestry best management practice program is a critical program to protect and conserve water quality. Urban tree care is also an important issue for Extension community and urban landscape education programs, especially with Arkansas weather that often involves ice storms and related tree injury.

Wildlife management is an important aspect of our natural resources since Arkansas is home to abundant wildlife. Many Arkansans are interested in wildlife recreation and wildlife enterprises. The discovery of the Ivory-Billed Woodpecker in Arkansas has created increased interest in bird watching. Wildlife enterprises are sometimes overlooked as an alternative for agricultural producers. Yet when economic conditions are severe and profit margins slim, a wildlife enterprise might make the difference between a producer's loss or profit. A combination of abundant wildlife and public interest in wildlife has created a large demand for Extension education programs and information about wildlife habitat enhancement, nuisance control and wildlife enterprises.

Arkansas generates approximately 4.8 million tons of solid waste annually, over a ton per person each year. The state has a limited number of disposal sites or landfills. Some areas of the state do not have comprehensive solid waste management collection programs. Improper disposal of solid waste is a health and safety problem and a detriment to economic development. Also, Arkansas livestock producers with confined animal feeding operations that use liquid manure handling systems require a permit for manure handling. Permit elements include nutrient management, specified application sites, maximum application rates, annual training for owner/operators and annual reporting requirements. Extension has developed programs to address waste management and recycling that train our clientele on environmentally safe methods to dispose of waste.

Total FTEs
43.63

Total Budgetary Amount
$2,544,675.45

KEY THEME:
AGRICULTURAL WASTE MANAGEMENT

Program Response:
Animal Waste Management

Contact: Karl VanDevender, Extension Engineer, 501-671-2244, Biological and Agricultural Engineering

Situation

Arkansas has 1,750,000 head of cattle, of which 22,000 are dairy cattle. There are 270,000 head of swine placed at one time. Annual broiler production is 1.2 billion birds. Turkey production is 32 million birds annually. Annual Arkansas farm gate income from livestock and poultry was $3.2 billion (66 percent) of the state's $4.8 billion total farm cash receipts before support services, industry or further processing are added. (Information from USDA- Agricultural Statistics Service, Arkansas, http://www.nass.usda.gov/ar/.)

A 1997 study indicated that animal production in Arkansas generated approximately 3.4 billion tons of manure on a dry weight basis each year. Annually the beef cattle, poultry, swine and dairy industries generated about 1.8, 1.3, 0.1 and 0.2 billion tons of manure, respectively. Given the increase in livestock production since 1997, the annual manure production will have also increased over the last decade.

Stakeholder Input

Personal communications with producers, livestock and poultry integrators, governmental agencies and county agents indicate that educational efforts in manure and mortality management are crucial to address environmental concerns. This input is used to shape and direct educational programs.

Overview

Since 1993, all Arkansas producers with confined animal feeding operations that use liquid manure handling systems (regardless of size) require a permit for manure handling. Permit elements include nutrient management, specified application sites, maximum application rates, annual training for owner/operators and annual reporting requirements.

In contrast, Arkansas livestock and poultry producers with dry manure systems have been encouraged by state and federal agencies to voluntarily comply with appropriate manure management BMPs, and to attend Extension's environmental education programs. A special effort is made by state and federal agencies and poultry integrators to encourage poultry producers to develop and follow a nutrient management plan for their farms.

Recently, the regulatory requirements are in the process of changing with the revision of the EPA Concentrated Animal Feeding Operation regulations that have been proposed. In addtion, there are new state laws that regulate the utilization of nutrients, both manure and commercial fertilizers, in certain sensitive watersheds in the northern and western tier of Arkansas counties. A significant effort has been implemented and will continue to address the educational needs of the nutrient applicators and nutrient management plan writers. Since the regulations address nitrogen and phorphorus nutrient applications from all sources, including manures and commercial fertilizers, and

all uses, including agricultural, residential, and turfgrass, only a portion of this effort and its impact is reported under the Animal Waste Management Key Theme.

Extension Program Results and Accomplishments

Output Indicators

7 Number of livestock producers provided with how-tos of on-farm animal mortality composting.

39 Number of certification training meetings conducted for all owner/operators of confined animal operations with liquid manure handling systems.

207 Number of educational materials produced.

14 Number of educational meetings, field days and/or demonstrations held to educate clientele on liquid and dry animal waste management.

15 Number of planning meetings held with industry groups, state and federal agency personnel and University of Arkansas Division of Agriculture faculty to identify and discuss animal waste management issues and how to address them.

397 Number of producers receiving individualized educational assistance.

1,046 Number of producers, industry or agency personnel attending education programs.

797 Number of soil test databases developed from selected livestock and poultry farms, and all animal manure samples processed through the U of A testing programs.

2 Number of on-farm composting operations of animal waste.

Outcome Indicators

- Coordination of Extension educational efforts with Agency regulatory and cost share programs, combined with input from the livestock industries increased the quality and effectiveness of the educational efforts.

- Livestock producers who participated in educational efforts received an increased awareness of environmental concerns and legal requirements. In addition, they also received information on recommended actions to implement. As a result, these individuals were better equipped to properly implement recommended Animal Waste Management practices.

Source of Funds

Miscellaneous EPA 319 grants combined with CES funding.

Scope of Impact

Dissemination – Statewide availability of program to interested counties. Waste management information/ publications available via county Extension offices and through UAEX web site.

Scope of Program – Producers living in the western two-thirds of the state had the opportunity to receive educational material. Producers from over 400 permitted liquid waste systems received their state-mandated annual training. The University of Arkansas processed over 3,300 manure samples to provide producers information necessary to better manage their manure.

KEY THEME: FOREST RESOURCE MANAGEMENT

Program Response: Forest Landowner Education

Contact: Tamara Walkingstick, Ph.D., Associate Professor/ Extension Specialist - Forestry, Arkansas Forest Resources Center, 501-671-2346, twalkingstick@uaex.edu; Caroll Guffey, Extension Instructor, 870-460-1549, guffey@uamont.edu; Kyle Cunningham, Extension Instructor, 501-671-2145, kcunningham@uaex.edu; Jon Barry, Assistant Professor/Extension Specialist - Southwest Research and Extension Center, 870-777-9702, jbarry@uaex.edu; Chris Stuhlinger, University System Forester, 870-460-1749, stuhlinger@uamont.edu

Situation

Arkansas' forests provide a diversity of products and other important benefits including wildlife habitat, recreational opportunities, watershed protection and aesthetic values. Statewide, there are 18,778,660 acres of forestland representing approximately 56 percent of the total land base. Of this, 27 percent is pine, 17 percent is mixed hardwood and pine, 39 percent is upland oak-hickory forests and the remaining 16 percent is bottomland species including oak, cypress, cottonwood and other species.

The forest products industry in Arkansas is one of the largest in the state and contributes millions of dollars annually in salaries to employees, in value-added dollars and in stumpage prices to private landowners. Private non-industrial forest landowners own more than half of the state's 18,778,660 acres of forestland. This important landowner group is comprised of farmers, ranchers, homeowners, teachers, factory workers, professionals and retirees. Cattle ranchers and row crop producers are becoming more interested in forest management as a means of realizing additional income, especially in light of declining prices. However, many of these landowners are unfamiliar with sustainable forest management practices, timber marketing, reforestation incentives and other vital information.

Forest sustainability is an increasing concern for the public and among stakeholders. Nationwide, forests face severe problems from insects and diseases, hazardous fuel loadings and inadequate management. In addition, the interrelationship between forest management and biodiversity and other environmental considerations is becoming increasingly important. Non-industrial private forest landowners, the largest if not most important forest landowner group, are often unaware of the potential impact to water and other natural resources from forest management practices. Many of these same forest landowners either lack the resources or the desire to regenerate their forestland after harvest. Forest management practices can achieve economic and sustainability goals, but it requires education and awareness.

The most critical information needs and issues include:

Forest Management

More than 60 percent of the annual timber harvest comes from NIPF lands, and this will likely rise as major corporations divest in their forestland: e.g., several large forest product industries sold large holdings in 2006. The trend will most likely continue. Some industry observers suggest that most large timber companies will divest themselves entirely of the forest holdings and rely exclusively upon stumpage from private forest landowners. One well-known company recently divested approximately 600,000 acres of their approximately 1.2 million acres. Nationwide, nearly half of all industrial forestland has changed hands since 1996. Most of these lands are purchased by private investment and other groups and not just traditional forest industries.

- Many landowners, especially in north Arkansas and the Delta, have limited knowledge about timber marketing, harvesting, planning and reforestation. Nationwide, less than 3 percent of all forest landowners have a written management plan for their forest. The result is that landowners have very few long-term plans for their forestland.

- Although short-term demand for forest products has declined somewhat from last year, long-term demand will most likely rise. This demand will impact private forestlands. The heightened focus on bio-fuel development might also increase demand for previously unmarketable products. Forest landowners, therefore, need to be educated about the benefits and costs of this increased demand for their forest products. Many questions remain about the long-term impacts of managing for bio-fuel including the long-term impact on site productivity and forest sustainability.

- Landowner understanding and awareness of forest management practices designed to protect water quality (Best Management Practices) remains limited. Preliminary results from a landowner survey suggest that less than 25 percent have ever heard of forestry BMPs.

Stakeholder Input

Stakeholder input comes from several different sources including personal communication with landowners, County Extension Councils, the Arkansas Forestry Association Landowner Education Committee, the Ozark Foothills Forest Landowner Education Committee, the Forestry Division of the Arkansas Farm Bureau, the Continuing Education Advisory Board, the Arkansas Forest Resources Center, the U.S. Forest Service, the Ozark Woodlands Landowner Association, Master Tree program attendees and the Master Tree Farmer steering committee. This input is used to guide and direct educational programs.

Overview

Forest landowner education is facilitated through several different types of programs at the county, state and regional level. County agents develop and host forest landowner meetings, host Master Tree Farmer series and collaborate with the Arkansas Forestry Association to co-host workshops or participate in a multi-county project developing and implementing forest landowner education. Demonstration areas and field days are designed across the University System Experiment Stations and collaborators to educate landowners and professionals. Topics include basic forest management, marketing, best management practices, stand evaluation and alternative forest products including pine straw and shiitake mushrooms.

Master Tree Farmer Series. The Southern Region U.S. Master Tree Farmer program is a satellite broadcast short course that covers a wide range of forest management topics including planning, wildlife habitat, forest finance and marketing. The course is sponsored by Clemson University and the Extension System, Southern

Region, USDA-CSREES, the Southern Group of State Foresters, The American Tree Farm System, American Forest & Paper Association, state forestry associations and participating industry representatives.

UA Division of Agriculture Field Days. The UA Division of Agriculture owns several thousand acres of forestland on primarily four Experiment Stations in Arkansas. Research and demonstrations are conducted on these sites to investigate and demonstrate management practices designed to help private forest landowners. The system forester, in partnership with Extension specialists, county agents, state partners, the Arkansas Forestry Association and interested landowners, organized three forestry field days in 2006. Topics included hardwood stand evaluation, hardwood log grading and evaluation, competition control in pine plantations, the use of tree shelters to improve seedling survival, wildlife food plots and riparian zone management.

County Level Forestry Meetings. County Extension faculty also conducted field days and meetings in 2005-06. Some of these meetings are organized by the county faculty and others are organized by counties participating in multi-county programs. A multi-county program located in the far southwest corner of the state is in its fourth year of forest programming. Another multi-county program provided continuing education programs for area professional foresters in 2005 and 2006 and has planned another event for 2007. The most recent multi-county effort was initiated in 2006 and includes four county offices. These agents are responsible for the planning, delivery and evaluation of an intensive forest landowner education project. Since February 2006, 16 county level meetings, a wildlife exposition, a youth conservation day and a field day have been conducted

Extension Program Results and Accomplishments

Output Indicators

25	Number of educational meetings held with forestry industry representatives, state and federal agency personnel, Arkansas Forestry Association, Arkansas Forest Resource Center and UA Cooperative Extension faculty to identify forest landowner education issues and plan education programs.
73	Number of landowner education meetings conducted.
1,199	Number of landowners attending workshops and educational meetings.
25	Number of demonstrations conducted.
438	Number of individuals attending demonstrations.
10	Number of forestry field days.
150	Number of individuals attending field days.
400	Number of clientele receiving newsletters about forestry and forest management.
100	Number of county agents, state and federal agents and other natural resource professionals receiving the Arkansas Timber Market Report.
5	Number of radio stations carrying quarterly Arkansas Timber Market Update.

Outcome Indicators

277	Number of landowners indicating changes in their management practices as a result from attending an educational program.

27,000 Number of acres being impacted by educational programs as self-reported by landowners participating in programs.

576 Number of clientele who indicated an increased understanding of forest valuation, marketing and basic forest management principals as reported in program evaluations.

Source of Funds

Smith-Lever 3b and 3c, USDA Forest Service, CSREES and Ozark Foothills Forest Landowner Education Project (OFFLEP), RREA, Arkansas Forest Resources Center.

Scope of Impact

Dissemination – This program is available to all 75 counties, even if only for phone calls asking for assistance. The timber price information is available on-line and electronically distributed to all county Extension offices. Timber valuation information is available on-line and via fact sheets and handouts. The weekly radio program is broadcast to five stations through the Arkansas Ag. Network.

1. Counties involved in forest resource education:
   a. Counties that submitted an individual plan of work under forest management:
      Bradley, Calhoun, Cleveland, Dallas, Hot Springs, Howard, Independence, Ouachita, Polk, Saline, Searcy, Union, White.
   b. Other counties with forest resource management education programs:
      Scott, Sevier, Hempstead, Nevada, Newton, Grant, Washington.

Program Response: Urban Forest Management

Contact: Tamara Walkingstick, Ph.D., Extension Specialist - Forestry, 501-671-2346; Caroll Guffey, Extension Instructor - Forestry, UA-Monticello, 870-460-1549, Forest Resources

Situation

Forestry entails more than timber stand management. Forestry also includes managing trees in urban and community settings. Insects, disease, natural disasters and urban sprawl all impact trees in community settings. Understanding the importance of community trees becomes especially important as economic growth expands throughout the state. Urban trees play a vital role in protecting watersheds, air quality and managing storm water. In addition, urban-wildland interface issues are also emerging as more people move to the traditionally forested and agricultural areas outside of larger cities. The most significant needs include:

- Response to Natural Disasters: Natural disasters are common in Arkansas and include ice and wind storms, tornadoes and wildfire. Winter storms, tornadoes, wildfire and poor forest health destroy or damage thousands of urban trees a year. Damage from these natural disasters is costly. Through appropriate information and education, city and county officials, homeowners and professionals can minimize potential damage to their urban trees.

- Trees are important in the community and urban landscape. However, few homeowners understand urban tree selection, maintenance and care. Urban tree care also requires an understanding of basic tree physiology,

ecology and arboriculture. County agents receive numerous calls about urban tree health, tree appraisal and tree selection. Few county agents, tree service or landscape professionals are trained in these arenas.

Stakeholder Input

Stakeholder input is received from numerous sources including County Extension Councils, Master Gardener groups, the Arkansas Urban Forestry Council, the Arkansas Forestry Commission and other interested stakeholders.

Extension personnel serve on the Arkansas Urban Forestry Council Board. Other board members include representatives from city councils, Master Gardener groups, private citizen advocates, forestry professionals, professional landscape architects and urban forestry professionals. The AUFC Board meets quarterly. Extension specialists, in addition to serving on the board, gather input for and collaborate on educational programs including the annual Urban Forestry Conference.

Overview

Forestry specialists and county agents offer presentations to Master Gardening and other homeowner groups covering basic urban forestry topics including native trees for Arkansas, responding to storm damage, insect and disease problems, hazard tree identification, storm water management and proper pruning techniques. Specialists have worked with the Arkansas Forestry Commission and others to present information about urban tree selection, tree care, Wildland-Urban interface, fires and Fire Wise Landscaping. In 2006, a conference on the utility of utilizing urban trees for storm water management was held and attended by city officials, homeowners, professionals and other tree service providers.

Extension Program Results and Accomplishments

Output Indicators

9 Number of educational programs held focusing upon urban tree care and urban forestry concepts.

350 Number of homeowners, urban foresters, county agents, Master Gardeners, arborists or the general public attending programs.

3 Number of training workshops designed for county agents and other natural resource professionals.

190 Number of county Extension, state agency and federal government personnel attending educational programs.

Outcome Indicators

120 Number of professional tree care providers who express an increased understanding of urban forestry planning.

Source of Funds

Smith-Lever 3b and 3c, Arkansas Forestry Commission Urban Forest Grant, International Society of Arboriculture Education program.

Scope of Impact

Dissemination – Articles about insect, ice and wind damage to urban trees received statewide coverage in local newspapers. Information is also available via the web. One fact sheet entitled *Ten Ways to Kill a Tree: And How to Avoid Them* was published and is available on-line.

Each county with Master Gardening programming responsibility incorporates some level of urban forestry education. Specialists are present at several Master Gardening meetings each year. Four radio programs are conducted concerning insects, ice and wind damage and planting trees to Arkansas Agriculture Network that are broadcast to at least five stations throughout the state.

The Arkansas Forestry Commission, the Arkansas Urban Forestry Council and the International Society of Arboriculture hosted two urban tree health care workshops in cooperation with the UA Cooperative Extension Service.

KEY THEME: INTEGRATED PEST MANAGEMENT

Program Response: Area-Wide Cultural Management of Plant Bugs in Cotton

Contact: G. M. Lorenz, Entomology, 501-671-2191, glorenz@uaex.edu

Situation

With the advent of Bollgard cotton and boll weevil eradication, growers have experienced a decline in the number of pesticide applications necessary for control of heliothines and boll weevil. As a result, the tarnished plant bug, once controlled by insecticides used for heliothine and boll weevil control, has now become a primary pest of cotton in Arkansas. In recent years, Arkansas growers have experienced extremely high plant bug populations in mid- to late-season cotton and have experienced problems with control and resulting boll damage. Also a factor is the increase is minimum tillage systems and Round-Up tolerant crops that favor plant bugs and other occasional pests. Recent studies have indicated the tarnished plant bug is becoming more tolerant of conventional insecticides, and the need for alternative methods for suppressing plant bug populations has become clearly evident. Sufficient information on plant bug biology in the Mid-South suggests that the tarnished plant bug is capable of sustaining and building populations on a plethora of wild hosts commonly found surrounding production fields. If these wild hosts can be removed from the system in an economical and environmentally safe way, this would help to suppress populations below damaging levels and would relieve, to some extent, the need for insecticide applications. Previous studies in Mississippi and Louisiana have shown that controlling weed hosts in the early spring can reduce resulting field populations of tarnished plant bug by as much as 30 percent to 50 percent.

Stakeholder Input

Producers, county agents and Extension specialists recognize that this issue will continue to be of great importance as an educational program.

Overview

With the advent of *Bt* cotton, new target-specific insecticides and boll weevil eradication have all helped to decrease the need for the use of broad-spectrum insecticides that helped to control tarnished plant bugs (TPB). However, with these changes, the pest status of the plant bug and stinkbug has increased. The TPB has developed high levels of resistance to many insecticides commonly used for control; insecticides are currently the only means of control for this pest.

Recent studies on TPB have shown that area-wide management using IPM tactics in combination over a large area can successfully suppress TPB populations. A three-year study conducted by USDA-ARS at Stoneville, Mississippi, showed that TPB populations could be reduced 30 percent to 50 percent by making spring applications of herbicides around field borders. These applications deny TPB populations the wild hosts they need to build populations. Similar studies in Louisiana have shown comparable results. The strategy of early wild host destruction is compatible with currently used IPM and crop production practices and provides Arkansas cotton growers with an easy, economical solution to their ever-increasing problem with TPB. Use of this type of tactic should improve environmental quality and human safety by reducing the number of insecticide applications needed in cotton. For cotton growers, the value of the program is reduced cost of production and reduced risk of potential yield loss. Also, this program should decrease the potential for increased problems with insecticide resistance and enhance biological control of the TPB and other economic insect pests of cotton, thus enhancing the overall IPM program for cotton. Twenty-two producers and three consultants participated in the two-year study. Results indicated that plant bug numbers were effectively reduced in the management area compared to outside the area.

Extension Program Results and Accomplishments

Output Indicators

22 Producers participated in a voluntary program to determine the applicability of this program and met with Extension specialists to plan and conduct the project.

440 Growers, consultants and other clientele attending meetings where information was presented.

27 Presentations at grower meetings and field days.

18 Presentations at professional meetings.

21 Number of educational meetings held with industry representatives, state and federal agency personnel and University of Arkansas research faculty to identify and discuss plant bug management issues.

Outcome Indicators

- Potential recommendations produced concerning management of plant bugs in cotton.
- Reduced number of plant bug applications. Studies indicated that control of broadleaf weeds in the spring could effectively eliminate two applications of insecticides targeted for plant bugs. At an average of $8 per application, this could result in a savings of $16 per acre or approximately $16 million statewide.

Source of Funds

Smith-Lever 3(d) IPM funds
Grants (Arkansas Cotton State Support Group of Cotton Inc.)
Cotton Incorporated Core Funds
Gifts (Various Crop Protection Companies)

Scope of Impact

Dissemination – Statewide availability of program to interested counties after additional research. Insect management information will be available through publications and presentations at county meetings.

Scope of Program – State Specific – Cotton IPM presentations were made in every major cotton-producing county (17). Cotton IPM field demonstrations were installed in all 17 counties during 2006. Cotton IPM county participation has held steady at 17 counties.

Program Response:
Arkansas Nematode Diagnostic Laboratory

Contact: Terry Kirkpatrick, Department of Plant Pathology, 870-777-9702, tkirkpatrick@uaex.edu

Situation

The Arkansas Nematode Diagnostic Laboratory (ANDL) was relocated from the University of Arkansas Department of Plant Pathology to the Southwest Research and Extension Center (SWREC) in May 1995 and has been maintained since that time as an Arkansas Cooperative Extension Service laboratory. This laboratory serves all aspects of agriculture, horticulture and urban horticulture in the state where nematode problems are widespread but their damage is often overlooked as “hidden hunger” or other difficult to diagnose plant health problems.

Stakeholder Input

Input was provided by cooperating county agents, growers and grower groups and industry personnel in Arkansas.

Overview/Description of the Program

The ANDL offers nematode assay, identification and advice to growers and homeowners regarding numerous nematode pests. In addition to standard soil assays, the ANDL provides nursery stock assays, rice seed assays (white-tip nematode) and wood products (pinewood nematode) assays as appropriate for phytosanitary certification by the Arkansas State Plant Board. Our primary users are cotton and soybean growers, nurseries, turf growers and homeowners. In addition to assays and advice, the ANDL also develops educational materials and programs regarding plant-parasitic nematodes and their management. The ANDL is tied closely to the Plant Health Clinic at Lonoke, Arkansas, and the research program of Dr. R.T. Robbins, nematode taxonomist in the Department of Plant Pathology on the Fayetteville campus. In recent years, focused surveys of certain regions or crops have become a significant part of the ANDL to give a more realistic picture of emerging nematode problems in our state.

The ANDL is managed cooperatively by Extension and research personnel on the SWREC campus near Hope, Arkansas. The laboratory includes such state-of-the-art equipment as a semi-automatic elutriator for extraction of nematodes, other specialized equipment and an inverted microscope for critical observation and nematode

identification. On a daily basis, the laboratory is supervised by Mr. R.J. Bateman, Extension Program Associate III, who oversees operations and is responsible for all nematode identifications. Ms. Margie Miller, Laboratory Technician, is responsible for receiving and conducts laboratory and extraction procedures and assays, and Ms. Cathy Howard, Research Assistant, is responsible for all reporting and data management.

The ANDL has grown substantially since 1995 when it was moved to the SWREC. The first (half) year of operation, we processed a total of about 500 samples for our growers. By contrast, during 2006, the laboratory provided 1,800 assays for Arkansas growers, homeowners and industry representatives and an additional 3,000 assays for Extension on-farm demonstrations and tests.

Extension Program Results and Accomplishments

Output Indicators

- 1,711 soil nematode assays performed for Arkansas growers.
- 20 rice seed assays for white-tip nematodes for phytosanitary certification by the Plant Board.
- 27 wood samples for pinewood nematode for phytosanitary certification by the Plant Board.
- 6 nursery stock assays for certification by the Plant Board.
- 3,000 soil assays for various on-farm demonstrations, verification programs and educational programs.
- Completed a rice white-tip survey of the state for APHIS ($8,000 funding support).
- Conducted cotton and soybean nematode surveys in Prairie, Lee, Phillips and St. Francis counties in cooperation with local county agents.
- Cooperated in a "walk-in" plant disease clinic as a part of the Southwest Research and Extension Center Horticulture field day – June 8, 2006.
- Provided fresh nematode specimens, microscopes, and laboratory equipment for two all-day laboratory sessions in conjunction with a graduate nematology course offered to our county agents (PLPA 6303).
- Developed one Special Report: Bateman, R. J., Howard, S. C. and T. L. Kirkpatrick. 2006. Nematode Diagnostic Clinic, 2005 Summary Report, Arkansas Cooperative Extension Service Ag Publication AG-968-06. 8pp.
- Coauthored two abstracts (papers given at the 2007 Beltwide Cotton Conference – January, 2007:
  - Wilson, G., J.D. Barham, R.J. Bateman and T.L. Kirkpatrick. Tolerance in cotton cultivars to *Meloidogyne incognita* in the field.
  - Kirkpatrick, W.D., J.D. Barham, R.J. Bateman and T.L. Kirkpatrick. Reniform nematode population response to crop rotations involving cotton, corn and rice.
- Developed four articles for the 2006 Plant Health Clinic Newsletter:
  - Nematodes on Turf (Newsletter #8)
  - White Tip Nematode – Is it a Problem in Arkansas (Newsletter #9)
  - Nematodes in the Home Garden (Newsletter #12)
  - Root-knot Control: Planning Next Year's Garden Now (Newsletter #14)

- Conducted a tour and explanation of nematodes and nematode assay for the Hope High School biology classes – April 19.

- Explained nematode assay procedures and results interpretation for Diseases of Economic Crops graduate students – July 17.

Outcome Indicators – Program Impact

Public exposure and recognition is important for our service laboratory. The fact that we have increased our user base significantly is a good indication of our impact – our growers see this service as valuable. The number of requests for participation in educational tours and field days has also increased, so we now are providing education on nematode parasites of plants from the high school to the producer levels. Our special tests (rice seed, nursery stock and wood products) were initiated at the request of the Plant Board because of a critical need for our growers who want to continue to use markets where nematodes are regulated organisms. Without our ability to test for these pests, our growers would lose their markets. Our cooperation with verification programs, on-farm demonstration and research programs and county surveys has provided considerable new insight into the incidence of nematodes in our state and has raised awareness of this potential economic threat.

Source of Funds

Federal Smith-Lever – CES: surveys and special projects; fees for assays.

Scope of Impact

Dissemination – The activities of the ANDL are primarily for Arkansans and Arkansas agriculture. Nematology education programs are presented to all interested counties.

Information is available via the Arkansas CES web site and printed copies of publications, including:

Relevant publications in 2006 included those mentioned above. In addition, MP154, *Plant Disease Control Products Guide,* and *Control Root Knot Nematodes in Your Garden*, FSA-6114.

Scope of Program – State Specific – all counties.

Program Response: Cotton Integrated Pest Management

Contact: G. M. Lorenz III, Entomology, 501-671-2191, glorenz@uaex.edu

Situation

Cotton is the most pesticide intensive of the major row crops grown in Arkansas. IPM is an essential part of cotton production in the state in helping producers farm more efficiently and reduce reliance on pesticides as much as possible. Despite the use of pesticides, losses in yield due to arthropods (insects and mites) are estimated at about 5 percent each year, for a loss in excess of $40 million. Management costs to prevent or minimize the impact of these pests are estimated at greater than $150 per acre for Arkansas producers. The cost of control and loss for cotton production in Arkansas is estimated at approximately $150 million dollars per year.

Because of the cost of pesticides as well as losses from arthropod pests, alternative strategies are critical for Arkansas producers. Further, over-reliance on pesticides has led to concerns about resistance to insecticides. With the increasing use of transgenic cotton and boll weevil eradication, the pest complex and its importance is changing. The stinkbug and plant bug complexes have been elevated in pest status with fewer applications being made for control of the bollworm/budworm complex and boll weevil. Alternative methods for control of these bugs must be a priority to help growers maintain cost-effective insect control. Current research is centering on cultural practices, pheromone-based monitoring and improved scouting procedures to reduce insecticide reliance.

Other ongoing concerns include insecticide resistance management of heliothines and plant bugs.

Arthropod pests continue to threaten the competitiveness of cotton production by reducing yields and increasing costs of production.

Stakeholder Input

For several years, the Arkansas Farm Bureau has identified cotton insect control as a high priority issue. The Arkansas State Support Program of Cotton Incorporated has identified insect control research as a high priority and has funded numerous grant proposals in these areas. Surveys of county agents have indicated that more information is needed due to the changes occurring in cotton production with the advent of transgenic cottons, boll weevil eradication and changing pest status of insect pests.

Overview

Arkansas growers rely on research-based information that helps them utilize contemporary management strategies: transgenic cotton, cultural practices, aphid fungus surveys, trapping heliothine moths, IPM meetings and insecticides. The responsibility of the cotton IPM program is to deliver this information to growers, county agents, consultants and industry representatives.

IPM is an essential part of cotton production in the state in helping producers farm more efficiently and reduce reliance on pesticides as much as possible. Another concern in recent years is the increasing tolerance of bollworms to B.t. cotton. In 1996-97 growers averaged just over one application for bollworm control in B.t. cotton, whereas in 2006 many growers in the southeast part of the state sprayed as many as six times to control bollworm.

Current programs include: 1) monitoring tobacco budworm and cotton bollworm populations for resistance to widely used insecticides; 2) monitoring bollworm populations for resistance to B.t. cotton, and plant bugs to pyrethroids and organophosphates; 3) determining the optimum time for insecticide termination; 4) evaluation of plant bug thresholds and sampling methods to determine “best fit” strategies for consultants and growers; 5) evaluation of dual gene transgenic cottons to determine viability for Arkansas cotton growers; and 6) implementing thresholds for cotton aphids utilizing beneficial insects and the aphid fungus. Results from this applied research are delivered to growers, consultants and county agents through presentations, field days and newsletters.

Extension Program Results and Accomplishments

Output Indicators

1,980 Growers, consultants others attending presentations.

2,300 Phone calls addressing insect questions from clientele.

2,013	Field calls to growers.
130	Grower surveys conducted.
121	Presentations at grower meetings and field days.
91	Field demonstrations.
17	Counties participating in Cotton IPM Program.
18	Field days (average attendance 41).
87/3,000	Newsletters on Cotton IPM/Audience.
31	Popular press articles featuring cotton IPM.
28	Radio spots featuring cotton IPM.
61	Insecticide Evaluation Reports.
34	Consultant training sessions.
7	Major Extension Publications.
29	Presentations at Professional Meetings.
3	In-service trainings for county agents (in the field).
87	Number attending Cotton Insect Scout Schools.
41	Agents attending in-depth training at professional meetings.
23	Agents participating in in-season weekly on-line training.

Outcome Indicators

$21.70 per acre	Savings per acre on insecticide cost attributed to the use of COTMAN for termination of insecticide applications.
$12.50 per acre	Savings per acre on insecticide cost reduction attributed to the use of the Aphid Fungus detection program for determining the need for aphid control.
$12.00 per acre	Savings per acre on application of new aphid threshold.
$15.00 per acre	Savings on insecticide costs attributed to area-wide management of plant bugs.

Source of Funds

Smith-Lever 3(d) IPM funds
Grants (Arkansas Cotton State Support Group of Cotton Inc.)

Cotton Incorporated Core Funds
Gifts (Various Crop Protection Companies)
FSL-CES

Scope of Impact

Dissemination – The Cotton IPM Program is available statewide to all counties through "hands-on" presentations, training, field days, IPM meetings held in six counties, field calls and visits, printed publications and the Extension web site at www.uaex.edu.

Scope of Program – State Specific – Cotton IPM presentations were made in every major cotton producing county (17). Cotton IPM field demonstrations were installed in all 17 counties during 2006. Cotton IPM county participation has held steady at 17 counties.

Program Response: Diversified Integrated Pest Management

Contact: Kelly M. Loftin, Entomology, 479 575-3462, kloftin@uaex.edu

Situation

Integrated pest management is well established throughout the major row crops in Arkansas. However, some of the greatest need and opportunities for implementing IPM are in crops with smaller acreage, animal production, and in managing invasive pests, such as fire ants. The Diversified IPM program in Arkansas engages county agents and agricultural growers and producers in finding ways to implement IPM, thereby reducing pesticide inputs and assuring greater harmony with the environment. Grants are made to county agents to develop programs that deliver IPM directly to growers or involve partnership with growers.

Stakeholder Input

Ranchers, farmers, Master Gardeners, neighborhood organizations and county Extension councils are often the primary driving force behind county diversified IPM programs. Like other successful programs, local needs (specific pests of the community) drive diversified IPM programs. Client feedback from calls and office visits is another driving influence on D-IPM program initiation. The governor-appointed Arkansas Fire Ant Advisory Board serves in advising the direction of the fire ant research and education program.

A focus group of dairy farmers, Extension specialists and researchers was formed in 2005 to help guide the outreach components of the Southern Region SARE Dairy/Filth Fly IPM project. This group meets on a yearly basis to review research generated during the previous fly season. The initial meeting was productive in that dairymen indicated their thoughts on the best venue to use in relating IPM education to dairy producers.

Overview

Diversified Integrated Pest Management (D-IPM) includes pest problems not associated with row crops, primarily livestock and urban pests. This portion of the overall IPM program has expanded considerably. Projects in the Diversified IPM program included fire ants, horn flies, filth flies, weed control, fescue control and corn pests. In 2006, cooperators in 21 counties, through funded competitive diversified IPM grants, used $7,302.

The horn fly, *Haematobia irritans* L. is the major pest species of beef cattle in the South. Its economic impact is significant in both beef and dairy cattle. Major damage is through blood loss and annoyance. Losses include reduction in yield of milk and meat. Horn flies can produce a new generation every two weeks, making this pest difficult to control and quick to develop resistance.

The housefly, *Musca domestica L.,* and the stable fly, *Stomoxys calcitrans* L., are the major fly pests in and around dairy housing systems in the southern United States. They create an uncomfortable environment for farm workers, raise public health concerns about unsanitary milk handling conditions, create community nuisance problems, spread diseases from cow to cow, disrupt feeding habits of cows and lower milk production and feed conversion efficiency.

A large proportion of flies breeding on most dairy farms occurs in calf housing and cattle resting areas where manure and bedding materials can accumulate. Fly breeding in this habitat is prolific, and natural populations of parasitoids, mostly *Muscidifurax raptor*, do not become well established until 1 to 2 months after peaks in abundance of fly populations. Producers often try to control fly infestations by making frequent insecticide applications, but this approach aggravates insecticide resistance problems and may limit the development of populations of parasitoids and predators. Interest in biological control agents for fly suppression on dairies is growing. Aware of the increasing cost of insecticides, decreasing availability of new chemicals and development of insecticide resistance, farmers recognize the cost effectiveness of IPM strategies.

As a result of successful Dairy Filth Fly IPM programs (SARE and D-IPM sponsored program) in Washington, Van Buren and Searcy counties, a multi-state, multi-discipline southern Region SARE Research and Education Grant is ongoing. UACES is the lead institution with cooperators at NCSU, Mississippi State University and UA Experiment Station. This project compares the cost and effectiveness of manure management, parasitoids and conventional insecticides against house and stable flies and will continue through 2008. Fly surveillance, sanitation and treatment thresholds are the core of the educational component. Research will focus on species distribution and abundance of naturally occurring pteromalids as well as optimal release rate, duration and dispersal of augmented releases.

Extension Program Results and Accomplishments

Output Indicators

21 Counties participated in the D-IPM program, receiving $7,300 in grants.

15 Diversified-IPM training meetings.

8 Field days/farm tours.

1,441 Producers attended D-IPM training meetings or made direct contact with CES faculty on pest issues.

16 Newspaper articles.

2 Newsletters addressing diversified-pest issues.

25 D-IPM demonstrations.

13 Youth directly involved in D-IPM projects (assisting county staff with projects).

12 Professional presentations (regional, local and national professional meetings) – 7 posters plus 5 oral papers.

1 Multi-state southern region SARE sponsored filth fly IPM project – involving 3 states and 4 institutions.

50 Livestock and dairy producers monitor pest populations prior to initiating control and employ manure management practices to lessen impact of fly pests.

19 Counties conducted fire ant management demonstrations.

6 Counties participated in imported fire ant biological control (phorid fly) releases and evaluations.

29 Educational meetings and seminars held to inform homeowners, grower groups, community leaders, elected officials, and specialized groups about imported fire ant biology, impact and management.

3 Educational programs in public schools.

Outcome Indicators

12 Additional dairies in 2006 have adopted fly surveillance and manure management into their filth fly management program, reducing reliance on insecticides to control flies around dairy facilities.

2 New producer groups (alternative livestock producers and organic milk producers) were educated about filth fly IPM, non-chemical and organic control strategies through demonstration, newsletter and state goat and sheep association.

12 Additional beef producers have adapted horn fly surveillance as part of their horn fly control program. In 2006, 8 additional beef producers have adopted horn fly monitoring and treatment thresholds in their horn fly management program.

7 Mechanical horn flies traps (non-chemical alternative) are deployed in horn fly management demonstrations in multiple counties.

8 Projects were initiated to manage weeds and insects in pastures.

Source of Funds

Smith-Lever 3d IPM funds, grants (SARE), gifts (various companies), FSL-CES.

Scope of Impact

Dissemination – Diversified IPM programs are available to all counties where a need exists to manage pests in a more efficient way. Educational materials such as newsletters, timely pest alerts and press releases are electronically distributed to all county Extension offices and agriculture agents. PowerPoint presentations are also available electronically to all county staff.

Scope of Program – State Specific – Twenty-seven counties implemented substantial Diversified IPM programs during 2005. These include Van Buren, Independence, Sharp, Fulton, Izard, Clark, Clay, Dallas, Perry, Franklin, Miller, Bradley, Cleveland, Craighead, Crawford, Polk, Sebastian, Grant, Desha, Drew, Union, Pulaski, and Yell counties.

Program Response:
Integrated Rice Disease Management Program (IRDM)

Contact: Rick Cartwright, Department of Plant Pathology, 501-837-9643, rcartwright@uaex.edu

Situation

There are numerous rice diseases affecting production each year in the state. Diseases vary in intensity depending on the cultivar, management and local environment. Control options vary greatly, but depend on some combination of resistant cultivars, modified cultural practices or fungicides. Researching all of the factors involved and pulling all results together into useful recommendations for each farm in the state remain an issue.

Stakeholder Input

Cooperating rice county agents, growers and industry personnel in Arkansas and other rice states provided input.

Overview

We established an integrated rice disease management program several years ago in an attempt to fill in practical research gaps for rice disease control and pull together all rice disease research to form integrated rice disease management recommendations through Extension education. Gap research involved the evaluation of many new rice cultivars in different environments, where disease reaction data were lacking, and we have consistently assessed different fungicide rates and timings on various diseases to determine economic benefits. We have explored the interaction of soil fertility and fertilization on disease intensity and assisted in the collection of data from other disease researchers on seedling disease control, basic germplasm evaluation, straighthead assessments and verification field observations to support management guidelines. This program supports the Rice Disease Monitoring Program and the rice breeding programs and has managed the Rice IPM Program, which provides grants to rice county Extension programs.

Extension Program Results and Accomplishments

Output Indicators

225	Rice cultivars/lines were evaluated for disease reaction in multiple environments.
12	Different fungicides were evaluated in 23 field tests and demonstrations.
6	Low potash field situations were assessed for stem rot.
8	Rice disease monitoring plot locations were assessed for 8 separate diseases.
2	ARPT locations and 3 other research sites were evaluated.
35	Counties overall had county agents involved.
23	Rice IPM county grants totaling $23,450.
32	Rice grower meetings featuring IRDM.
1,100,200	Rice acres represented at meetings.

2,670	Stakeholders attending meetings.
16	Field days featuring IRDM.
211	Field demonstrations in Rice IPM.
103	Newsletter articles featuring IRDM.
6,700	Stakeholders receiving newsletter articles.
154	Popular press articles.

Outcome Indicators

- Rice growers continue to adopt new technology discovered and extended to them by IRDM.
- Arkansas rice growers continue to be accepting of integrated approaches toward risk management, rather than high input preventative schemes. IRDM has been used by county agents to achieve this change in the attitude that was prevalent during the 1980s and early 1990s.
- IRDM and the Rice IPM Program have raised awareness of the role of flood management and fertility on disease problems.
- The number of counties participating remains stable.
- The successful use of flood management for blast control has allowed Arkansas to grow blast-susceptible cultivars on 75 percent of the acreage, without major yield loss.
- Maximum return from fungicide applications to rice have been realized, using the recommendations developed by IRDM, saving growers at least $15 per acre.

Source of Funds

Arkansas Rice Promotion Board; Federal IPM (Lorenz); Company Gifts; Smith-Lever.

Scope of Impact

Dissemination – This program is open to rice farmers in Arkansas, although surrounding states also use the recommendations. Recommendations have been published in the MP154, *Arkansas Plant Disease Control Products Guide* (rice section); *Arkansas Rice* (newsletter on the Extension web site); Annual Report to National IPM Program; RIS 164 ARPT report; B.R. Wells Rice Research Series Reports.

Scope of Program –
State Specific – rice counties.
Integrated Research and Extension – rice counties.

Program Response:
Plant Health Clinic

Contact Rick Cartwright and Sherrie Smith, Department of Plant Pathology, 501-837-9643 or 501-676-3124; rcartwright@uaex.edu or ssmith@uaex.edu

Situation

A recent Departmental Review suggested that growing demand in the urban "green" industry required an Urban Plant Pathology program. To satisfy this demand, the Extension Plant Pathologist responsible for the Plant Disease Clinic was reassigned to Urban Plant Pathology in Little Rock, and the Plant Disease Clinic at Lonoke was renamed the Plant Health Clinic and a new diagnostician hired and various upgrades made.

Stakeholder Input

Input for the Plant Health Clinic is provided by an advisory group of selected county Extension agents, growers and industry clientele – as well as feedback from all clientele using the Clinic as determined by an annual survey.

Overview

The Plant Health Clinic provides plant diagnostic services to the public in Arkansas. The Clinic is now equipped with digital microscopy, computer imaging diagnostic capability, conventional PCR, conventional microbiology capability and serology to better respond to the growing diagnostic needs of the day. The Clinic also provides education to the Arkansas public on plant health and diagnostic matters through participation in grower meetings, flower and garden shows, field days and other events. And the current diagnostician has written numerous timely newsletter articles and fact sheets in support of Clinic education programs. The Clinic also serves as the primary hub for plant diagnostics in the state, including soybean rust diagnostics – receiving samples from sentinel plot cooperators and managing and reporting soybean rust data from around the state.

Extension Program Results and Accomplishments

Output Indicators

2,300+	Samples diagnosed – a new record.
	Several hundred soybean rust samples diagnosed.
	Soybean rust sentinel plot data entered.
18	Seasonal newsletters written.
2	fact sheets prepared.
1	fruit management guide prepared.
2	field day presentations/mobile clinics.
3	grower presentations.

5 trade show/meeting displays.

1 advanced diagnostic training attended.

Outcome Indicators/Program Impact

- Arkansas growers and the public have positively responded to increased Clinic activity and programs, submitting a record number of samples during the year.
- More than 40 positive written comments were received about the timely Clinic newsletters and fact sheets.
- The diagnostician has been invited back to various trade shows and meetings for the second year.

Source of Funds

State of Arkansas Special Appropriation; USDA CSREES SPDN Funding; Smith Lever

Scope of Impact

Dissemination – The Clinic is available to all Arkansas citizens, primarily through the county Extension offices. Educational materials prepared included 18 issues of the *Plant Health Clinic Newsletter* (available on the Extension web site); the Hosta X virus fact sheet (web); Diseases of Leafy Greens fact sheet (web); and the fruit pest management guide (still in process). Sample records are available in the Clinic database and soybean rust records were entered into PIPE (national web site database) and on the www.sbrusa.net web site.

Scope of Program

1) State Specific – all counties.
2) Multi-state – Arkansas, Louisiana, Mississippi, Texas, Alabama, Georgia, Florida, South Carolina, North Carolina, Tennessee, Virginia, Puerto Rico, Virgin Islands (SPDN).

Program Response: Site-Specific Nematode Management

Contact: Terry Kirkpatrick, Department of Plant Pathology, 870-777-9702, tkirkpatrick@uaex.edu

Situation

Cotton is the most important agronomic crop in the southern U.S. with an estimated annual value of approximately $6 billion. A significant constraint to profitability in the region is yield suppression due to plant-parasitic nematodes. The estimated monetary loss to our cotton farmers last year was slightly over $300 million. No commercially acceptable nematode resistant cotton cultivars have been developed for use in this region, so growers rely heavily on annual applications of chemical nematicides. These materials range in cost from $25-$45 per acre annually, and are all toxic and pose considerable environmental risk. There is a need for 1) lower cost, effective nematicides and 2) strategies that utilize existing products in a more efficient and environmentally appropriate manner.

Stakeholder Input

Input was provided to initiate this grant by southern cotton producers and their representatives, including the Arkansas Cotton Support Group and Cotton Incorporated (a national organization) and cooperating scientists in the southern region working on nematode problems in cotton.

Overview

Multi-state (Arkansas, Missouri, South Carolina, Georgia) cooperative investigations were initiated to evaluate the potential of certain precision agriculture technologies and strategies to enhance our ability to deliver nematicides in a more economical and environmentally safe manner. These investigations demonstrated that soil type and texture are a primary factor in determining both the distribution of nematodes within production fields and their damage potential for the crop. Soil electrical conductivity (EC), which is highly correlated with soil texture, can be easily and economically measured and mapped within individual production fields using mobile EC meters. Our work has shown that these maps can then be used both to focus ground-truthing (nematode sampling) to determine nematode-induced crop risk and to deliver nematicides at appropriate rates site-specifically only to those areas within fields where uncontrolled nematodes will result in economic yield loss. During the 2005 season in a nematode-infested commercial production field in Mississippi County (179 acres), we were able to reduce the total amount of the nematicide Telone II (1,3-dichloropropene) applied by 42 percent while maintaining yields that were statistically comparable with a standard whole-field application. During 2006, we initiated a pilot program called the Site-specific Nematode Management program. We installed precision nematicide delivery systems and global positioning systems on three farms in Arkansas and three farms in South Carolina. These systems are being used as a type of "train the trainer" approach with the growers and farm managers involved in demonstrating the system to other farmers and industry leaders in their areas.

Extension Program Results and Accomplishments

Output Indicators

- Precision agriculture technologies for site-specific nematode control in cotton were evaluated on southern U.S. cotton farms.
- Soil type and texture were demonstrated to by primary predictors of nematode distribution.
- Soil EC was highly correlated to soil texture and easy to measure.
- 42% reduction in Telone II use demonstrated in one cotton field.
- Site specific nematicide delivery systems using GPS were installed on 3 Arkansas and 3 South Carolina cotton farms for future training use.

Outcome Indicators/Program Impact

- Significant cost savings were demonstrated by using the SNP approach because less nematicide was used without sacrificing yield or quality of cotton.
- Indications were that SNP changed the attitudes of cotton consultants and growers toward acceptance of more precise and environmentally friendly nematode control methods.

Source of Funds

USDA Initiative for Future Agricultural and Food Systems; USDA Natural Resources Conservation Service; Gifts from Dow AgroScience and Bayer Crop Protection.

Scope of Impact

Dissemination – This program is open to cotton farmers, county agents and consultants in Arkansas and the U.S.

Scope of Program

1) State Specific – cotton counties.

2) Multi-state – Arkansas and South Carolina.
3) Multi-state Research – Arkansas and South Carolina.
4) Integrated Research and Extension – Arkansas and South Carolina.
5) Multi-state Integrated Research and Extension – Arkansas and South Carolina.

Program Response: Soybean Disease Management

Contact: Cliff Coker, Department of Plant Pathology, 870-460-1091, coker@uamont.edu

Situation

Soybean diseases remain a major yield-limiting factor in the warm, humid climactic conditions of Arkansas. Education to avoid or prevent disease problems is an important consideration for growers, county agents and consultants in the state.

Stakeholder Input

Cooperating soybean county agents, growers and industry personnel in Arkansas provided input.

Overview

The soybean disease management program has been established several years and includes support for county programs in regard to field diagnosis of soybean problems, presentations to soybean growers/industry personnel, development of educational materials on soybean pathology, soybean fungicide testing and management of the Soybean IPM program.

Extension Program Results and Accomplishments

Output Indicators

- Soybean IPM Program had 22 counties participating.
- Participated in 23 planning meetings.
- 61 individual or group training sessions.
- 2,900 phone calls.
- 600 field visits.
- Involved in 91 presentations to soybean clientele.
- Participated in 11 workshops.
- Involved in several thousand test plots.
- 1 international meeting on soybean rust.

Outcome Indicators/Program Impact

- Soybean yield in Arkansas has continued to rise despite numerous challenges, indicating adoption of effective disease management.
- We have avoided statewide soybean disease epidemics.
- Growers have accepted new technology tested and recommended by this program, including new fungicides.
- Growers have avoided blanket fungicide applications, accepting our premise of IPM use, thereby saving up to $16 per acre.

Source of Funds

Smith-Lever; Company Gifts; Soybean IPM Funds (Lorenz); Arkansas Soybean Promotion Board.

Scope of Impact

Dissemination – This program is open to all soybean farmers and other clientele in Arkansas. Educational materials have included contributions to the annual *Soybean Update* and the *Soy Notes* newsletter.

Scope of Program
State Specific – soybean counties.
Integrated Research and Extension – soybean counties.

Program Response: Soybean Integrated Pest Management

Contact: G. M. Lorenz, Entomology, 501-671-2191, glorenz@uaex.edu

Situation

Arkansas is the largest soybean-production state in the southern U.S., with 2.9 to 3.1 million acres grown each year. Soybeans are intensively managed, requiring timely irrigation, fertilizer and heavy pesticide use. IPM is a necessary and natural tool to help producers farm more efficiently while reducing pesticide risk to the soybean ecosystem. Increasing special problems in Arkansas soybean production including soil and water quality, herbicide drift/resistance issues, insect pressure, new pests introduction, severity of established pests and others have also increased the need for IPM in soybean. High inputs and the continuing low value of the grain makes efficiency of production extremely critical, and IPM practices increase efficiency while minimizing pesticide overuse. Opportunities for Extension IPM education include improvement in the economic and environmentally sound use of pesticides, preservation of pesticide technology through resistance management, reduction in unneeded pesticide applications, increased integration of genetic/cultural tools with pesticide practices, pest surveys/monitoring and improved understanding of pest identification and biology.

The Arkansas Soybean IPM Program is a multi-disciplinary effort, with components of insect, weed and disease management. Activities include monitoring for resistance development in pigweed, ragweed and horseweed to herbicides; monitoring for new pests including Asian soybean rust and the soybean aphid; evaluation of the economic value of preventative vs. decision threshold-based fungicide applications; improved treatment thresholds for soybean insect control; educational meetings on IPM methods in soybean and soybean pest

identification and biology. Target audiences include soybean producers, crop consultants, dealer personnel, pesticide applicators and county Extension agents. Messages include “soybean pest monitoring”; “economic value of soybean scouting”; “match the cultivar to the field, not the whole farm”; “save the technology through resistance management”; “don’t waste your pesticide dollar, make it count”; and “know your soybean pests.”

The Soybean IPM Program is coordinated by the Extension Plant Pathologist and guided by the Soybean IPM committee made up of University of Arkansas Division of Agriculture personnel including a soybean agronomist, the IPM coordinator, a soybean entomologist, soybean county agent representatives, a soybean weed scientist, an agricultural economist and a regional Extension administrator. The program is carried out by county Extension agents through a grants program, in cooperation with various soybean Extension specialists. General program involvement includes plant pathology, entomology, soil and water science, weed science, economics, pesticide application and pesticide regulation – all within the University of Arkansas. Cooperating organizations include the Arkansas Association of Crop Consultants, the Arkansas State Plant Board and APHIS PPQ/Arkansas.

Stakeholder Input

The Arkansas Farm Bureau has identified soybean pest control as a high priority. The Soybean Promotion Board has identified insect research as a high priority and has funded numerous grant proposals in these areas. County agent surveys have disclosed an increased need for clientele to determine “Best Management Practices” for control of soybean pest problems. With the advent of transgenic soybean production, growers are faced with many difficult decisions on economic management practices. Thus, many activities revolve around field demonstrations, workshops and training sessions in the local production area (grower fields, etc). Stakeholders participate at every level in the counties and in meetings, encouraging a feeling of “ownership” in the local programs.

Overview

The Soybean IPM education program was initiated in 1999 as an effort to teach producers how to better manage soybean using methods that increase production efficiency while reducing unnecessary inputs, including pesticides – and also to improve basic producer knowledge of the agro-ecosystem of which they are stewards. Management of insects in the state relies more heavily on scouting and decision thresholds for the judicious use of insecticides.

The Soybean IPM Program is primarily a local “hands-on” program. Many stakeholders will not change their practices in pest management (especially pesticide applications) unless they “see” that IPM practices work for them. The IPM program this past year has provided Arkansas producers the information and training to place them at the forefront of pest management including Asian soybean rust, glyphosate-tolerant weeds and the soybean aphid. This involved keeping county Extension agents, crop consultants and producers abreast of new products and application methods. Although these programs are important, it is also important to maintain continuity in educational activities that focus on best management practices, which rely upon accurate pest identification.

Through awareness, understanding and acceptance of the educational messages in the Soybean IPM Program, the University expects an overall improvement in the efficiency of pesticide use in soybean. Continued IPM efforts, such as efficiency of pesticide use, scaling up pesticide management to the agro-ecosystem and improving decisions about pesticides, have been necessary and natural tools to help producers farm more efficiently while reducing the pesticide risk to the agriculture ecosystem. This means more profitable soybean production with the same or less overall pesticide use over time, and there should be a corresponding decrease in human and environmental exposure to pesticides – at least compared to the recent past. Impacts are measured through annual

Soybean IPM annual reports from participating county Extension agents, who rely on surveys, soybean harvest and economic data and local pesticide use data.

Extension Program Results and Accomplishments

Output Indicators

- Participation included 20 top soybean counties, representing 72% of Arkansas soybean acreage with 82% of this acreage implementing IPM practices.
- Soybean IPM meetings – featuring entomology, weed science, and/or plant pathology – totaled 36 during 2006.
- Meeting attendance exceeded 2,000 soybean producers, about 48% of Arkansas soybean farmers.
- Participating counties held 18 workshops or field tours featuring soybean IPM, including entomology, weed science and/or plant disease management.
- County participants wrote or distributed 46 newsletters on soybean IPM.
- Participating county agents conducted 42 field demonstrations related to integrated pest management of soybean diseases, weeds, and/or insects.

Outcome Indicators/Program Impact

- Eighty-two percent of the 2,000 soybean producers attending IPM meetings implemented IPM practices.
- Soybean disease, weed, or insect IPM topics were featured in 54 popular press items among the participating counties, including radio and TV programs and newspaper articles.

Source of Funds

Smith-Lever 3(d) IPM funds, grants (Arkansas Soybean Promotion Board), gifts (various crop protection companies), and FSL-CES.

Scope of Impact

Dissemination – The soybean IPM program is available statewide to all counties through "hands-on" presentations, training and field days. IPM meetings held in nine counties, field calls and visits, printed publications and the Extension web site.

Scope of Program – State Specific – Soybean IPM presentations were made in every major soybean-producing county. Soybean IPM field demonstrations occurred in 19 counties during 2006. Soybean IPM county participation has held steady at 19 counties.

Program Response:
Urban Pest Management Program

Contact: John D. Hopkins, entomology, 501-671-2226, jdhopkins@uaex.edu

Situation

The scope of Urban Integrated Pest Management in Arkansas includes native and introduced insect pests that can directly impact the state's citizens. These insect pests pose both direct and indirect threats to human health and well-being, as well as having the potential to adversely impact the value of property and quality of life of all Arkansans.

The Urban Integrated Pest Management program focuses on education of homeowners; agriculturists; youth; the professional pest control, landscape, turf, and nursery industries; and staff in the Arkansas State Plant Board, Department of Health and Department of Education. Program goals are achieved through county and state educational programs such as demonstrations, applied research, education booths, presentations, publications, newsletters, web pages, in-service training of county faculty and news releases.

Educational and training materials was updated for individuals trying to become certified commercial and non-commercial pesticide applicators in the areas of Termite and Structural Pest Control; Household Pest and Rodent Control; Food Manufacturing, Processing, and Storage Pest Control; General Fumigation; Food Related Fumigation; Ornamental, Tree, and Turf Pest Control; Weed Control; and Golf Course Pest Control.

Arkansas public schools were surveyed as to their use of integrated pest management programs. There is no specific program promoting integrated pest management (IPM) in Arkansas public schools. The U.S. EPA promotes School IPM programs as a means to protect human health by suppressing pests that vector diseases, reducing losses from pest damage, reducing environmental pollution and reducing human exposure to pesticides. For Arkansans to benefit from IPM in public schools, school personnel need to be aware of current pest control practices and integrated pest management.

Damage resulting from termite infestations is a concern for all who own structural property in Arkansas. In addition to the native termites that threaten property, a new invasive species of termite, *Coptotermes formosanus* (Formosan subterranean termite) has the potential to cause damage in Arkansas. In addition to infesting wooden structures, this species has been found attacking 47 species of living plants, including tree species that are dominant in Arkansas' forests.

Africanized honeybees were first detected in Arkansas in June 2005. The spread of this invasive bee is anticipated to proceed across the state within a few years. A cooperative effort between Extension and the State Plant Board led to development of educational materials to inform the citizens of Arkansas of the risks from this insect and provide them with proper safety precautions when Africanized honeybees are encountered.

The red imported fire ant (*Solenopsis invicta*) is a pest of both rural and urban Arkansas. This ant is found in at least 50 Arkansas counties and continues to expand its range. Thirty-two Arkansas counties are included in the Federal Fire Ant Quarantine. The inclusion of these counties within the quarantine area has implications to commerce due to imposed restrictions on the movement of regulated material. Educational efforts stressing management and suppression of fire ant continue in infested areas of the state as well as in areas of potential infestation.

The management of pest problems associated with the urban environment is critical to the health and well-being of all Arkansans. The Urban Integrated Pest Management program was developed in 2002 to focus programs

toward protecting the property, health and well-being of the citizens of Arkansas. These programs involve using innovative methods to educate, detect and protect Arkansans from threatening pest species.

Stakeholder Input

The Arkansas State Plant Board (ASPB) plays a major stakeholder role, leading to development of updated educational and training materials for individuals seeking commercial/non-commercial pesticide applicator certification in the areas of Termite and Structural Pest Control; Household Pest and Rodent Control; Food Manufacturing, Processing, and Storage Pest Control; General Fumigation; Food Related Fumigation; Ornamental, Tree, and Turf Pest Control; Weed Control; and Golf Course Pest Control.

The ASPB and USDA/APHIS/PPQ identified a need to survey for the presence of Formosan subterranean termites in southern Arkansas.

The Africanized Honey Bee Advisory Board along with the ASPB requested assistance in developing educational materials relating to Africanized honeybees.

The Arkansas Department of Education has supported the Extension Urban Entomology program to assess pest control practices in Arkansas public schools and to promote the implementation of a voluntary School Integrated Pest Management Program.

The Governor-appointed Fire Ant Advisory Board and County Extension Personnel provide input to assist in appropriately targeting educational and management efforts related to fire ants.

Overview

During 2006, cooperative work involved the creation of educational materials relating to professional commercial pest control, in collaboration with the Arkansas State Plant Board. This work was supported through a Professional Applicator Training Materials Grant sponsored by EPA and administered by the Plant Board. Miscellaneous Publications produced were MP449, *General Fumigation (Commercial) Training Manual*, and MP450, *Food Related Fumigation (Commercial) Training Manual*. This project addressed a significant need in Arkansas for updated and improved training material for commercial pest management professionals, and demonstrates a cooperative interdisciplinary approach (Extension Entomology, Plant Pathology, Weed Science and Wildlife Biology) toward accomplishing the project goals. Support to counties and the commercial pest control industry was provided through in-service training, various county meetings and interactions with commercial pest management professionals.

A survey conducted to determine pest management practices in Arkansas public schools was completed and summarized. The survey was sent to the superintendent in each of Arkansas' 267 school districts, of which 119 (44.57 percent) responded to the survey. This effort was supported through a grant received from the Southern Region Integrated Pest Management Center with funds from the USDA/CSREES's Integrated Research, Education and Extension Competitive Grants Program - Integrated Pest Management.

A Cooperative Agreement Project (CAPS) Proposal entitled "Formosan Subterranean Termite Survey in Southern Tier Arkansas Counties" ($15,304.00) was submitted to USDA APHIS PPQ but not approved. This invasive species is established in areas of Louisiana, Texas and other southern states. If allowed to become established in Arkansas, this termite has the potential to cause extensive economic damage to structures as well as damage to the state's forest resources. Of greater concern than the termite's natural movement is the potential for artificial spread of infested debris from areas damaged by hurricane Katrina. The objective of the survey is to identify points of colonization by the Formosan subterranean termite in southern Arkansas through the use of light/sticky

traps. The Plant Board is cooperating in this project and would initiate appropriate action if this termite were identified in the state.

The Urban Entomology Program, in conjunction with the State Plant Board, also concentrated on awarness education regarding Africanized honey bees. This invasive species was first detected in Miller County, Arkansas, in June 2005. Educational materials (MP451, *Africanized Honey Bees in Arkansas Training Manual*; FSA7068, *Africanized Honey Bees: What You Should Know*; FSA7067, *Africanized Honey Bees: How to Bee-Proof Your Home*; FSA7069, *Africanized Honey Bees and Your Pets and Livestock*; and FSA7070, *Preparing Schools for Africanized Honey Bees*) were produced and provided to first responders, commercial pest management companies and citizens of the state. Another cooperative effort among UACES, ASPB and USDA APHIS PPQ was the production of FSA7066, *Emerald Ash Borer: A Potential Pest of Ash Trees in Arkansas*, to alert Arkansans and help prevent the introduction of this destructive pest from other infested areas in the U.S.

Fire ant control demonstrations, involving mound and broadcast applications of commercial products, were conducted in Miller and Faulkner counties. Work on fire ant biological control demonstrations either continued or was initiated at new sites. Indications are that the fire ant phorid parasite, *Pseudacteon tricuspis*, released in Pike County in 2002, has been sucessfully established and continues in 2005 to expand outward from the area of initial release. Initial releases of another parasite, *Pseudacteon curvatus*, were made in Sevier and Clark counties in an attempt to diversify the biological control efforts in the state. Additionally, education programs to increase fire ant awareness and management strategies were conducted in areas of the state where expanding fire ant populations pose a threat.

Extension Program Results and Accomplishments

Output Indicators

1,449 Individual contacts relating to Urban IPM.

696 Individuals attending presentations.

457 Contacts from individuals seeking pest information.

40 Presentations at educational meetings.

12 Newsletter articles.

16 Media interviews.

19 Extension publications.

14 Presentations at professional meetings.

7 Demonstrations conducted for clientele.

9 Youth outreach educational activities.

Outcome Indicators/Program Impact

- All individuals seeking licensing by the Arkansas State Plant Board in the commercial and non-commercial pest control categories utilize training materials prepared by the Urban Pest Management Program.

- A survey of pest control methods and IPM awareness in 267 public school districts in Arkansas indicates interest in implementing IPM programs in schools and that there is a desire for learning more about a voluntary School IPM Program among a slight majority of survey respondents. Some elements of IPM are already practiced by many of the survey respondents.

- Members of the Arkansas Pest Management Association, Arkansas Green Industry, Arkansas Turfgrass Association and others in the Arkansas pest control industry have been alerted through the Urban Pest Management Program about invasive insect species that pose current or future threats.

- Most of Arkansas' 75 counties have delivered the Urban Pest Management Program via ongoing fire ant programs with, approximately 45 participating regularly and through educational opportunities for individual citizens.

- The urban pest management program continues to help connect the citizens of Arkansas and agriculture through service and education.

Source of Funds

Federal Smith-Lever - CES; CSREES IPM Funds.

Scope of Impact

Dissemination – Urban IPM programs are available to all counties where a need exists to manage pests in a more efficient way.

Scope of Program – State Specific – A majority of Arkansas counties have delivered the urban pest management program via ongoing county educational trainings and meetings. The urban pest management program applies to all Arkansas counties and all counties have disseminated information from our program in the form of the MP 144, *Insecticide Recommendations for Arkansas.*

Program Response: Urban Plant Pathology Program

Contact: Steve Vann, Department of Plant Pathology, 501-671-2229, svann@uaex.edu

Situation

Based on the 2004 Plant Pathology Program Review and the recognition of the growing green industry in Arkansas, an Urban Plant Pathology program was initiated during 2006 to address disease problems in "urban" or non row-crop settings.

Because of its geographic location, climate and tourist activity, Arkansas is an especially desirable area for gardeners, golf courses, landscapers and other urban plant activities. Unfortunately, the climate also is very favorable for myriad disease problems, and the urban population remains mostly unfamiliar with plant disease or management. It is also true that commercial landscape and golf course personnel have limited plant pathology educational opportunities, resulting in consistent overuse of fungicides and other chemicals in the urban environment.

Stakeholder Input

Input is provided by an advisory group of selected county Extension agents and through feedback from Master Gardeners, Extension specialists and the Plant Health Clinic.

Overview

The program educates the urban public on plant disease matters through the development of educational materials, support for county Extension efforts in urbanized settings, support for the statewide Master Gardener program and other Urban Integrated Pest Management efforts. It utilizes and supports the Plant Health Clinic at the Lonoke Agricultural Center.

Extension Program Results and Accomplishments

Output Indicators

19 Multi-county Master Gardener disease-related presentations.

2,167 Master Gardeners for 2006 with 101,430 project hours by participants.

1 Publication edited, MP 154 Arkansas Plant Disease Control Products Guide 2006, providing the latest chemical disease control recommendations for commercial and urban clientele.

2 Disease sections authored in pesticide applicator training manuals in support of Arkansas State Plant Board programs: MP444 http://www.uaex.edu/Other_Areas/publications/HTML/MP-444.asp and MP445 http://www.uaex.edu/Other_Areas/publications/HTML/MP-445.asp.

9 Disease-related newsletter articles issued in print and posted to the UAEX web site.

11 Plant Disease fact sheets developed for web and POD for 2006.

68 Phone contacts in reference to disease problems and diagnoses on various crops grown in the state.

2 Gardening Radio Shows (KARN).

2 4-H O-Rama exhibits.

2 Annual gardening seminars.

1 Advanced Master Gardener training (“Train the Trainers”).

1 In-service training attended – “Creative Teaching/Learning.”

125 Digital images of plant disease problems were assessed via e-mail.

- Guest Lectures at ATU (7th consecutive year).
- Assisted at Arkansas Flower and Garden Show Plant Health Clinic Exhibit.

Outcome Indicators/Program Impact

Public exposure and recognition is of foremost importance for the urban plant pathologist position. The establishment of a single source of disease-related information for urban populations throughout the state will reinforce the genuine need. The scope of urban plant pathology in Arkansas is very diverse, involving native and introduced disease pests that can directly impact all citizens of the state. These plant disease pests pose both direct and indirect threats to agricultural commodities of Arkansans. The urban plant pathology program focuses on education of homeowners, agriculturists, youth and the professional landscape, turf, and nursery industries. Program goals are achieved through county and state educational programs such as demonstrations, applied research, education booths, presentations, publications, newsletters, web pages, in-service training of county faculty and news releases.

Source of Funds

Smith-Lever.

Scope of Impact

Dissemination – This program is available to all citizens but is focused toward individuals growing plants in non row-crop situations and who work with the county Extension agents in Arkansas. Educational materials are available on the web as follows: MP154, *Arkansas Plant Disease Control Products Guide;* MP 444, *Ornamental, Tree and Turf Pest Control Training Manual;* MP 445, *Golf Course Pest Control Training Manual;* FSA7530, *Black Spot of Rose*; FSA-7525, *Daylily Rust*; FSA-7527, *Rhizoctonia Large Patch Disease of Zoysiagrass and Bermudagrass*; FSA-7529, *Control Root Knot Nematodes in Your Garden*; FSA-6114, *Submitting Plant Samples for Disease Diagnosis*; FSA-6113, *Powdery Mildew of Landscape Ornamentals; FSA-7533, Anthracnose Diseases of Common Landscape Trees; FSA-7536, Branch Canker of Leyland Cypress; FSA-7534, Fire Blight of Ornamental Pear; FSA7537, Slime Molds; and FSA-7541, Dollar Spot of Bermudagrass*. An image library of plant disease symptoms is also available on the Extension web site. Newsletters and handouts were prepared and disseminated, and digital images of problems can be e-mailed to the program leader for comment. Information is also disseminated via presentations to Master Gardener meetings, the annual Spring Tune-up, other meetings and through personal visits to greenhouses, nurseries, homes, landscapers, etc.

Scope of Program – State Specific – All 75 counties in the state have urban settings eligible for program assistance.

KEY THEME:
NATURAL RESOURCE MANAGEMENT

Program Response:
Forestry Continuing Education

Contact: Caroll Guffey, Extension Instructor and Director Continuing Education, 870-460-1549, Arkansas Forest Resources Center

Situation

A continuing education program for forestry professionals was created in 1993 through support from the Arkansas Forest Resources Center. Other states were conducting continuing education programs, and the Center wanted to investigate the potential for an Arkansas-based continuing education program. The program received an additional boast in 1999 when the Registered Foresters Law was strengthened. 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 700 registered foresters. Each must complete six 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. The program also delivers education to other professionals including attorneys, accountants, natural resource managers, county agents, landowners and other Extension professionals.

Stakeholder Input

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. Members include representatives from the UA Cooperative Extension Service, School of Forest Resources, Arkansas Forestry Association, Arkansas Forestry Commission, Arkansas Game and Fish Commission, Natural Resource Conservation Service, The Timber Company, International Paper Company, Potlatch Corporation, Consulting Foresters, The Nature Conservancy, U.S. Forest Service and a private non-industrial forest landowner. The group meets annually.

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.

Overview

The Forestry Continuing Education program, although originated to serve registered foresters, facilitates workshops and short-courses covering a wide array of topics. Topics covered in the continuing education short courses include Global Information Systems applications in forestry, timber cruising, wildlife management, pine plantation management, upland oak ecology symposium and prescribed fire. Future topics will include property law, Best Management Practices, presentations and business communications and advanced GIS applications. Workshops are from one to four days long, depending upon the course material. For example, the prescribed fire short-course is a four-day intensive field-based course.

In addition to sponsoring continuing education for natural resource professionals, the director has helped with other programs designed for forest landowners including the U.S. Forest Service Crossett Forestry Field Day.

Extension Program Results and Accomplishments

Output Indicators

329 Number of registered foresters, forest landowners, industry and/or agency personnel attending educational programs.

5 Number of educational meetings held with forestry industry representatives, state and federal agency personnel and UA Cooperative Extension faculty to identify forest continuing education issues and plan programs.

14 Number of continuing education programs conducted.

Outcome Indicators

700 Number of participants maintaining registered forester status.

Source of Funds

Smith-Lever 3b and 3c and the Arkansas Forest Resources Center.

Scope of Impact

Dissemination – Program is available statewide to all interested professionals including county and state UA faculty. The Arkansas State Board of Registered Foresters recognizes this program as being the primary resource for forestry professionals to receive continuing education credits.

KEY THEME: PESTICIDE APPLICATION

Program Response: Pesticide Safety Education Program

Contact: Ples Spradley, Department of Plant Pathology, 501-671-2234, pspradley@uaex.edu

Situation

By federal and state laws, applicators of restricted use pesticides must be certified or work under the direct supervision of a certified applicator. Applicators must be periodically recertified by attending educational programs on pesticide safety, integrated pest management, endangered species protection, groundwater protection, the Worker Protection Standard and other appropriate topics. Federal requirements stipulate that multi-state educational activities should be implemented for various Extension programs. Arkansas, Louisiana and Mississippi have chosen Pesticide Applicator Training as multi-state cooperative effort.

Stakeholder Input

Using a discussion and priority setting process, the County Extension Councils in nine Arkansas counties have identified this issue as a major emphasis for their long-range education program. In order to produce food and fiber and protect the environment and human health, safe use of pesticides is essential.

Overview

Initial certification and recertification training sessions for private and commercial/noncommercial pesticide applicators are conducted statewide each year. County agricultural Extension agents provide the training for private applicators (farmers), and the pesticide assessment specialist is responsible for training the commercial/noncommercial applicators. Private applicators must be retrained every five years while commercial/noncommercial applicators are retrained every three years.

The training sessions last from two to six hours depending on the category and whether it is initial or recertification training. The sessions include information on spray drift management, pesticide labeling, safety precautions, pesticide regulations, first aid, protective gear, storage, handling, disposal, integrated pest management, environmental concerns, application equipment and calibration, groundwater protection, heat stress management, pesticide record keeping and nitrogen management. There are approximately 22,000 private applicators and 3,400 commercial/noncommercial applicators in Arkansas who are certified/recertified via the Extension Service's Pesticide Applicator Training Program.

Extension Program Results and Accomplishments

Output Indicators

101 training sessions conducted for private applicators. Approximately 2,039 private applicators trained at these sessions. Fourteen training sessions conducted for commercial/non-commercial applicators with approximately 1,436 trained. One new slide set and 11 other training aids developed. One new Spanish publication developed for the Worker Protection Standard.

Outcome Indicators

Over 826 applicators indicated they have adopted recommended pesticide practices after attending the pesticide safety education programs conducted by Extension personnel. The adoption of these practices provides numerous health and environmental benefits.

Source of Funds

Smith-Lever 3b and 3c. Supplemented with cost recovery funds via registration fees for pesticide applicator training sessions and charges for study kits.

Scope of Impact

Dissemination – This program is open to all private and commercial/noncommercial pesticide applicators in Arkansas. Certification and recertification pesticide applicator training sessions are also open to the public. Training materials, training session schedules, fact sheets, IPM related information and other material are located on the Pesticides web page. County offices also disseminate information about PSEP via mailings, newsletter, grower meetings, radio spots, etc. "Información Importante para la Norma de Protección del Trabajador (Worker

Protection Standard)," a Spanish translation of an existing publication, was developed and placed on the PSEP web page.

Scope of Program –
1) State Specific – All 75 counties in the state conduct PSEP training.
2) Multi-state – Multi-state collaborations are used to develop study materials for the PSEP. Specifically, Arkansas has worked with Mississippi, Oklahoma, Louisiana and Texas to develop training materials for the turf and ornamental categories. The same states have also collaborated to obtain an EPA grant for developing educational materials on urban misting systems.

KEY THEME: RECYCLING

Program Response: Solid Waste Management (Including Recycling and Yard Waste/Composting)

Contact: Suzanne Smith Hirrel, Associate Professor/Extension Specialist - Environmental Management, 501-671-2288, shirrel@uaex.edu, Environmental and Natural Resources

Situation

Agricultural producers are faced with disposal of solid waste that is generated on the farm. Rural communities are also faced with solid waste disposal issues. Illegal dumping, burning of solid waste and littering, which are health and safety problems, are common disposal practices. Landfill disposal fees continue to rise.

Stakeholder Input

Using a discussion and priority-setting process, the County Extension Councils in one-fourth of Arkansas counties have identified this issue as a major emphasis for their long-range education program.

Overview

Arkansas generates approximately 4.8 million tons of solid waste annually, over ton per person each year. The state has a limited number of disposal sites or landfills (22 Class 1 landfills to serve 75 counties). Some areas of the state do not have comprehensive solid waste management collection programs. Yard trimmings are banned from landfills. Recycling goals have been set by state legislation. In 2004 (latest year available), 1.9 million tons were recycled, a recycling rate of 40.2 percent. Improper disposal of solid waste is a health and safety problem and a detriment to economic development.

Extension Program Results and Accomplishments

Output Indicators

16 Number of educational meetings, workshops, demonstrations (sites or exhibits), news articles, radio programs and tours help to educate clientele about the benefits and how-to of composting (backyard, on-farm and municipal).

20 Number of educational meetings, workshops, news articles, radio and TV programs, demonstrations and tours held to educate clientele about appropriate solid waste management practices (landfilling, recycling, source reduction, reuse, household chemical disposal, pay-as-you-throw programs and others).

12 Number of educational meetings, workshops, news articles, radio and TV programs, demonstrations and tours held to educate clientele about disposal, recycling and composting opportunities for on-farm generated waste (plastic irrigation pipe, pesticide containers and used motor oil).

18 Number of educational meetings, workshops, news articles, radio and TV programs and tours held to educate clientele about the dangers of improper solid waste disposal – illegal dumping, open burning and littering.

1,500 Number of clientele attending educational programs and receiving educational publications and other materials written and/or distributed on solid waste management.

Outcome Indicators

250 Number of clientele who reported changing their solid waste management practices.

7,000 tons Number of tons of plastic irrigation pipe collected for recycling.

Source of Funds

Smith-Lever 3b and 3c.

Scope of Impact

Dissemination – Statewide availability of program to interested counties. Recycling, composting (fact sheets available), source reduction, buying recycled and household chemical recycling information is available on the UAEX web site.

KEY THEME:
WATER QUALITY

Program Response:
Water Quality and Watershed Education

Contact: Mike Daniels, Extension Specialist – Environmental Management, 501-671-2281, mdaniels@uaex.edu

Situation

The United States Environmental Protection Agency (EPA) has identified agriculture as a major source of water quality impairments of our nation's lakes and streams. Both EPA and the United States Department of Agriculture (USDA) have promoted a voluntary watershed approach to address nonpoint source pollution from agricultural sources.

The State of Arkansas has identified seven priority watersheds in need of voluntary restoration efforts to address runoff from agricultural land. Watershed-specific education will become increasingly important to our clientele. Several streams in eastern Arkansas are slated for sediment-based TMDLs as ordered by a Consent Decree from the Federal Courts.

Hundreds of Arkansas poultry producers will be classified as a Concentrated Animal Feeding Operation (CAFO) and will have to comply with federal rules such as obtaining a NPDES permit, which will govern effluent discharge from these operations. Also, Arkansas Acts 1059, 1060, and 1061 will regulate the utilization of poultry litter and other nutrients in nutrient sensitive watersheds as declared by the Arkansas General Assembly. In these watersheds, landowners who apply nitrogen or phosphorus will have to obtain a nutrient management plan that is prepared by a state-certified planner and will have to be state-certified to apply nutrients.

Stakeholder Input

- County Extension Councils.
- Nonprofit watershed organizations (Bayou Bartholomew Alliance, the Beaver Lake Partnership, the Lower Little River Watershed Coalition, etc.).
- The Arkansas Soil and Water Commission.
- The Arkansas Department of Environmental Quality.
- The Natural Resources Conservation Service.
- The Arkansas Association of Conservation Districts.
- Local conservation districts.
- Local watershed steering committees (organized by Extension as part of watershed projects).
- Agricultural producer organizations.
- Arkansas Farm Bureau.
- The Arkansas Conservation Partnership.
- The Arkansas Watershed Advisory Group.
- EPA, USDA.

Several actions are taken to seek stakeholder input:
- Project plans are reviewed by the Arkansas Soil and Water Conservation Commission and EPA.

- All of our watershed projects are done in conjunction with formal and informal partners who give us valuable input.
- Program plans are shared with County Extension Councils and input gathered.
- In many watersheds, we have formed local watershed advisory committees who work with us to develop and implement plans. One advantage of this approach is the transfer of ownership from Extension to local stakeholders after the project funding ends.
- We have worked with nonprofit organizations to help them assess their needs and actions in addressing water quality issues. In the process, we gain valuable input.
- We serve on several federal, state and ad hoc committees in other agencies and organizations, which has resulted in much input.
- On grant-funded watershed projects, we almost always conduct a formal survey of landowners to gain their input and perceptions
- The steering committee of watershed stakeholders has assisted greatly with targeting groups for these educational efforts. Also, many public meetings and forums that have been sponsored by Extension have led to the identification of individual and groups.

All of this input has been considered and has helped us in the design, implementation and evaluation of these educational programs.

Overview

We have completed four EPA-funded watershed education projects and are currently concluding two CSREES funded projects (see below):

- Watershed: 406 Regional Watershed Funding (Fed. Only): $70,000 per year for four years
  Location: Statewide
  Status: In fourth of four years
  Issue/Extension Response: This grant helps us coordinate programs with 12 other southern states and helps us to conduct programming where watershed specific funds are not available.

- Watershed: Ballard Creek
  Funding (Fed. Only): $300,000 for 3 years
  Location: Washington County
  Status: Completed. Final Report issued in August 2003
  Issue/Extension Response: Phosphorus/Promote proper animal waste management, pasture management and soil testing as well as nutrient management planning to reduce soil phosphorus levels and soluble P in runoff.

- Watershed: White River
  Funding (Fed. Only): $150,000 for 3 years
  Location: Washington and Madison counties
  Status: Completed. Final Report issued in October 2003
  Issue/Extension Response: Sediment/Promote agricultural and land management practices that reduce sediment loss such as improved pasture management.

- Watershed: Lower Little
  Funding (Fed. Only): $240,000
  Location: Hempstead, Little River, Sevier and Howard counties
  Status: Completed. Final Report issued in December 2004.
  Issue/Extension Response: General protection of drinking water supply/Create public awareness of need to protect water quality, youth education and environmental training for livestock producers.

- Watershed: Bayou Bartholomew Incremental Funding
  Funding (Fed. Only): $75,000 for 2 years
  Location: Jefferson, Lincoln, Drew and Ashley counties
  Status: Completed. Final Report issued in July 2003
  Issue/Extension Response: Turbidity (suspended sediment)/Promote the use of conservation tillage to reduce sediment loss from cotton production by implementing a conservation mentor farmer program.

- Watershed: Mud Creek II
  Funding (Fed. Only): $117,667
  Location: Washington County
  Status: Initiated in FY2000
  Issue/Extension Response: Urban nonpoint source pollution/Promote proper lawn care, disposal of hazardous household wastes to homeowners using Home*A*Syst.

- Watershed: Addressing Phosphorus Concerns in Northwest Arkansas
  Funding (Fed. Only):
  Location: Washington, Benton, Carroll and Madison counties
  Status: Initiated in FY2001
  Issue/Extension Response: Reducing phosphorus from livestock farms in Northwest Arkansas/Nutrient management planning education.

- Environmental training for Arkansas Livestock Producers
  Funding (CSREES 406 integrated)
  Location: Statewide
  Status: Completed
  Issue/Extension Response: Voluntary training program to help livestock producers address impending CAFO rules and regulations; over 1400 producers attended meetings across the state to learn about CAFO rules, proper soil testing, and the status of water quality in Arkansas; special topics graduate course developed and offered via compressed video through the poultry science department; phosphorus management conference held.

CURRENT EFFORTS

To assist livestock producers to deal with new State regulations, we launched a new EPA 319h project ($819,000 federal dollars) to provide nutrient management certification training and nutrient applicator certification training. Secondly, we are participating in a new CSREES funded regional project with 12 other Southern States.

- Nutrient Management Training for Plan Writers and Nutrient Applicators
  Funding (EPA 319h - $819,000)
  Location: 14 counties in Nutrient Surplus watersheds
  Status: Initiated in FY2005
  Issue/Extension Response: Developed a 4-day training session and the Arkansas Nutrient Management Planner's Guide to help nutrient management planners meet State Certification; We developed a 2.5 hour training session for nutrient applicators and the Arkansas Nutrient Applicator's guide

- 406 Watershed Management
  Funding (CSREES – $61,000 per year for 4 years)
  Location: Statewide
  Status: In third year of 4

Issue/Extension Response: Working with 12 other states to coordinate regional efforts in nutrient management, animal waste management, agricultural producer education, watershed assessment, etc. We contribute towards regional web site, newsletters and bi-annual conference

Extension Program Results and Accomplishments

Output Indicators

262 Number of educational events (i.e., meetings, demonstrations, farm visits, consultations, field days, etc.) held to educate clientele on best management practices to lessen the agricultural impacts and urban nonpoint source impacts on surface water quality and watershed issues.

1,112 Number of educational materials written and/or distributed (i.e., fact sheets, news releases, conference proceedings, newsletters, handouts, etc.) on best management practices for reducing agricultural and urban nonpoint source pollution as well as watershed issues.

3,596 Number of clientele participating in educational events.

Outcome Indicators

172,630 Number of community residents who potentially changed their practices to reduce urban nonpoint source pollution.

125 Number of nutrient management planners received our nutrient management planner's training for certification. All nutrient management plans written in Nutrient Surplus watersheds (14 counties) were written by these planners. These plans included significant changes in planning due to our training i.e. using the P-Index to develop Phosphorus-Based plans.

2,500 Number of private nutrient applicators certified with our training. This includes changes in nutrient application on over 100,000 acres in the Nutrient Surplus watersheds.

Source of Funds

Smith-Lever, EPA, USDA-CSREES.

Scope of Impact

Dissemination – Program is delivered statewide; however, more intensive efforts are made in the counties that have funded watershed projects. The statewide dissemination is through local county offices with support from specialists. In these watershed projects, delivery is tailored to the specific needs and issues of the respective watershed. Each project funds dedicated Extension personnel housed locally within the watershed. In some cases, educational products developed for the watershed projects are delivered statewide. Over 130 nutrient management planners have completed our 4-day training, while over 2,500 nutrient applicators have been trained in over 40 meetings. Several educational products have been developed and circulated via county offices.

Scope of Program – Educational events were conducted to address agricultural and urban water quality issues statewide. Educational materials were developed and were disseminated in all counties. In all agricultural watershed projects, Extension either founded a local watershed steering committee or provided technical and educational advisory to nonprofit watershed organizations. The regional 406 watershed management grant has

allowed us to conduct programming with the other 12 southern states (North Carolina, South Carolina, Florida, Georgia, Tennessee, Kentucky, Alabama, Mississippi, Louisiana, Texas, Oklahoma and New Mexico).

KEY THEME: WILDLIFE MANAGEMENT

Program Response: Arkansas Wildlife Education and Outreach Program

Contact: Dr. Rebecca McPeake and Rex Roberg, ENR, 501-671-2197

Situation

Arkansas is home to wildlife that thrives in cities, suburban backyards and rural countrysides. An estimated 52 percent of all Arkansans participated in wildlife-related activities (calculated from 2001 National Survey of Fishing, Hunting and Wildlife-Associated Recreation and population estimates from the U.S. Bureau of the Census). This includes hunting, fishing and wildlife viewing of species such as elk, deer, bear, trout, bass and the ivory-billed woodpecker. Hunting and fishing traditionally have received strong public support. The Arkansas Game and Fish Commission receives the majority of a 1/8 of 1 percent sales tax for natural resource conservation. Support for non-game wildlife is also present primarily through State Wildlife Grants awarded by the U.S. Congress. A 2005 statewide survey (www.wildlifearkansas.com/materials/cwcsfinalreport.pdf) indicated 60 percent of the general population believed it was very important to maintain healthy populations of non-game wildlife in Arkansas.

Many Arkansans enjoy seeing wildlife on their property and seek information for improving wildlife habitat. In 2005, a qualitative analysis of small-group discussions at public meetings revealed most didn't know what conservation actions to take to generate the desired outcomes. Different conservation agencies and organizations offer education about a particular management emphasis. For example, the Arkansas Forestry Commission offers tree seedlings but limited information on wildlife habitat improvement. Landowners seeking financial assistance for wildlife management often are directed to the Farm Bill, which requires knowledge about a number of programs and agencies. Dealing with the multiple agencies and organizations adds to the public's confusion about the appropriate wildlife habitat practices.

Natural resource enterprises contribute significantly to some local economies, particularly those in the Big Woods and Delta waterfowl flyways. In 2001, residents and visitors spent $1.3 billion on wildlife recreation in Arkansas (2001 National Survey of Fishing, Hunting and Wildlife-Associated Recreation). Interest in bird watching has increased recently with the reported citing on an ivory-billed woodpecker in the Big Woods. Natural resource enterprises offer an opportunity for some producers to support their farm with supplemental income from hunters and wildlife watchers.

Conversely, wildlife abundance has contributed to landowner problems such as destruction of gardens and landscape plantings, increased incidence of deer-related vehicle accidents, lowered agricultural crop production, and bird depredation at aquaculture facilities, to name a few. In Arkansas, nuisance wildlife species contribute an unknown but potentially substantial cost in property damage. An estimated 10,000 deer-vehicle collisions occur annually.

A combination of abundant wildlife and public interest in wildlife has generated a large demand for information about wildlife habitat enhancement and nuisance control on private lands. Information from commercial enterprises, regulatory state and federal wildlife agencies, academic faculty and private organizations is sometimes construed as biased by private landowners. Extension plays a vital role in linking landowners with options for enhancing habitat or addressing problem wildlife.

Stakeholder Input

The primary audiences for the wildlife management program are agriculture producers, private non-farm landowners, homeowners, youth, schoolteachers, 4-H leaders and natural resource professionals. Youth education is vital as they are our future landowners and wildlife biologists. Stakeholders are identified through mailing lists from county Extension offices, the Acres for Wildlife program (3,000+ participants), mailing lists from partner organizations and promotional efforts in newspapers and radio announcements. Stakeholder input is solicited through formal and informal methods including periodic strategic planning processes, statewide surveys, regional meetings, county councils, workshop questionnaires and topical meetings such as non-game wildlife, commodities, water quality, Master Gardener training and youth contests.

The wildlife management program continually collects information from stakeholders through requests for information, input from county councils and program evaluations. This input is directly tied to program development. Many programs are developed based on needs expressed by county agents. Feedback from stakeholders and county Extension agents is gathered using formal and non-formal means at presentations, workshops, seminars and in-service trainings. This includes evaluation forms, surveys and personal inquiries. Advisory/planning committees are formed for particular events, activities and projects. These committees are comprised of specialists, agents and volunteers representing stakeholder groups. We conduct a survey-based evaluation for each program delivered. This input is valuable in assessing whether the program met the clients' needs, the program's impact on attitudes and/or decisions and ideas for designing future programs. After sending a media release, newspapers are monitored and articles counted to assess educational impact.

Overview

The Wildlife Program addresses a range of stakeholder needs from those desiring more wildlife on their property to others who experience wildlife damage and want to reduce wildlife on their property. The Wildlife Program can be subdivided into four areas: Landowner Education Programs, 4-H Programs, Wildlife Policy and Education, and Applied Research.

Landowner education programs assist county Extension agents (CEAs) in the development, implementation and evaluation of local county wildlife education programs. The Wildlife Program supports CEAs for conducting landowner education about wildlife habitat management through the Acres for Wildlife program, presentations at Master Gardener training and landowner meetings, Wildlife Habitat Improvement Workshops and development of new fact sheets about pertinent topics. Another focus area is diversified agriculture through wildlife enterprises. A web module is available (www.forestandrange.org) to assist landowners with making this decision through understanding wildlife management concepts and practices, conducting a habitat assessment, knowing the legal aspects, developing a marketing strategy, and designing a business plan. Fact sheets and posters about this topic have been developed and distributed.

Our future program direction for landowner education includes fact sheets about wildlife habitat enhancement and wildlife damage control, fact sheets and workshops about wildlife enterprises, and finding ways to provide financial assistance for counties to conduct forestry and wildlife programming.

Youth education is an opportunity to teach future landowners, their parents and adult leaders about wildlife management. Details about program impacts can be found under Goal 5, Youth Development/4-H, Forestry and Wildlife Education. The 4-H Wildlife Habitat Evaluation Program teaches youth ecological principles, a variety of wildlife habitat management practices and basic life history for a variety of wildlife species in both urban and rural settings. 4-H Forestry and Wildlife Camp is a four-day educational experience designed for 11- to 13-year-old youth. The 4-H Grasslands Evaluation Program is a comprehensive pasturelands management training tool that several Extension faculty have used to train both adults and youth about livestock and wildlife management practices. NatureMapping ties together existing curricula and offers hands-on, experiential activities that are self-directed by participants and leaders. NatureMapping teaches science-based techniques for observation and data collection while providing youth the flexibility to shape their own projects.

Wildlife and Policy Education addresses Extension representation for policies, regulations and issues that impact county Extension agents, producers and landowners. To ensure that this information is transferred to local county programs, county Extension agents are offered in-service training opportunities, fact sheets, reference literature for their county office, e-mail and personal contacts about local issues of concern. Extension continues to partner with the Arkansas Game and Fish Commission, as well as a number of non-profit wildlife organizations, in collecting and assessing stakeholder input that is used in program and policy decision-making.

Applied Research focuses on answering wildlife-related questions offered by county Extension agents that currently are not being addressed through universities and other research entities. For accomplishing this program direction, we collaborate with university faculty or other agencies to conduct research/demonstration studies comparing native and non-native plants consumed by wildlife.

Extension Program Results and Accomplishments

Output Indicators

32	Number of educational meetings, workshops, demonstrations, displays/booths and/or field days held to educate clientele on enhancing wildlife habitat, prevention and control of wildlife damage and wildlife enterprises.
32	Number of educational presentations through 4-H clubs and in schools to teach youth and 4-H leaders about wildlife identification, management and habitat practices.
34	Number of educational materials written and/or distributed (i.e., fact sheets, news releases, conference proceedings, newsletters, handouts, etc.)
3,050	Number of individual contacts through office, site, phone or e-mail.
2,043	Number receiving wildlife education through newsletters, direct mailings, etc.
1,593	Number of clientele participating in educational meetings, workshops and seminars.
384	Number of clientele receiving individualized training about wildlife management.

Outcome Indicators

2,448	Number of clientele who adopt wildlife management practices that enhance wildlife habitat or prevent and control wildlife damage to property.

Source of Funds

Smith-Lever, 50/50 cost-share partnership agreement with Arkansas Game and Fish Commission, and RREA.

Smith-Lever 3b and 3c.

Scope of Impact

Dissemination – Information is available on the web and printed publications are available upon request.

Scope of Program – This program is available to all 75 counties, even if only a phone call asking for assistance with addressing a nuisance wildlife problem. Fifty-eight counties that are served through specific FY2006 wildlife programs are Washington, Madison, Newton, Searcy, Marion, Van Buren, Conway, Faulkner, Pope, Johnson, Yell, Logan, Sebastian, Perry, Pulaski, Saline, Garland, Polk, Sevier, Little River, Miller, Lafayette, Hempstead, Hot Spring, Nevada, Ouachita, Clark, Dallas, Calhoun, Union, Ashley, Bradley, Cleveland, Drew, Lincoln, Jefferson, Lonoke, Arkansas, Chicot, Desha, Phillips, Monroe, Lee, St. Francis, Crittenden, Poinsett, Craighead, Mississippi, Stone, Sharp, Independence, Fulton, Cleburne, White, Jackson, Grant, Union and Prairie.

Goal 5 – Enhanced economic opportunity and quality of life for Americans.

By definition, Arkansas is clearly a rural state. The 2000 Census indicates that, at the national level, 21 percent of the population is considered rural, while in Arkansas 47.5 percent of the citizens live in places with less than 2,500 residents or outside of an urbanized area. While we are rural, we are growing. Between 2000 and 2005, the population of Arkansas grew by more than 105,000 people, or nearly four percent. People of Hispanic origin accounted for 42 percent of this population growth.

Maintaining a diverse mix of jobs and sources of income is important to the success of the state's economy. Although manufacturing and natural resource sectors are historically important, the service sector has become the largest sector of the Arkansas economy, providing over one-fourth of the jobs in Arkansas (based on 2003 data). It is followed by trade (20 percent), manufacturing (16 percent) and government (14 percent). Construction; finance, insurance and real estate; transportation and public utilities; and farm and farm services each count for six percent of jobs in Arkansas.

Economic challenges are significant for many Arkansas communities and families. The number of jobs in Arkansas increased 1.3 percent from 2000 to 2004. Urban areas gained 32,655 net new jobs, while rural areas lost a net 12,512 jobs. Net national growth during that same period was two percent. Arkansas' unemployment rate (February 2006) was 4.7 percent compared to a national rate of 4.8 percent. Between 1996 and 2000, the average earnings per job across the U.S. increased 10.9 percent compared to 7.5 percent in Arkansas.

The national poverty rate rose from 12.1 percent in 2002 to 12.7 percent in 2004. Arkansas continued to have a higher rate of poverty in 2004 (15 percent) compared to the U.S. as a whole (12.7 percent). Although poverty has become less persistent across Arkansas, rural Arkansans had a substantially higher rate of poverty (18.9 percent) than urban Arkansans (18.5 percent). The Delta had the highest poverty rate of 22.5 percent. Poverty among families with children is more prevalent in rural counties than urban counties. In 1999, 21 percent of rural families with children lived in poverty compared to 16 percent in urban counties. The 2000 census figures report that 23.5 percent of Arkansas children under the age of 18, and 30 percent of Arkansas' children under five, live in poverty.

Despite being below national average in many measures of economic health, Arkansas has experienced some success at addressing some of the underlying issues that exist. For example, 2000 Census data showed that 75.3 percent of the population was a high school graduate or higher compared to a national average of 80.4 percent. In 2005, Arkansas improved to 81 percent, still lower than the national average (84.2 percent), but the gap appears to be decreasing.

Cooperative Extension faculty and staff work collaboratively with local stakeholders to empower individuals, families and communities, through research-based information and education, to improve the quality of life across Arkansas. These efforts are aimed at addressing some of the underlying problems that contribute to the social and economic difficulties faced by the state and its citizens. In 2005-2006, these programs centered around four primary areas:

- To support and strengthen families, programs focus on a range of priorities from strengthening parenting skills and relationship building to improving the quality and availability of child care to resource management training for youth and adults.
- Programs such as 4-H, youth leadership programs and school enrichment activities seek to prepare and empower Arkansas youth to become strong leaders and citizens.

- Education programs concerning public issues and policies provide citizens and leaders with the knowledge they need to make more informed and better choices regarding issues that affect their lives.
- In community and economic development, programs focus on a using a strategic asset-based approach to planning for the future; developing strong leadership that understands challenges and opportunities and is able to act quickly; and providing businesses and entrepreneurs with the tools they need to be successful.

Total FTEs
162.63

Total Budgetary Amount
$8,045,456.14

KEY THEME: CHILD CARE/DEPENDENT CARE

Program Response: The Best Care and Best Care Connected

Contact: Traci A. Johnston, Child Care Program Associate, (501) 671-2364; tjohnston@uaex.edu

Situation

The National Academy of Early Childhood Programs defines a high quality child care program as one that meets the needs of and promotes the physical, social, emotional and cognitive development of the children and adults who are involved in the program. For Arkansas' child care to be of high quality, child care providers must understand and implement best practices that promote such development. This requires continued training and education. Providing necessary training to child care providers in all parts of Arkansas, including remote rural areas, is a considerable challenge.

As of 2006, 586 (560 child care centers, 26 family child care homes) of Arkansas' 2,955 licensed child care facilities have achieved a quality rating (Division of Child Care and Early Childhood Education, 2007). This means most of the 155,116 children served by these facilities do not enjoy the quality care desired. A number of challenges make quality difficult to achieve. Pay in child care settings is typically low. The work is difficult and labor intensive, and turnover among child care professionals is high. These conditions make it difficult to keep a well trained staff. And a trained, knowledgeable staff that interacts positively with children is the most important ingredient to achieving quality. Making effective research-based training available at times, locations and formats convenient to child care providers is essential to improving the quality of Arkansas child care.

Stakeholder Input

Understanding the needs of children, parents, caregivers and child care service organizations is critical to developing and implementing quality educational programs. The Cooperative Extension Service (CES) works closely with the Arkansas Division of Child Care and Early Childhood Education and the Arkansas Early Childhood Professional Development System to determine needs and effective solutions. To better understand the needs of child care providers, evaluation data is collected from two child care training programs. A "Best Care"

advisory committee composed of subject matter specialists and county agents meets regularly to review evaluation data, discuss participant feedback and assess current program needs.

Overview

The Best Care – The Best Care program is a 10-hour curriculum designed to provide training to child care providers. The multidisciplinary curriculum provides training in 1) resource management, 2) nutrition, 3) health and safety and 4) child development/child care. The Best Care program is verified training that meets both the licensing requirements and training criteria for the Arkansas Early Childhood Professional Development System. The Best Care training is conducted in 30 county clusters by family and consumer science agents who are verified trainers through the Professional Development System. To accommodate the needs of providers, The Best Care training is offered in the evenings or on Saturdays.

In 2005, child care providers attended classes on Feeding Infants and Toddlers, Making Snacks Healthy and Fun, On Fire! Avoiding Burnout in Early Childhood, Childproofing for Safety, An Ounce of Prevention, Let's Go on a Field Trip, Rainy Day Blahs, Math Made Fun, Hidden Hurts and Scary Secrets and Setting Children Up for Success. Each of The Best Care trainings is designed with engaging activities and applied resource materials.

Best Care Connected – Best Care Connected is a way to experience quality child care training through the convenience of the Internet. As a web-based training program, Best Care Connected can be taken at locations and times most convenient to early childhood professionals. Although early web-based programs were little more than an online book, more recent developments have added a number of learning aids that encourage interactivity and connect participants to a community of learners. To make it engaging, Best Care Connected is designed with activities, review questions and situational discussion questions. The program is supported with after-hour technical support. In 2005 the topics included 1) Smiles, Tears and Laughter: Dealing With Emotions, 2) Soft Comfort During Hard Times, 3) Cozy Up to Books, 4) Little Helpers Make a Difference, 5) Construction Ahead: Building Foundations With Blocks, and 6) Serve Up Healthy Food Choices.

Extension Program Results and Accomplishments

Output Indicators

Program	Providers Reached	Hours of Training	Number of Classes Taught
The Best Care	2,337	286	85
Best Care Connected	876	10	2

Outcome Indicators

The Best Care

97% of participants *Agree or Strongly Agree* that the trainer was knowledgeable on this topic.

97% of participants *Agree or Strongly Agree* that the purpose of the unit was clear.

96% of participants *Agree or Strongly Agree* that the information and activities met the purpose of the unit.

93% of participants *Agree or Strongly Agree* that the unit was interesting.

97% of participants *Agree or Strongly Agree* that the trainer was open, friendly, and encouraging.

Best Care Connected

49% of participants *Agree or Strongly Agree* that technical assistant was open, friendly and encouraging.

99% of participants *Agree or Strongly Agree* that the authors of the material were knowledgeable on the topics.

99% of participants *Agree or Strongly Agree* that the purpose of the lessons was clear.

100% of participants *Agree or Strongly Agree* that the information and quizzes met the purpose of these lessons.

98% of participants *Agree or Strongly Agree* that the lessons were interesting.

99% of participants *Agree or Strongly Agree* that the quiz instructions were adequate.

Source of Funds

Best Care and Best Care Connected child care training projects are funded through a grant from the Arkansas Department of Health and Human Services, Division of Child Care and Early Childhood Education.

Scope of Impact

Dissemination – An announcement of training is done through statewide mailings, county mailings and contacts, state conferences, public service announcements, Division of Child Care and Early Childhood Education newsletter and the Arkansas Early Childhood Professional Development System web site.

Scope of Program – The Best Care training program is conducted statewide. Child care providers from all 75 counties have attended. Best Care Connected is conducted through the Internet.

KEY THEME: COMMUNITY DEVELOPMENT

Program Response: Arkansas Procurement Assistance Center (APAC)

Contact: Elinor Sue Coates ("Sue"), Program Director, Arkansas Procurement Assistance Center, scoates@uaex.edu

Situation

In Federal Fiscal Year 2004-05 (the latest data available), the federal government spent at least $1,029,630,597 on contracts in Arkansas, about 3 percent of its national total, near the bottom in per capita dollars nationwide. Public agencies purchase every conceivable commodity and service. About 25 percent of the federal dollars went to

small businesses. Over 90 percent of the 61,000 businesses in Arkansas are defined as "small" by the Small Business Administration, and perhaps half are family-owned. Government contracting is fraught with red tape and peculiar methods, so in order to tap into this huge marketplace, Arkansas businesses need help in the form of counseling and technical assistance, and with such non-monetary support, they are extremely successful.

Stakeholder Input

APAC's stakeholders include Arkansas businesses, referred to as "clients" and "potential clients"; other business assistance programs, referred to as "resource organizations"; and public agencies, referred to as "customers." Clients are businesses located in Arkansas who have agreed to participate in APAC's program, receive its services, report the results and provide comments and input about the program. Their reports are collected and tabulated monthly, and the assistance they request and receive from APAC is documented daily, providing the most effective stakeholder input. Potential clients are Arkansas businesses that are or could be government contractors but have not formalized a relationship with APAC yet. Their input is collected informally through oral surveys at conferences they attend, and through the needs they express when interviewed. Resource organizations include those which provide services that APAC clients need to support their government contracting efforts, many of which APAC faculty participate in. These include Chambers of Commerce, supplier development councils, professional development associations, minority business development councils, small business development centers, Arkansas Department of Economic Development, as well as offices of elected officials and County Extension Offices who refer their constituents to us. Customers include contracting officers at federal, state, or local government agencies, whose input is collected informally through conversations and correspondence and who refer vendors to us and participate with us in putting on training events.

Overview

APAC's mission statement reads as follows: "To provide training and resources that help Arkansas businesses generate revenues and thereby create or retain jobs for Arkansans through effective government contracting. The APAC Agri Project extends APAC services to farm-based businesses in rural Arkansas." As a result of recent strategic planning exercises, APAC developed this Vision: "To be the recognized source of knowledge and assistance for Arkansas companies to compete and perform successfully as vendors to public agencies and for agencies to achieve their diversity goals."

With a staff of six, three faculty who are procurement professionals and three administrative support personnel, APAC operates statewide out of two offices. APAC provides individual counseling, training in group workshops, education through seminars and conferences, access to technical data, a weekly newsletter containing informative articles and listings of local events, an electronic bid-matching service that sends federal and state bid opportunity listings specifically filtered to each client's stated areas of interest, a password-protected state-and-local bid board maintained by APAC staff on a special web site designed by the IT group at CES, and a comprehensive web site containing extensive resource information which the Communications Department keeps updated at least weekly. The Government Contracting Course, which was designed and accredited for Continuing Education Units, includes intensive formal versions of the six "core curriculum" topics and an additional day of hands-on education focused on large "indefinite delivery indefinite quantity" contracts with the federal government. In short, APAC provides access to whatever Arkansas businesses need to succeed with sales to public agencies.

Extension Program Results and Accomplishments

Output Indicators

2,208	Total counseling/consultant sessions held with clients.

619	Total number of client companies served.
746	Client companies receiving personal counseling sessions.
46	Total number of conferences sponsored or participated in.
3,318	Total number of attendees at conferences.
30,950	Distribution of fifty weekly newsletters distributed to 636 client companies.
4,000	Approximate number of local bid opportunity listings collected and posted.
1,003,829	Number of electronic bid-match opportunities furnished to clients.

Outcome Indicators

1,317	Total number of contracts awarded to clients as reported.
$175,735,425	Total dollar value of contracts awarded to clients.
4,206	Total jobs created or retained as a result of these contracts.

Source of Funds

Under a Cost-Sharing Cooperative Agreement between the Defense Logistics Agency and the University of Arkansas Cooperative Extension Service, the APAC total budget for this period was $620,734, of which DOD provided $300,000 cash and the matching funds came from the University. A small planning grant was awarded by the Winthrop Rockefeller Foundation to develop the APAC Agri Project, which supplemented the University's share. The Return on Investment for this budget, compared to the revenues generated, is 158 to 1 over a 3-year average.

Scope of Impact

Dissemination – The program is available to any company that has its headquarters in Arkansas, with particular emphasis on businesses designated as "small" according to SBA's published size standards. Companies that choose to partake of this service provide data about the firm's organization and capabilities, sign a "Request For Assistance" form, and submit Monthly Activity Reports containing results of their government marketing activities. APAC helps those firms that could qualify with assistance and those that already do qualify to conduct business with government. Companies that are not ready for this marketplace, such as start-ups, are referred to other resource organizations.

Various techniques are used to reach these companies, including newspaper articles, appearances at public meetings and conferences, brochures and other literature left with County offices, Small Business Development Centers, and other resources. A very important outreach tool is the APAC web site at uaex.edu. Press releases are drafted for the CES Media Office at least once a month, participation in trade shows and opportunity conferences occurs three or four times a year, and information is provided to Congressional and Legislative delegations once or twice a year, resulting in a significant number of referrals to APAC.

Scope of Program – This program serves all 75 counties in Arkansas and receives the maximum federal dollars allowed. Clients are served by phone, fax and e-mail, orientation workshops, weekly newsletter and in person.

APAC clients that are typically under-served population groups receive a significant share of contract awards. For example, Small Disadvantaged Businesses receive about 51 percent of the total dollars reported, and 266 active clients state they meet the criteria for "disadvantaged." Women-owned businesses receive about 47 percent of the total dollars reported, and 182 active clients are women-owned. Hispanic-owned businesses receive about 1.5 percent of the total dollars reported, and 17 active clients are Hispanic-owned. Clients located in HUBzones receive about 5.8 percent of the total and 114 active clients are located in HUBzones. Of APAC's active clients, 113 are located in counties designated as "distressed." About 5.3 percent of the contract dollars reported are to companies in "distressed" counties, resulting in about 224 jobs created or retained.

Program Response: Community, Economic and Leadership Development

Contact: Tony E. Windham, Assistant Director – Community and Economic Development, 501-671-2000, twindham@uaex.edu

Situation

Improving the economic well-being and quality of life for Arkansans and Arkansas communities is the focus of this program. Issues such as globalization, changes in information technologies, government regulatory and fiscal policy, demographic shifts and social needs all impact our society. Educational programs are needed to help citizens, businesses and communities deal with these issues and take advantage of opportunities that accompany these changes. Business owners and professionals need continuing education regarding changes in regulatory and tax policy. Youth and adults need leadership, government, citizenship and issue-driven knowledge and skills so they can act strategically to position their communities for continued economic viability and success.

Stakeholder Input

Input is actively sought from a variety of sources including state and community leaders, partnering organizations, professional associations, government agencies, advisory councils, county faculty and program participants. Input is received through a variety of methods including focus groups, program evaluations, surveys and individual communication via telephone, the Internet, mail, e-mail and face-to-face conversations.

Overview

Citizen Action Produces Strength: The Citizen Action Produces Strength (CAPS) workshop is a three-day citizenship workshop for 4-H youth ages 12 to 14. Delegates survey leaders and youth in their community, campaign for office, elect officials for CAPS city, prepare a plan to improve their neighborhood, take a trip to see local government in action and develop a plan to address an issue in their home county. CAPS also includes a two-day training session for eight CAPS counselors who run the workshop. The program is available to 12- to 14-year-old Arkansas youth who are 4-H members. The information regarding CAPS is updated annually in the 4-H Activities Manual, which is provided to and is available in every county Extension office. Reminder letters are also sent to county agents prior to the event. The event is publicized in Extension's blue letter and is available on Extension's web site.

Home Based Business: The Cooperative Extension Service Home-Based Business Program was developed to assist Arkansans who desire to establish and/or maintain a home-based business. The Home-Based Business Program functions through three avenues: workbooks, consultations and seminars. The program is available to all Arkansans interested in starting a home-based business or needing assistance with a current home-based business.

All counties have a copy of the Home-Based Business Workbook produced and printed by the Cooperative Extension Service. The manual is also available on a loan basis to CES county clients.

National Institute on Cooperative Education: The National Institute on Cooperative Education (N.I.C.E) is the largest annual national conference dedicated to the topic of agricultural cooperatives available. The program is hosted by a different state each year. The youth who attend N.I.C.E are sponsored by the Arkansas Committee on Rural and Agricultural Cooperatives and are, therefore, essentially paid for through funds received by the committee from Arkansas cooperatives.

Arkansas Farm Income Tax Schools: The University of Arkansas Farm Income Tax Schools update and inform practitioners, bookkeepers and Certified Public Accountants on changes in federal, state and Social Security tax regulations. Participants received 16 hours of Continuing Professional Education credits. The school is available to anyone who prepares taxes for the public or who prepares their own taxes. Brochures are distributed in late August through dispatch to all county Extension offices and to past participants, as well as interested individuals included on a master mailing list. Tax School information is also available on the Web.

Raising Community Awareness of Community Assets: Each county is different, with different strengths and different assets. The extent to which residents and workers in a community are aware of, appreciate and utilize local assets often has a direct impact on quality of life and sustainability of the community. The Cooperative Extension Service uses a variety of methods educate citizens and build awareness of local assets. These efforts vary from county to county based on the needs of the local community. Two examples of these efforts (Community Dynamics Increases Awareness; Business After Hours) are described in more detail under Programs of Excellence below.

Economic Development Strategies for Rural Arkansas: Entrepreneurship and Entrepreneurial Communities: Viable economic opportunities are declining in rural areas. Small “lifestyle” businesses, which primarily provide employment for the owner and his or her family, are the core of the American economy and could be part of a diversified set of strategies for economic growth in rural areas. We are developing a comprehensive educational and technical assistance program on entrepreneurship for rural Arkansas. The program emphasizes two major aspects of entrepreneurship: a) start-up and growth of rural enterprises, and b) development of entrepreneurial communities. Successful entrepreneurs need business knowledge and skills, but they also need access to talent, local resources and services.

Rural communities typically do not know how to be entrepreneurial and have limited access to technical assistance. Research suggests that entrepreneurs are more likely to be successful in those communities that provide an entrepreneurial friendly climate. This program includes a major effort to build community capacity for entrepreneurship in rural areas. Our efforts parallel and expand upon those of the national eXtension CoP on Entrepreneurship and can help UAEX become one of leading programs in Community Economic Development. We will partner with other organizations within Arkansas and the Southern Region in program delivery.

At this time, we have scheduled an in-service training on entrepreneurship for UAEX faculty, are engaged in the national eXtension entrepreneurship initiative, creating research-based fact sheets and other educational materials on entrepreneurship, trying to develop a statewide collaboration on entrepreneurship and discussing the possibility of a regional entrepreneurial coaching initiative with the Southern Rural Development Center, and the CES in Louisiana and Mississippi.

Arkansas Community Disaster Recovery Initiative: Many rural communities in Arkansas struggle to recover from disasters, both natural, and economic. In the past year, a large number of Arkansas communities have been confronted with serious reductions in workforce and/or lost major employers due to relocation or plant closures. The economic impact of such closures constitutes economic disaster for the affected communities. The state has a Dislocated Workers Task Force in place to address job training/retraining, placement and other immediate needs,

but the Task Force does not address long-term community recovery. We are working with the Arkansas Department of Economic Development and other partners to organize a comprehensive disaster recovery plan for rural Arkansas communities. We are modeling the economic disaster recovery plan after natural disaster response plans and adapting educational materials from those response plans for use in the affected communities. The preliminary plan contains four major components: 1) pre-disaster assessment (including a vulnerability assessment), 2) immediate (short-term responses) activities, 3) secondary (medium-term responses) activities, and (4) redirection and implementation of new rural development strategies (long-term responses).

ConnectAR – Connecting Arkansas and its Leaders: Arkansas has a history of strong ties among neighbors, but because of demographic and economic changes, many of our residents are suffering from a lack of civic mindedness. This lack of community support has placed a strain on the development of local leaders. ConnectAR curriculum and programming has been created to help meet this need. ConnectAR programming is specifically created for lay-leaders and emerging leaders throughout Arkansas communities. It is a fluid program that is intended to help maximize the skills of Arkansas residents. Participants of ConnectAR programs will learn ways to positively impact their community, as well as how to communicate effectively, inspire trust and cooperation, manage conflict, cope with criticism, identify and adapt to new challenges, and much more.

VisionWorks Connected Communities: VisionWorks programs include 1) Breakthrough Solutions, 2) Connected Communities, and 3) Customized community development workshops. Communities throughout Arkansas are dealing with a shifting economy, putting strain on traditional community leaders who have an industrial mindset or are resistant to change. Winds of change are challenging both rural and urban economies to educate a workforce for knowledge and service jobs – new economic drivers. The following situations have been identified from census data and through focus groups and information meetings across the state:

- Arkansas is losing population in many rural areas.
- Manufacturing jobs are leaving.
- Inadequate work force (numbers, training, work ethic, drug free).
- Lack of knowledge and infrastructure for effective use of technology.
- Local assets/regional assets not always recognized.
- Apathy, contributing to the inability to create action.
- Complacency – acceptance of the way things are.
- Ignorance of opportunities and strategies for positive change.
- Some rural areas are experiencing rapid growth, requiring planning for anticipated changes.
- Resistance to trying new methods.

Extension Program Results and Accomplishments

Output Indicators

4,635 Number of total direct contacts reported related to economic and community sustainability and growth.

280 Number of events reported related to improving economic opportunities to improve quality of life for Arkansans.

222 Number of education publications, newsletters and other materials produced.

41 Number of community studies, surveys and assessments.

395 Number of educational publications, newsletters and other materials produced and distributed.

Outcome Indicators

526 Number of income tax workshop participants that used knowledge gained in their businesses.

21 Number of home-based business owners that reported increased profits.

423 Number of citizens involved in visioning efforts to improve their communities.

17 Number of community development projects completed by citizens.

Source of Funds

Smith-Lever 3b and 3c.

Scope of Impact

Dissemination – The educational program and resource materials are available to all counties and statewide organizations that want to better understand the needs of their constituencies. Resource materials are available in printed copy and on the Cooperative Extension Service web site.

Scope of Program – These programs have been delivered at some level in all 75 Arkansas counties.

Programs of Excellence

Community Dynamics Increases Awareness

Success Story – A Community Dynamics Workshop was held in Searcy County, Arkansas, in 2006. Community Dynamics evolved out of a simple idea to hold a meeting that would highlight the many ways in which county Extension programs impact the local community. Armed with this idea, county Extension agents met with the Searcy County Extension Council to seek their input and assistance. The group decided to expand the scope of the program and forge new partnerships in order to insure success. The three primary goals of the planning group were to showcase recent economic and community developments, to increase awareness and opinions of local citizens about the community and to foster further local development.

To showcase local developments four separate tours were arranged, consisting of three sites per tour. The tour sites included industrial businesses and developments, the entertainment, local schools, health care facilities, government services, retailers and new construction. Program participants were allowed to participate in the tour of their choice. In addition, the planning council invited the Arkansas Department of Economic Development to do a community survey and rating of businesses in Marshall, and to present their findings to the workshop audience. This component of the program also fulfilled a requirement for achieving Arkansas Community of Excellence status for our county. Finally, a blanket invitation was given to local groups, organizations and businesses to participate in a trade show-style poster session where they could highlight their organization's impact in and service to the community.

General Program Information – The goals of the community dynamics workshop are to 1) increase the awareness of local citizens about their community and the local developments taking place, 2) to spark further development and 3) to showcase the impact of local groups on the community. Most importantly, this program allowed local citizens to gained awareness and improved attitudes regarding their community and leadership of the community.

Locations Involved – Searcy County (Marshall, St. Joe, Witt Springs, Leslie, Oxley).

Impact Numbers The Community Dynamics meeting was held on August 9, 2006, and was a great success. The meeting drew a crowd of sixty participants with a wide variety of interests, backgrounds, age range and culture. This innovative program has been highlighted among Arkansas Extension Professionals and has been adopted as a model for other counties in laying a foundation for community development programs. Searcy County Airport, one of the tour sites, rented local hangar space (impact of $1,200 annually) as a result of the community dynamics tours.

CES Section Contact Person – Sean Milliken – County Extension Agent, Searcy County, 870-448-3981, smilliken@uaex.edu.

Business After Hours

Success Story – Agriculture is a very important part of the Boone County economy. However, the importance of agriculture is often overlooked. The Agriculture Awareness Committee planned an agriculture promotion event for the Chamber of Commerce Business After Hours. Business After Hours is conducted monthly by the local Chamber of Commerce as a way to promote area businesses and industries.

General Program Information – The goal of this program was to highlight the importance of agriculture to the Boone County economy. The program was held in conjunction with Business After Hours, a Chamber of Commerce event, at the Northwest Arkansas District Fairgrounds.

Locations Involved Harrison, Arkansas.

Impact Numbers – In addition to the Cooperative Extension Service, groups and clubs such as Cattlemen's, Soil Conservation District, Farm Bureau, 4-H Clubs, FFA Chapters, Meat Goat Association and producers were involved in conducting the activity. Over 60 business men and women (not including program coordinators) attended the activity. Educational displays were set up for attendees to view. There was also a presentation on the economic impact of agriculture in Boone County. Many people commented that they were made aware of the importance of agriculture in the county. Program coordinators were very pleased with success of the activity and have requested a similar program for next year.

CES Section Contact Person – Nita Cooper, County Staff Chair, Boone County, 870-741-6168, ncooper@uaex.edu.

Breakthrough Solutions – Helping Communities Create Their Future

Success Story – The Breakthrough Solutions Program is designed to address key issues from a global, knowledge-based economy perspective. The program was launched with a Breakthrough Solutions Conference on May 3, 2005, at the William J. Clinton Presidential Center in Little Rock with 185 in attendance. A Breakthrough Solutions video was shown for the first time at that conference. Since that time, the Breakthrough Solutions Program has been shared with community leaders and Extension professionals in a variety of venues:

- November, 2005 – Workshop for Arkansas Chapter, American Association of Biological and Agriculture Engineers.
- December, 2005 – U of A Economic Development Institute, conduct two-hour workshop.
- January, 2006 – Portions of two-day workshop at North Central Arkansas Regional Economic Development retreat in Bull Shoals.
- January, 2006 – Booneville, information meeting, one-day workshop, and youth focus groups in Magazine and Booneville.
- March-July, 2006 – Gentry, two information meetings, one-day workshop, report to community.

- March, 2006 – Southside Main Street (Little Rock), one-half day workshop.
- May, 2006 – Breakthrough Solutions Conference, Brinkley.
- May, 2006 – Coulson Oil, one-hour workshop, North Little Rock.
- July, 2006 – Tourism and Business Initiative, facilitated one-day retreat at Village Creek State Park.
- North Central Arkansas Regional Economic Development Corporation (NCARED).
  - Series of four initial exploratory meetings.
  - MOU drafted, signed February 14, 2006.
  - Fundraising workshop – March 14, 2006.
  - Seven county information meetings.
  - Seven youth focus groups.
  - September, 2006: Two Breakthrough Leadership Skills workshops (50 leaders attended).
  - Community Blueprint Poster produced, generic and regional brochures produced.
  - NCARED 21st Century Vision Voice – weekly electronic newsletter to over 300 leaders and professionals.
  - VisionWorks News – bi-monthly electronic newsletter on community and economic development to over 2,000 community leaders in Arkansas and other states.

This program is a next generation community development program for communities and regions. It integrates concepts from community, leadership and economic development, along with systems thinking, marketing, information technology, innovation and strategic thinking, applying them to a community context. This curriculum is designed to enable communities, organizations and businesses to prosper in times of rapid change, unlike community initiatives that become obsolete when the environment changes. It is driven by the critical issues and opportunities of a community or region, as defined by local leaders.

Breakthrough Solutions builds on its predecessor, VISION 2010, which involved over 9,000 citizens in community development initiatives and generated over $70 million in local funds invested, grants, appropriations and taxes. Working closely with 19 partners in the public, private and non-profit sectors, this VisionWorks program of the University of Arkansas Cooperative Extension Service offers a next-generation study action process that responds to and harnesses the global forces and trends impacting us all. Recipient of the Community Development Society's Outstanding Program Award, Breakthrough Solutions has been used in communities, with the Community Development Institute at the University of Central Arkansas, the Community Development Society and with organizations and businesses.

The Breakthrough Solutions Program includes these elements:
- Seminars held on-site to maximize the opportunities for community involvement and education.
- Focus groups held with high school youth in the community, with the results shared back with the leaders.
- An economic analysis that identifies key economic engines for the new economy.
- A community poster that is tailored to the community, recognizes program sponsors, and communicates key initiatives to the public.
- A scenario-driven visioning and planning process that leads to a community blueprint for the future.
- Support of development initiatives over a three-year period.

CES Section Contact Person – Mark Peterson, Professor – Community Development, 501-671-2253, mpeterson@uaex.edu

Program Response:
Public Policy and Issues Education

Contact: Director – Policy and Issues Education Center, 501-671-2080, triley@uaex.edu

Situation

Voters, farmers, business and government at all levels are increasingly called upon to make decisions about issues such as resource allocation and use, water quality, taxation, public finance and public health. The issues are complex, cutting across a range of academic disciplines, stakeholder groups and value systems. These factors, coupled with a lack of understanding by citizens and stakeholders concerning other perspectives, often result in a contentious atmosphere for decision-making.

The mission of the University of Arkansas Division of Agriculture Public Policy Center is to educate citizens about public issues and policies affecting their lives, enabling them to better participate in civic decision-making. The premise behind this is that better knowledge leads to better choices. Through programs that reach the full spectrum of citizens and collaboration with other entities, Extension specialists and county agents are striving to meet the need for credible, neutral research and education programs that will enable Arkansans to improve the quality of their lives.

Stakeholder Input

Public Policy Center faculty work with the academic community, government agencies, nonprofits, state and local leaders, professional organizations and other entities to design quality education programs that are unbiased and understandable by the target audience. These partners, as well as information gathered through county program committees and Extension Councils, the Division of Agriculture's strategic plan, and other formal and informal data collection techniques, provide the basis for identifying subject areas for which there is a need for additional education programs.

Overview

Ballot Issues Education

In a democracy where voters decide outcomes of important public policy questions that impact the well-being of communities and states, it is critical for voters to have sufficient information to make informed choices. In response to a lack of preexisting objective and timely information about ballot initiatives, the University of Arkansas Cooperative Extension Service and Division of Agriculture Public Policy Center have formalized a process for developing and implementing ballot issues education programs targeted toward citizens. This program has been one of the Public Policy Center's top priorities since its official inception in July 2004.

The goal of ballot issues education is to provide voters with unbiased, balanced information so they can make informed choices. State faculty research statewide election ballot initiatives, develop resource materials, and train county agents to deliver programs. County agents utilize these materials to provide education at the local level. In FY 2006, Extension professionals were actively involved in developing and presenting education programs for a statewide special election held in December 2005 and preliminary research regarding ballot measures under consideration in the state's general election to be held in November 2006. The ballot issues education model has also been adapted for use at the local level to provide education programs on local ballot measures as well. In FY06, county agents from three counties used this model to develop educational programs for county elections.

Research Partnerships

In FY06 the Public Policy Center continued its relationships with researchers from across the University of Arkansas system through its partnership program. Eight groups are currently conducting research that will be used to develop educational programs related to pressing policies and issues in Arkansas. The partnerships, ranging from one to two year commitments, focus on several areas including economic sustainability, government finance, air and water quality, methamphetamine concerns, prescribed forest burns and water rights.

Extension Program Results and Accomplishments

Output Indicators

231	Number of events where educational materials were displayed.
13,628	Number of fact sheets or other printed educational materials distributed.
83	Number of educational meetings, focus groups and small group discussions.
22	Number of newsletters.
120	Number of media efforts (print, radio, television).
23,486	Total contacts made with clientele.

Outcome Indicators

133	Number of presentation attendees who reported that the presentation will help them make a more informed decision (from evaluation forms).

Source of Funds

Smith-Lever 3b and 3c.

Scope of Impact

Dissemination – Public issues education programs are available to Arkansas citizens, local governments and other interested parties. Most programs are delivered by county agents. Information is also posted on the PIEC web site (http://piec.uaex.edu).

Scope of Program – Public issues education programs have been delivered at some level in all 75 counties.

KEY THEME:
FAMILY RESOURCE MANAGEMENT

Program Response:
Financial Security in Later Life

Contact: Laura Connerly, Instructor – Family Resource Management, (501)671-2170, lconnerly@uaex.edu

Situation

Arkansas families face significant economic challenges to include:

- Not enough savings to meet emergencies or a sudden loss of income.
- High credit use and misuse that increases credit costs, automobile or life insurance premiums and hampers their search for employment.
- An increase in bankruptcy fillings of three percent from 2003 to 2004.
- Low median annual incomes to purchase needs and wants.
- The combination of a low national savings rate and high debt levels mean few families have sufficient dollars to save for retirement or plan for the long term, including making estate plans.

Stakeholder Input

Program planning teams composed of family and consumer sciences agents from all districts and state specialists met twice and identified priority issues in family resource management. Agents and specialists constantly networked with local and state groups including Arkansas Advocates for Children and Families, Kids Count, Family Self-Sufficiency Working Group, AARP, Consumer Credit Counseling, Arkansas Department of Human Services and Area Agencies on Aging to identify current needs. The focus groups and initiative teams used this input to frame the priority issues. Using a discussion and priority-setting process, the County Extension Councils in Arkansas counties identified resource management as a major emphasis for their long-range education program.

Overview

The Financial Security in Later Life National Initiative was adopted as a focus program. The objective of the program is to prepare individuals and families for retirement years. Subjects addressed include modifying family spending and consumer credit use in order to dedicate funds for retirement savings, calculating the total amount of money needed for retirement, addressing long-term care needs and estate planning.

Extension Program Results and Accomplishments

Output Indicators

41 Number of educational events related to Financial Security in Later Life.

378 Number of participants attending educational meetings related to Financial Security in Later Life.

1,337 Number of persons receiving education information via mail-e-mail-mass mail, newsletters, on-site or by telephone.

18 Number of volunteers who spent 11 hours teaching others.

29 Number of media efforts related to Financial Security in Later Life.

Outcome Indicators

11 Number of participants who initiated or increased contributions to a savings plan.

40 Number of participants who reduced or eliminated consumer credit debt.

14 Number of households who can identify and use appropriate financial services.

204 Number of participants who correctly identify benefits and costs of consumer credit.

28 Number of participants who follow a spending plan.

479 Number of participants who prevent the loss of resources by recognizing and avoiding fraud and exploitation.

Source of Funds

Smith-Lever.

Scope of Impact

Dissemination – Goals, objectives, situation statements, background statistics, marketing tools, curricula and other annotated resources are available on a Family and Consumer Sciences Department intranet web site and a national web site. Existing resource materials were supplemented with additional resources on the state web site. A monthly e-mail money management hint provided additional updates for agents and clientele. Agents were encouraged to order materials to fit their county programs. The program included direct teaching in workshops or single presentations, leader training and use of mass media and newsletters.

Scope of the Program – State Specific –Participating Counties: Ashley, Boone, Bradley, Calhoun, Carroll, Clay Cleburn, Cloumbia, Conway, Craighead, Crawford, Crittenden, Fulton, Garland, Grant, Green, Hempstead, Hot Spring, Howard, Independence, Jefferson, Johnson, Lafayette, Lawrence, Lee, Little River, Logan, Lonoke, Mississippi, Montgomery, Nevada, Newton, Perry, Phillips, Pike, Pope, Pulaski, Saline, Scott, Stone, Union, Van Buren, Woodruff, and Yell.

Program Response:
Planning for the Long Term

Contact: Laura Connerly, Instructor - Family Resource Mangement, (501)671-2170, lconnerly@uaex.edu

Situation

Significant issues faced by Arkansas families in preparation for the aging years include:

- The combination of a low national savings rate and high debt levels means few families have sufficient dollars to save for retirement or plan for the long term, including making estate plans.
- Learning to adapt lifestyles as each person experiences physical changes.
- Learning to cope with loneliness, anxiety, and depression.
- Practicing care-giving skills to help the frail and sick adapt to their shrinking world.

Stakeholder Input

The Planning for the Long Term Focus Program uses a three-prong approach – financial, health and social – to educate Arkansas on planning for a quality of life in later years. The Planning for the Long Term Focus Program committee composed of family and consumer sciences agents from all districts and the resource management and health and aging specialists met three times to identify program goals and resources that would address program goals. Agents and specialists networked with local and state groups including AARP, area agencies on aging, county senior citizens centers and local Extension Homemakers Clubs to determine program needs.

Overview

The Planning for the Long Term Focus Program was developed as a multi-prong thrust to address retirement and aging issues from three perspectives – financial, health and social. The objective of the program is to prepare individuals and families for retirement years. Topics addressed included learning to adapt to a changing financial situation, assessing long-term care needs, adjusting to one's own or another's physical and mental health changes due to aging and improving care-giving skills. Curriculum materials were identified and developed for each topic. The Arkansas Extension Homemakers Council adopted a proposal to make care-giving an emphasis program for the next biennial program year.

Extension Program Results and Accomplishments

Output Indicators

40 Number of educational meetings held related to Planning for the Long Term.

1,375 Number of participants attending education meetings related to Planning for the Long Term.

6,210 Number of persons receiving education information via mail/e-mail/mass mail, newsletters, on-site or by telephone.

1,941 Number of hours spent planning, conducting, marketing, and evaluating educational programs related to Planning for the Long Term.

57 Number of volunteers who spent 257 hours teaching others.

29 Number of collaborations related to Planning for the Long Term.

Outcome Indicators

134 Number of participants increasing knowledge of later life changes that affect relationships among family members.

242 Number of participants reporting a more positive attitude about dealing with relationship changes that may occur in later life.

70 Number of participants who have developed a plan for managing long-term health care needs.

80 Number of participants who have discussed later life legal issues with family members or other caregivers.

225 Number of participants who have increased their knowledge of health and medical issues that face individuals in later life.

88 Number of participants who have increased their knowledge of legal issues that face individuals in later life.

106 Number of participants who have increased their knowledge of risks, costs and financing options for health (including long-term care).

132 Number of participants who have organized important records and documents so family members can find them when needed.

82 Number of participants who have reviewed, updated or created a will or estate plan.

167 Number of participants who have reviewed, updated or created advanced directives related to health care (e.g. living will, durable power of attorney).

115 Number of participants who increased their knowledge of recommended communication methods that can be used when discussing changing needs in later life with family members or others.

257 Number of participants who increased their skill levels in the use of recommended communication methods that can be used when discussing changing needs in later life with family members or others.

70 Number of participants who report that they plan to develop a plan for managing long-term health care needs.

Source of Funds

Smith-Lever.

Scope of Impact

Dissemination Goals, objectives, situation statements, background statistics, marketing tools, curricula and other annotated resources are available on a Family and Consumer Sciences department Intranet web site. Agents were encouraged to order materials to fit their county programs. Programs were delivered to EHC, Area Agency on Aging, AARP and general Extension audiences. Media releases were prepared with topics of interest to elders and their caregivers.

Scope of the Program – Participating counties: Arkansas, Calhoun, Carroll, Clark, Clay, Craighead, Dallas, Green, Howard, Lawrence, Little River, Logan, Marion, Ouachita, Pike, St. Francis, Sevier, Sharp, Van Buren, Washington, White.

KEY THEME: PARENTING

Program Response: Guiding Children Successfully

Contact: Dr. H. Wallace Goddard, Professor - FamilyLife, FCS, 501-671-2104; wgoddard@uaex.edu

Situation

American children face unprecedented challenges. The frustrations and demands of a fragile economy, heavy work schedules, stress overload, family dissolution, and personal uncertainties put a heavy load on young Americans. The problems are further aggravated by the lack of training available for adults in dealing with child rearing and child care issues. The need for solid, practical, research-based information for parents and other caregivers is increasing at the same time that American adults are less likely to be reached by traditional informal educational processes such as meetings and neighborhood gatherings. Unfortunately much of the popular wisdom about family process is mistaken---even counterproductive. American families face a stress and disinformation crisis. Cooperative Extension, with its extensive network and research-oriented personnel, is uniquely qualified to respond to the challenge.

Stakeholder Input

Brazelton and Sparrow (2001) have observed that parents and caregivers are desperate for information yet are unsure where to get information that is reliable. While good childrearing may be the most important work that any society can do to assure its future, it is estimated that 90 percent of parents undertake the task without any specific training. A meeting of FCS agents and a meeting of the Marriage, Parenting, and Family Life Initiative Team determined that the highest priority in Arkansas communities was for quality, research-based information on family life that could be used in multiple ways. Some of that need was addressed by providing a richness of information units on the Arkansas Families (www.arfamilies.org) website that can be used in various media: newspaper, radio, newsletters, and trainings. These resources, called Family Life: Challenges and Choices, are widely used both by Extension personnel and by clients. There were over 5,000 non-Extension hits to the web resources during 2003. There were an unspecified number of client contacts with this information through newsletters, media, and county programs.

Yet all of these contacts reach only a small percentage of Arkansans. There is a continuing need both for good information and for an increased awareness that such solid, research-based information is readily available.

Overview

Working closely with the production staff at Arkansas Educational Telecommunications Network (AETN), the Communication and FCS faculty of the University of Arkansas Cooperative Extension Service developed the concept and program outlines for a new public television series entitled Guiding Children Successfully. Each show is an hour-long program that includes practical tips for parents and caregivers. The developer and host for each show is H. Wallace Goddard, Extension Family Life Specialist. Dr. Goddard's training in Family Life together with training in Instructional Psychology make him uniquely qualified to develop this television series.

Dr. Goddard draws on Extension personnel to provide technical support (taping, publicity, design), and content specialists for the shows. In fact the extraordinary capacity of the communication department with excellent videographers, graphics specialists, and communications specialists has been an essential element of the show's success. With the support of the remarkable Extension network, the program organizers have also been able to identify and involve excellent panelists for the shows.

The twelve shows in Guiding Children Successfully focus on providing parents and other caregivers with practical, sensible information to help children develop into healthy, contributing adults.

UACES wrote a proposal to the Arkansas Division of Child Care and Early Childhood Education to make the twelve shows available through county Extension offices to childcare providers statewide. When the project was funded, the GCS leadership team developed learning checks and support materials to accompany the shows.

Through the county offices, the shows are available not only to providers, parents, and community groups, but also for the courts and agencies to use with caregivers who are identified as needing special training.

Since training of childcare providers began in January 2004, 2,822 hours of training have been successfully completed by 553 participants.

Guiding Children Successfully was expanded during the last year as the Division granted permission to create eight more hours of training using The Parenting Journey map and its seven accompanying Travel Guides. Not only do these Extension materials provide practical training for providers but they also provide a resource that providers can use to help parents of the children for whom they care.

Extension Program Results and Accomplishments

Output Indicators

Output Indicators: Twelve one-hour shows designed, taped, and edited. Each show has aired on AETN many times which translates into dozens of television hours of training for a wide audience in Arkansas. The National Educational Telecommunications Association (NETA) has adopted Guiding Children Successfully thereby making the series available to audiences nationwide. According to NETA records, Guiding Children Successfully has aired on 60 stations across the nation reaching 31.22 percent of the public television audience in the United States. Four of the 10 major markets (New York, Los Angeles, Philadelphia and Atlanta) have aired GCS. As of August 2004, 14 stations were airing the series.

More than 50,000 copies of the Parenting Journey have been circulated statewide through care systems and public schools.

Outcome Indicators

Guiding Children Successfully has enjoyed a very positive reaction in Arkansas and states nationwide. While it is not possible to track all broadcast viewers of the show, hundreds of thousands of people nationwide have viewed shows from the series.

Among child care providers who have viewed shows, 90 percent have successfully completed the learning checks suggesting that the shows effectively teach the material for most viewers. Since training of childcare providers began in January 2004, 2,822 hours of training have been successfully completed by 553 participants.

Source of Funds

Smith Lever 3b and 3c for all Extension planning, filming, and producing. AETN has absorbed production and broadcast costs. Providing GCS tapes to county Extension offices for providers and parents was funded by the Arkansas Division of Child Care and Early Childhood Education(Professional Services Contract Number 4600003835).

Scope of Impact

Dissemination – Not only are shows from Guiding Children Successfully available through public television broadcast in Arkansas and many states nationwide, but also videotapes and DVD's of all shows are available to all parents and professionals through all 75 county Extension offices in the state of Arkansas.

Further, the Parenting Journey map and supporting materials are available in all county offices. Extension Service is reaching many Arkansans through many partners.

Scope of Program –

1) State Specific – Tapes of Guiding Children Successfully with all support materials are available through all 75 counties in the state of Arkansas. All FCS agents have been trained in using the programs and managing the support materials (including learning checks).

   During the program year we awarded 1,584 hours of Guiding Children Successfully training for child care professionals and 698 hours of training to individuals who were not early childhood professionals. Since we began the program, January 2004, we have delivered 6,293 hours of training for providers and 1,978 hours of training for non-providers. We have evaluation data showing effectiveness with approximately 87 percent mastery of material. (Detailed report available.)

2) Multistate – The National Educational Telecommunications Association (NETA) has adopted Guiding Children Successfully thereby making the series available to audiences nationwide. , Guiding Children Successfully has aired on 60 stations across the nation reaching 31.22 percent of the public television audience in the United States. Four of the 10 major markets (New York, Los Angeles, Philadelphia and Atlanta) have aired GCS. As of August 2004, 14 stations nationwide were airing the series.

Programs of Excellence

Guiding Children Successfully and the **Parenting Journey** are both used by the ArCares program that serves mothers who are in residential treatment. Many of the mothers have been involved with methamphetamines and are put in treatment with their children. At ArCares they are prepared to return to productive family life and

citizenship. The counselors report that GCS and PJ are vital tools not only for the skills they provide but also because of the hopeful spirit they convey to these mothers.

KEY THEME: WORKFORCE PREPARATION – YOUTH AND ADULT

Program Response: Entrepreneurship Camp

Contact: Joshua Wright, 4-H Youth Development, 501-821-6884, jwright@uaex.edu

Situation

According to the Arkansas Department of Education, 59 percent of general population fourth grade students in public schools perform below the current grade proficiency level. In the combined population (including students who receive special education services, those students whose first language is not English and those students who recently moved into the district), 63 percent are below the grade specific level of proficiency on standardized math tests. Help is clearly needed to motivate Arkansas students to develop critical math skills. In addition, many Arkansas youth do not have the opportunity to become knowledgeable about career opportunities and entrepreneurship. The Entrepreneur Camp curriculum combines several educational skills, including math, in an experiential manner and likewise introduces the concepts of entrepreneurship and economics to the students.

Stakeholder Input

Evaluations from the previous year's entrepreneur camp were carefully studied and key program adjustments were made to enhance educational and social opportunities for the young people. Parents' comments were solicited following camp.

Overview

The Entrepreneurship program is an experience-based approach to teaching children ages 9 to 12 entrepreneurship concepts and preparation for the "real world." Specific program objectives are to:

- Provide children with opportunities to experience entrepreneurship.
- Teach entrepreneurship concepts in the context of these experiences.
- Integrate the study of entrepreneurship with other subjects such as language arts, mathematics, science, social studies, critical thinking, problem solving, arts and cooperative learning.

The Entrepreneurship Program was implemented in two ways, the first being a three-day statewide camp targeting underserved youth and the second being implementation at the county level via schools, day camps and with special audiences.

Extension Program Results and Accomplishments

Output Indicators

- State Youth Camp – three days and two nights

36 Youth, ages 9-12, who participated in the state camp.

1,000 Hours of educational instruction during the Mini-Society Camp.

8 Counselors trained to implement the Entrepreneurship Program.

Outcome Indicators

- Students developed an understanding of having to work or produce a product to have an income.
- Participants developed an appreciation of the difference between a "need" and a "want."
- Students learned interpersonal skills.
- Participants learned to budget money and to keep up with the income they generated.
- Students reported learning how to count money and how to complete a job application.
- Youths learned about partnerships and working together in groups.

Source of Funds

Supported primarily by camper fees.

Scope of Impact

Dissemination – Camp is open to all 4-H youth from 9-12 years of age throughout Arkansas. Camp information is available on the web and distributed to counties through e-mail announcements.

Program Response: Kansas City 4-H Global Conference

Contact: Mike Klumpp, 4-H Youth Development, 501-671-2105, mklumpp@uaex.edu

Situation

Arkansas youth require knowledge of the global, culturally diverse and high-tech workplace in order to compete and succeed in the job markets of the future.

Stakeholder Input

Agents and leaders who have chaperoned this event have reported it to be one of the best learning experiences for youth with which they have been affiliated.

Overview

The Kansas City 4-H Global Conference is a four-day experience designed to provide insight into a global and high-tech workplace through direct interaction with international companies and to increase appreciation and awareness of the strengths of cultural diversity in a global society. Because of their interaction with business leaders, educators and international contacts, delegates returned home with increased confidence in their ability to interact in a global society. 4-H members were able to develop an awareness of and appreciation for the strengths of cultural diversity in a corporate climate through academic, personal management and teamwork skills. In addition to exploring career opportunities, the delegates took part in service learning projects.

Extension Program Results and Accomplishments

Output Indicators

40 Arkansas 4-H members who attended the four-day Kansas City Global Conference in Kansas City, Missouri.

391 Arkansas 4-H members who have experienced Global and Cultural Education, including heritage, diversity and exchanges, as reported on ES-237.

846 Arkansas 4-H members who have experienced Career Exploration opportunities as reported on ES-237.

Outcome Indicators

7 Arkansas 4-H members who were past delegates reported information gained to the extent that they made application to attend for a second year. One of these members was selected to serve as a facilitator for the Global Conference.

Source of Funds

Participant fees managed by the Arkansas 4-H Foundation fund the program.

Scope of Impact

Dissemination – Program is available to all counties statewide. Information is available on the UAEX web site and through internal communications.

Scope of Program – 18 counties from across the state: Benton, Columbia, Craighead, Crawford, Faulkner, Garland, Independence, Izard, Jefferson, Lawrence, Logan, Lonoke, Perry, Polk, Pope, Saline, Washington, White.

KEY THEME:
YOUTH DEVELOPMENT/4-H

Program Response:
Arkansas AG Adventures

Contact: Willa Williams, 4-H Youth Development, 501-671-2225, wwilliams@uaex.edu

Situation

Agricultural Awareness

- U.S. consumers spend less of their income on food than almost any other nation in the world.
- Farmers and ranchers provide food and habitat for 75 percent of the nation's wildlife.
- New technologies in agriculture could help solve the problems of hunger and disease as well as increase the number of jobs and lower the cost of living.
- Less than 3 percent of the population is directly involved in agricultural production, yet about 25 percent of the state's economy is agriculturally based.
- Tomorrow's citizens, consumers, business leaders, legislators and educators must be agriculturally literate in order to protect and preserve the advantages we gain from a strong agricultural industry.

Stakeholder Input

Producer Focus Groups and results from the Farm Crisis Survey both identified a significant need, particularly with children and young people, for an increase in factual public information and education regarding production agriculture.

Overview

Arkansas is a diverse state that depends on a strong agricultural industry. Agriculture is Arkansas' largest industry, providing over $5 billion a year in farm income. Roughly one-half of the state's land is devoted to agriculture, and our climate and topography make it well suited for the production of a broad spectrum of commodities. Nationally, Arkansas ranks first in the production of rice and second in the production of broilers. Arkansas is also highly ranked in the production of catfish, turkey, cotton and soybeans.

Although Arkansas depends on agriculture, it is seldom taught in elementary or secondary schools. Along with the fact that most children are two to three generations away from the farm, there is an increasing need for agricultural awareness.

A center to teach youth about agriculture was established on the University of Arkansas at Pine Bluff Research Farm in Lonoke, Arkansas. Children learn a variety of subjects through hands-on lessons at the center whether they come from rural or urban schools. The program also provides in-school visits to schools that may not be able to send children to the center due to cost or travel restraints.

Extension Program Results and Accomplishments

Output Indicators

8 Number of programs held at the agricultural awareness center.

37 Number of outreach programs held throughout the state.

300 Number of participants in agricultural awareness field days.

3,000 Number of participants in state outreach programs.

Outcome Indicators

- Increased the number of outreach participants throughout the state.

Source of Funds

50 percent University of Arkansas at Pine Bluff (UAPB), 50 percent University of Arkansas Cooperative Extension Service (CES).

Scope of Impact

Dissemination – The program is available to all youth and adults in the state of Arkansas. The program is available to counties by attending field trips at the center or reserving a program in their county. Materials about the program are available on the web and through the program coordinator.

Scope of Program – The increase of outreach participants has included over 30 percent of the counties in Arkansas.

Program Response: Arkansas 4-H Tech Team

Contact: Willa Williams, 4-H Youth Development, (501) 671-2225, wwilliams@uaex.edu

Situation

All school-age children and youth will have access to information technology through their 4-H program, opportunities to become skilled in the safe and effective use of information technology and its applications and the ability to apply their technical skill and knowledge as a tool to enhance their education, career opportunities, contributions to community and personal life.

Stakeholder Input

The Access the Future Coalition was formed at the 2000 National 4-H Conference by the Access the Future Consulting Group to coordinate the efforts of 4-H youth and adults working in partnership with organizations across the United States to slam shut the Digital Divide that separates our country's technology haves and have-nots. By Digital Divide, we mean the disparities in both accessing and using information technology. Youth from throughout the nation gathered at Conference to identify issues of concern to youth and responses to those issues.

The Access the Future Coalition is the 4-H youth response, our action to help American society address these issues. National leadership for 4-H and information technology comes from the Cooperative State Research, Education, and Extension Service (CSREES), which is part of the United States Department of Agriculture (USDA). Both USDA and CSREES have declared that addressing the issues of the Digital Divide are priorities for the coming year.

Overview

Members of the Arkansas 4-H Technology Team meet to discuss future plans for the team including community service projects and educational workshops. The team can learn about GPS, digital photography or even forensic science with hands-on lessons at the workshop. The lessons are given by various career professionals in the technology field. The goals of the state tech team are to introduce 4-H members to various careers in technology, to learn new skills in technology, to network with other 4-H members who are interested in technology and to complete a community service project that is technology related.

Extension Program Results and Accomplishments

Output Indicators

5 Number of state Tech Team workshops.

20 Number of county Tech Teams.

2 Number of camp or special event workshops.

50 Number of participants at the Arkansas 4-H Technology Conference.

Outcome Indicators

The Arkansas 4-H Tech Team increased in size by 50 percent.

Source of Funds

Private donations and registration fees.

Scope of Impact

Dissemination – The Arkansas 4-H Tech Team is only open to youth 13-19 years of age, but the programs are available to all youth and adults in the state of Arkansas. Materials about the program are available on the web and through the program coordinator.

Scope of Program The technology program has reached youth and adults throughout Arkansas and the United States.

Program Response:
Arkansas 4-H Volunteer Core Competencies

Contact: Mike Klumpp, 4-H Youth Development, (501) 671-2105, mklumpp@uaex.edu

Situation

Recruiting, retaining and successfully supporting Arkansas parents and volunteers in our 4-H program can be both exciting and difficult. It has been recognized that an effective 4-H program requires committed parents, dedicated volunteers and Extension faculty that work together for the common good of young people. In order for each of these groups to contribute their part, they need to have some basic core knowledge about the 4-H Youth Development Program of the University of Arkansas Cooperative Extension Service.

Stakeholder Input

The hallmark of the 4-H program has been its strong volunteer leadership base. Today many volunteers are not willing to make long-term commitments or volunteer at all unless they have a well-defined set of expectations. For these reasons, a consistent training program with core competencies has been identified as a need for volunteer development and management in Arkansas. Competencies provide for a fundamental understanding of 4-H Youth Development and assist in creating a strong foundation for educational programming in Arkansas. The newly developed Arkansas 4-H Core Competency Training Curriculum – "Unit 1 - This Is 4-H" and "Unit 2 - Getting the Most Out of the 4-H Experience" – provides the base for training volunteers

Overview

Extension professionals and 4-H paraprofessionals utilize the training tools found in Arkansas 4-H Core Competency Training Curriculum – "Unit 1 - This Is 4-H" and "Unit 2 - Getting the Most Out of the 4-H Experience." This training provides parents/volunteers with the skills needed to effectively carry out assigned roles and responsibilities in planning, conducting and evaluating local 4-H programs. The Unit 1 and Unit 2 guidebooks and CD-ROM contain PowerPoint presentations, teaching outlines, a parent-volunteer self study series, newsletter support materials, handouts and 4-H resource materials.

Extension Program Results and Accomplishments

Output Indicators

During the year, 458 trainings were held across the state, covering each of the three districts, with 9,835 adult/youth volunteers being trained.

Outcome Indicators

There was an increase by participants in knowledge level and awareness of the key components that were covered in both Unit 1 and Unit 2 curriculum. Those key components were: History of the Cooperative Extension System, History of 4-H, Local 4-H Clubs, Structure of a County Program, 4-H Project Work, Selecting 4-H Projects, Roles of 4-H Volunteers/Family/Agents, 4-H Public Speaking, 4-H Events and Activities, 4-H Evaluation and Recognition, 4-H Record Keeping and Leading a 4-H Project Group.

Source of Funds

1862 Smith-Lever Funds.

Scope of Impact

Dissemination – The Arkansas 4-H Volunteer Core Competencies Curriculum material is made available by county Extension agents to Arkansas 4-H volunteer leaders, parents and 4-H teen leaders. Unit 1 – This Is 4-H and Unit 2 – Getting the Most Out of the 4-H Experience guidebooks and corresponding CD-ROM contain PowerPoint presentations, teaching outlines, a parent-volunteer self study series, newsletter support materials, handouts, 4-H resource materials and evaluations. Counties make the materials available through volunteer trainings, newsletters, displays, self-studies, web pages and other correspondence methods.

Scope of Program – All 75 counties in Arkansas have had Extension faculty and key volunteers participate in training and are providing opportunities for other clientele to receive additional training in identified competency areas.

Program Response: Building 4-H Clubs

Contact: Brian Helms, Instructor - 4-H Youth Development, (501) 671-2289, bhelms@uaex.edu

Situation

Too few young people grow up experiencing key ingredients for healthy development. They do not experience encouragement from adults or building sustainable relationships with their peers. Many have too little to do that is positive or constructive. A recent Montana State University study shows proof of just how important 4-H is to the positive development of young people. The research results revealed that youth who participated in 4-H for more than a year are significantly better off than youth who did not participate in the program. 4-H clubs represent the best opportunity for long-term meaningful youth development.

Stakeholder Input

Stakeholder input was sought though the utilization of the county 4-H expansion and review committees, county Extension councils and the formation of a state team to address the need to increase the number of 4-H clubs in the state of Arkansas. These groups used a discussion and priority-setting process. In addition, the 4-H program underwent an external program review, which indicated the need to enhance clubs and volunteer training.

Overview

Addressing the need to involve youth in positive out-of-school experiences and the drive to focus on increasing the quality and number of organized 4-H clubs, “Building 4-H Clubs” was conceptualized. This program focused on organizing new 4-H clubs and groups in after-school settings, recruiting and training 4-H volunteers, marketing 4-H and providing recognition to 4-H members.

Extension Program Results and Accomplishments

Output Indicators

1 In-service training for new agents and program assistants was held.

855 Organized 4-H clubs and groups.

382 School-age child care units reported.

424 Youth participated in after-school programs.

6,644 Youth volunteers trained.

3,191 Adult volunteers trained

997 Other adults trained.

- County Extension agents serviced an average of 5.8 organized clubs and groups per agent in the state.

Outcome Indicators

404 Volunteers became Certified Volunteers after completing three training courses.

- 4-H volunteers contributed an average of 192 hours per year for a total of 1,664,064 hours of service by adult volunteers.

- 4-H youth volunteers contributed an average of 48 hours per year, for a total of 83,904 hours of service.

Source of Funds

Smith-Lever Funds 3b and 3c; a Rural Youth Development Grant was obtained for the 4-H After-School program.

Scope of Impact

Dissemination – Program is available to all 75 counties. The Arkansas 4-H Volunteer Core Competency Curriculum (two notebooks, plus three CDs) was made available to all participants in the district trainings. Each county had two faculty members participate in the training. This curriculum was adapted for Arkansas (originally prepared in Oklahoma) by Mike Klumpp, Associate Professor - 4-H Youth Development.

Scope of Program – State Specific – Available to all 75 counties in Arkansas.

Program Response: Citizenship...Washington Focus

Contact: Brian Helms, 4-H Youth Development, 501-671-2289, bhelms@uaex.edu

Situation

Because of recent national events, there is a renewed patriotism among youth in Arkansas and an interest in gaining knowledge of the workings of government.

Stakeholder Input

Agents and leaders who accompany the delegates to Washington, DC, for this event completed an evaluation of the event. The ratings from this evaluation are consistently high.

Overview

The Citizenship...Washington Focus (CWF) program is designed to teach young people to be active, responsible citizens and leaders. This is accomplished through the use of workshops, dynamic speakers, committee work, field trips and social events. Delegates to this program saw government in action and explored rights, responsibilities and heritage while considering what action they would take in their own communities after the trip. The CWF program included a visit to Capitol Hill where the delegates had the opportunity to visit with their Congressional delegation. Each 4-H'er files a plan of action with their county agent, outlining ideas for their leadership role at home in some area of need in their community.

Extension Program Results and Accomplishments

Output Indicators

46 Arkansas 4-H members, two volunteer leaders and two county Extension agents attended the nine-day CWF trip to Washington, DC.

7,437 Arkansas youth received citizenship education according to the ES-237 report.

Outcome Indicators

620 Arkansas youth participated in Youth in Governance programs.

Source of Funds

The program is funded by participant fees managed by the Arkansas 4-H Foundation.

Scope of Impact

Dissemination – Program is available to all counties statewide. Information is available on the UAEX web site and through internal communications.

Scope of Program – Participants in this program represented 22 Arkansas counties: Arkansas, Benton, Boone, Conway, Craighead, Cross, Faulkner, Garland, Fulton, Grant, Greene, Independence, Jefferson, Johnson, Lonoke, Phillips, Pike, Polk, Marion, Union, Washington and White.

Program Response: Developing Youth

Contact: Darlene Z. Baker, Ph.D., Assistant Director - 4-H Youth Development, dbaker@uaex.edu, 501-671-2064

Situation

In an increasingly complex and competitive world market, the human capital of the United States is its most important resource. And while young people under 18 years of age represent only 26 percent of the population, they represent 100 percent of America's future. Yet too many youth are reaching adulthood unprepared to be productive workers, effective parents or responsible citizens.

Stakeholder Input

Using a discussion and priority setting process, the County Extension Councils in 100 percent of Arkansas counties have identified developing youth as a major emphasis for their long-range educational programs. Educational programs within the 4-H program for youth are designed to provide youth with positive opportunities to learn and interact with peers and adults and to provide leadership development and focus on life skills enhancement through research-based educational programs focusing on Family and Consumer Sciences, Science and Technology, Community and Economic Development, Agriculture and Natural Resources.

Overview

The 4-H youth development program promotes a focus on positive youth development. Positive youth development is a process which prepares young people to meet the challenges of adolescence and adulthood through a coordinated, progressive series of activities and experiences which help them to become socially, ethically, emotionally, physically and cognitively competent. Positive youth development addresses the broader developmental needs of youth, in contrast to deficit-based models that focus solely on youth problems. This approach embodies a wide array of programs. Recent research studies have shown that when young people are provided safe, structured, supervised and healthy activities in which to participate, they are less likely to become involved in the high-risk, unhealthy behaviors that can delay or derail positive development and are more likely to obtain a broad range of competencies.

Extension Program Results and Accomplishments

Output Indicators

10,552	Number of clubs/units in which youth participated.
822	Number of organized clubs/units in which youth participated.
126,212	Number of youth who participated in clubs/units.
12,359	Number of youth who participated in organized clubs/units.

32,624 Number of non-duplicated youth participating in educational programs based on the experiential learning model at the county level.

33,261 Number of youth who participated in educational programs designed to teach basic life skills.

Outcome Indicators

126,212 Number of youth who reported working in one or more educational project areas.

1,775 Number of non-duplicated youth developing community service projects.

4,932 Number of non-duplicated youth serving in leadership roles at the club or county level.

313 Number of youth benefiting from county and state 4-H scholarships.

328 Number of youth serving on advisory/management groups.

92 Number of non-duplicated youth serving in leadership roles at the state level.

Source of Funds

Smith-Lever 3b and 3c.

Scope of Impact

Dissemination – Statewide availability of program to interested youth and adults. 4-H program information is available through the UAEX web site.

Scope of Program – All 75 counties in Arkansas conduct a 4-H Youth Development program.

Program Response:
ExCEL: Experience the Challenge, Experience the Leadership

Contact: J.J. Pitman, jpitman@uaex.edu, and Burnie Kessner, bkessner@uaex.edu, 4-H Youth Development, 501-821-6884

Situation

As our communities become more detached, the need for leadership skills increases. Academic skills are pushed to the forefront of education in today's society. There is an increasing need for communication and social interaction skills. ExCEL provides a forum which enhances and encourages these educational opportunities.

Stakeholder Input

Participants in the ExCEL program offer input on a voluntary basis. Participant responses are collected by many forms, e-mail, evaluations, thank you letters and via phone. Input was selected through evaluation.

"This program has proven it can work with people of all ages and varying personal abilities." – *Jordan Johnson*

"On behalf of the staff and faculty of The Cathedral School, I would like to thank you for the most successful staff development program we have participated in. We have a long history of providing staff development activities." – *Ann Larkowski*

Overview

The main objectives of ExCEL are to:

- Help individuals and groups increase trust in themselves and others.
- Develop self-confidence in participants.
- Develop team concept and spirit in self and group.
- Help participants increase motivation and personal performance.
- Teach the value of trust and cooperation and how these qualities are important in everyday life.
- Translate leadership skills immediately into real life situations (communication, working in groups, decision-making, understanding self and management).

The ExCEL program is designed to give groups the opportunity to develop creative problem-solving skills and to discover the value of working with others to achieve goals. ExCEL targets older youth and adults. ExCEL can be a valuable tool for youth and adult interpersonal and organizational growth by providing a tailor-made program to meet the needs of youth and adult organizations. The ExCEL program is designed to build self-confidence and teach trust and cooperation. It directs participants to develop positive solutions to existing problems. ExCEL uses low initiatives, a high ropes course and rock climbing walls to help groups achieve their personal and group goals.

Extension Program Results and Accomplishments

Output Indicators

3,495 participants participated in the program in 2005-06.

# of Activities/Participants	Description of Activity, Program, Product
119 activities with 3,495 participants	2- to 12-hour Challenge course programs

Outcome Indicators

- 1997-98 1,550
- 1998-99 2,800
- 1999-00 2,900
- 2000-01 3,500
- 2001-02 3,540
- 2002-03 3,254
- 2003-04 3,570
- 2004 -05 3,245

Source of Funds

Funds for the ExCEL program are from the Cooperative Extension Service, University of Arkansas 4-H Foundation and participant fees. This year grant funds were secured from 4-H Urban and Rural funds.

Scope of Impact

Dissemination – The ExCEL program is available to all eligible persons regardless of race, color, national origin, religion, gender, age, disability, marital or veteran status, or any other legally protected status. Information is available through the web. Brochures are available at the 4-H Center and via mail upon request.

Scope of Program – Program available to all counties.

Program Response: Environmental Education Programs: 4-H Responsible Environmental Stewardship – Quest (4-H RES-Q), Science Enrichment Education for Kids (SEEK), Summer Day Camp, NatureMapping

Contacts: Leslie Gall, lgall@uaex.edu, and Burnie Kessner, bkessner@uaex.edu, 4-H Youth Development, 501-821-6884

Situation

Numerous children live in an urban setting and view the outdoors through computers, television and textbooks instead of venturing outside. The experiences children have will help define their attitudes as adults. In turn, these adults will affect the future of our natural state. As adults and educators, we are responsible for teaching our youth about the importance of protecting, using and conserving our natural resources, thus ensuring a healthy environment for all living things.

Stakeholder Input

"We can move the classroom to Ferndale and they get a lot of hands-on experience. We bring our support staff, music, PE teacher and librarian, and they incorporate what they learn here into their curriculum when they get back to school." – *Leara Beth Carmichael, Teacher, Cabot Central Elementary, commenting on the school field trip section of 4-H RES-Q*

"I just wanted to tell you how impressed I was with the first grade SEEK program today. (Nathaniel had surgery earlier this week, but insisted on going today, so I went along as his "shadow" to make sure he didn't overdo it.) I already knew that it was a well-organized program just from the tidbits I've learned from Nathaniel, but after today I can see why it's so successful! Angie and Kelly are great with the kids, and everything is done so well (from their lessons, to lunch, to discipline, etc.). It was quite obvious that they had spent a lot of time in preparation for the class, and their love for the kids was evident as well. I commend you on finding such excellent teachers and for such a quality program that is well worth every penny! Thanks for all your hard work! This home-schooling mom really appreciates all of you!" – *Betty Ray, Home school parent commenting on the first grade SEEK class*

Overview

4-H environmental education programs at the 4-H Center, such as 4-H RES-Q, allow students to experience the out-of-doors and provide them with environmental facts that will allow them to make decisions and solve problems concerning their role as stewards of the environment. This goal is accomplished through numerous

avenues such as 4-H RES-Q, SEEK, Summer Day Camp and NatureMapping. The mission of the Cooperative Extension Service, University of Arkansas, is to help people improve their lives through an educational process that uses research-based knowledge focused on issues and needs. The mission of 4-H is to 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.

The goals of all of the environmental education programs are:

- To provide learners of all ages a positive outdoor education experience.
- To instill a lifelong enthusiasm, appreciation and sense of responsibility toward the natural world.
- To assist participants in ultimately making informed environmental decisions.

4-H RES-Q: School and Youth Group Environmental Education Field Trips

Our program is a residential environmental education program available to youth as a one-day or multi-day and night program. This program incorporates existing educational resources, such as Project WET, Project WILD and Project Learning Tree, into the 4-H RES-Q curriculum. The activities are aligned to Arkansas' science standards. Educators select from 19 classes that allow students to participate in experiential learning activities. A few classes are:

Water Ecology – The Water Ecology class explores how the water cycle affects lakes, springs and streams, as well as interrelationships between plants, animals, macro invertebrates, people and physical features. Students predict, observe and classify components of water ecology. This class increases awareness of the role of water ecosystems in our world.

Forest Ecology – Forests serve as the lungs of the earth. Students explore this concept while learning the life cycle of trees. Sensory experiences and hands-on activities convey appreciation and awareness of the forest as a community of living things and a renewable natural resource.

Canoeing and Hooked On Fishing – Clean water is essential for all living things. Students are instructed in water safety skills for the recreational activities as well as an appreciation for the importance of clean water.

Wildlife – Wildlife explores the diverse animals that inhabit the forest, fields and cities. Ecosystems and habitats are heavily emphasized in this class.

Additional classes include Astronomy, Reptiles and Amphibians, Nature Awareness, Archery, Plants and Their Pollinators, Birds, Adventure Games, Orienteering, and several other topics.

Summer Day Camp

The ever-increasing demand for quality summertime activities for children was a niche into which the University of Arkansas Cooperative Extension Service 4-H RES-Q program fit perfectly. One of the premier outdoor education programs in the state, the 4-H RES-Q program, was ready to offer its fun, experiential education curriculum during a warmer season. Children ages 7-12 years old enjoyed four fun-filled days from 9:30 a.m. to 3:00 p.m. Tuesday through Friday at the Arkansas 4-H Center in Ferndale, Arkansas. Each day's activities revolved around a theme such as wildlife, aquatics, forest ecology and outdoor adventure. The program repeated for six weeks during the summer.

Science Enrichment Education for Kids

The SEEK program began in the fall of 1999. The program was established to help meet the science needs of home-schooled children and their parents. The program's primary objective is to concentrate on providing hands-on science experience in a fun and safe social environment. We currently have three days of programming (Tuesday, Wednesday and Friday) with students attending one day a week for 12 weeks during 2005/2006. The program currently has one first grade, two second grade, three third/fourth grade, three fifth/sixth grade, three seventh/eighth grade and two ninth through twelfth grade classes.

NatureMapping

NatureMapping is a data collection and monitoring program for schools and the public to keep track of nature, by mapping what they observe. A two-year pilot program was conducted, beginning with the 2002/2003 SEEK program, incorporating NatureMapping curriculum into the SEEK program. High school age students met once per week during the 12-week program to study natural resource management topics, mapping, Geographic Information System and Global Positioning System technology and leadership skills.

Extension Program Results and Accomplishments

Output Indicators

9,217 Number of participants in the 4-H RES-Q school and youth groups environmental education field trip program at the Arkansas 4-H Center FY06.

118 Number of participants in the three weeks of the Summer Day Camp program, June, July and August 2005.

185 Number of participants in the 12-week SEEK program, winter of 2006.

11 Number of participants in the NatureMapping program, winter of 2006.

Outcome Indicators

- The SEEK program was recognized as a 4-H Program of Distinction by the National 4-H Headquarters in 2005.

- Program Evaluation Process – In order to evaluate the process of the program, parent, student and instructor feedback from the previous year has primarily been utilized. As a result of past process evaluations, changes have been made to the program such as reducing the length from 14 to 12 weeks, adding a first grade class, and adding more options for high school age students. Due to parent and instructor feedback, risk management actions such as drop-off and sign-out procedures, insurance, and health, media, and activity permission procedures have been enhanced each year. The registration process has also been improved due to parent and instructor feedback.

- Outcomes and Impacts – Test Scores – A pre- and post-test has been conducted since the first year of SEEK. A pre-test is administered during the first or second day of class prior to engagement in learning activities and a post-test is given at the conclusion of the learning activities. The most complete data are for all six years of the third-fourth grade comprised of 202 tests. All six years combined result in an average pre-test score of 53.08 and an average post-test score of 92.35 with an average positive change of 39.26 for the third-fourth grade class. The fifth-sixth grade classes have five years of data comprised of 164 tests. The average fifth-sixth grade pre-test score is 66.38 and post-test is 89.55 with an average change of 23.00 points. The seventh-

eighth grade data are represented by 138 students tested over five years. The average pre-test score is 54.63 with an average post-test score of 75.76 and an average change of 21.46 points.

Source of Funds

Sponsors include the Arkansas Game and Fish Commission, Arkansas Department of Environmental Quality, Arkansas 4-H Foundation, USDA Ouachita National Forest Service, Entergy, Nucor Steel, Nucor Yamato Steel, EPA, and numerous organizations, industries, and individuals from across the state.

Scope of Impact

Dissemination – 4-H environmental education programs at the 4-H Center are available to all youth from across the state through the Arkansas Cooperative Extension Service. The Arkansas Cooperative Extension Service offers its programs to all eligible persons regardless of race, color, national origin, religion, gender, age disability, marital or veteran status, or any other legally protected status, and is an Equal Opportunity Employer. The information is available on the Internet and through county Extension offices.

Scope of Program – Our programs are based at the Arkansas 4-H Center with some workshops facilitated in other parts of the state. We have participants from Ashley, Craighead, Dallas, Faulkner, Franklin, Garland, Grant, Hot Spring, Independence, Lawrence, Lonoke, Mississippi, Perry, Pope, Pulaski, Saline, Sharp, Van Buren, and White counties in one or more of the 4-H RES-Q sections.

Program Response: Regional and State 4-H O-Rama

Contact: Priscella Thomas, 4-H Youth Development, 501-671-2059, pthomas@uaex.edu

Situation

Arkansas youth are provided with an opportunity to exhibit the skills that they have developed through their project work in a variety of competitive and noncompetitive activities at the regional and state levels.

Stakeholder Input

4-H adult volunteers, 4-H members, Extension county agents and specialists were involved in an intensive review of the overall 4-H O-Rama process in August of 2005. The purpose was to listen to the stakeholders and to make any needed revisions in the program. The committee collected input from parents, volunteers and 4-H members in their respective counties and then shared that input during a six-hour statewide committee meeting. The committee was divided into three subgroups with each group making recommendations to the total committee. The committee's recommendations were shared with administration and adjustments were made in the areas of scheduling, programming and policies for 2006-2008. However, minor adjustments are made as a result of evaluation response when needed.

Overview

Junior and senior 4-H members have the opportunity to participate in the Regional O-Rama, a one-day event held in each region, and the Arkansas 4-H O-Rama, a three-day event held on the University of Arkansas's Fayetteville campus. The events are designed to provide youth the opportunity to exhibit the skills they have developed through their project work. It also gives a comprehensive vision of 4-H and offers the opportunity to enhance life

skills and acquire knowledge through competitive and noncompetitive activities while experiencing campus life, developing personal relationships, making choices and being recognized in front of peers. Junior and senior 4-H members' skills are displayed through demonstrations and illustrated talks. In addition to competing during Arkansas 4-H O-Rama, the 4-H members have the opportunity to take part in service projects, the Bumpers College picnic lunch and attend the Awards of Excellence Banquet.

Extension Program Results and Accomplishments

Output Indicators

Regional O-Rama

168 Number of Extension agents who attended the Southeast, Southwest, Northeast and Northwest Regional O-Ramas.

36 Number of Extension paraprofessionals who attended the Southeast, Southwest, Northeast and Northwest Regional O-Ramas.

185 Number of specialists conducting activities and others attending at the Southeast, Southwest, Northeast and Northwest Regional O-Ramas.

158 Number of 4-H leaders who attended the Southeast, Southwest, Northeast and Northwest Regional O-Ramas.

677 Number of junior 4-H'ers competing in activities at the Southeast, Southwest, Northeast and Northwest Regional O-Ramas.

466 Number of senior 4-H'ers competing in activities at the Southeast, Southwest, Northeast and Northwest Regional O-Ramas.

Arkansas 4-H O-Rama

87 Number of Extension agents who attended State O-Rama.

10 Number of Extension paraprofessionals who attended State O-Rama.

45 Number of specialists who conducted activities and attended State O-Rama.

61 Number of 4-H leaders who attended State O-Rama.

466 Number of 4-H'ers from the Southeast, Southwest, Northeast and Northwest districts who attended State O-Rama.

Outcome Indicators

Numerous newspaper articles from around the state promoting State O-Rama.

Source of Funds

The programs are funded by participant fees. These fees are managed by the Arkansas 4-H Foundation.

Scope of Impact

Dissemination – The program is available to all junior and senior 4-H members statewide who are eligible through competition in district-qualifying or state-only competitive activities.

Scope of Program – Junior and senior 4-H members, volunteer leaders and Extension faculty from all 75 counties have participated in the event.

Program Response: State 4-H Camp

Contact: Joshua Wright, 4-H Youth Development, 501-821-6884, jwright@uaex.edu

Situation

Camp experiences have been recognized by child development professionals as valuable in helping children mature socially, emotionally, intellectually, morally and physically. Camps can make a significant contribution to meeting priority needs of youth. Youth of 4-H age today feel they are too often treated as if they were incapable of making decisions, taking responsibility, acting independently, thinking seriously and having a serious conversation with others. Today's youth are interested in constructive involvement and decision-making. They have the need to be understood by peers and adults, and to have a sense of identity. They need to feel productive and have opportunities to develop and express their creativity.

Stakeholder Input

Evaluations completed by student campers.

Overview

Three state camps designed for county 4-H youth participation (ages 9-12), three for youth (ages 13-15), and one camp added (ages 5-9) – known as Bring a Big Person to Camp – were conducted at the Arkansas 4-H Center and at camp areas during June and July. The camping program used 4-H Teen Counselors to assist with supervision of campers, maintain a high level of cooperation and teamwork between counselors and campers, conduct camping programs, mentor young campers and assist with other duties of the camping program. The educational programs and camping activities were conducted using experiential learning methods, individual and group participation and achievement. Camp was designed not only to allow youth to learn new skills, but also to expose them to opportunities for developing social skills, personal development, developing relationships, building life skills and increasing responsibilities for self and others.

Through this camping program, young people learned to problem-solve, make social adjustments to new and different people, learn responsibility and gain new skills to improve their self-esteem. One of the many advantages of camping is that it helps young people discover and explore their talents, interests and values. Young people who have the opportunity to participate in camping experiences develop healthier lifestyles and attitudes, experience fewer problems adjusting to social situations and are more likely to develop an appreciation for

exploration and creativity. Camp is one of the most exciting and rewarding experiences of a young person's life. The Counselors were provided with a two-day intensive counselor training that helped to prepare them for their duties and responsibilities. Camps were designed around the theme "Mission Earth: It's Up To You" which introduced campers to a wide variety of 4-H educational subject matter through exploration of environment around them.

Extension Program Results and Accomplishments

Output Indicators

50 4-H Teen Counselors.

97 Bring a Big Person Camp.

9 State Equine Camp.

223 State Camp One.

317 State Camp Two.

696 Total number of campers.

32 Counties whose youth participated in State Camp.

9,852 Hours of camper educational instruction time.

2,958 Hours of camper recreational time.

Outcome Indicators

- Camp evaluations were rated on a 1-5 scale with 5 being the best rating (based on 302 responses out of 696 campers).
- Facilities received an average 3.84 rating.
- Educational workshops received an average 4.07 rating.

Source of Funds

Primary source of funding was camper user fees.

Scope of Impact

Dissemination – The State 4-H Camp is marketed to county youth ages 9-12 through the county Extension offices across the state. 4-H teens from across the state are eligible to make application for 4-H Counselor positions.

Scope of Program – 32 Arkansas counties used the program.

Program Response:
USAF 4-H Adventure Camps/
Arkansas 4-H High Adventure

Contact: Dr. Connie S. Phelps, Assistant Professor - 4-H Youth Development, 501-671-2053, cphelps@uaex.edu

Situation

The Arkansas media is filled each day with news of Arkansas soldiers being deployed around the world to fight the war on terrorism. Soldiers are being called up each day to fight for their country and leaving their families behind. Youth are being faced with a new way of life and seeing on television each and every day what their loved ones are facing. These youth are expected to go on with life as normal, but normal is no longer part of their vocabulary. In Arkansas, there are 116 units with the Arkansas National Guard and the Little Rock Air Force Base; therefore, Arkansas has one of the highest deployment rates in the nation. Because of this high deployment rate, there are many young people left behind to take on new responsibilities and deal with new family situations. The University of Arkansas Division of Agriculture, Cooperative Extension Service's 4-H Youth Development Programs, the Arkansas National Guard State Family Programs and the United State Air Force are partnering to offer young people a fun and educational experience to help them cope with their current family situations and have the opportunity to just be a kid.

Youth of deployed soldiers are very creative when it comes to dealing with the pressures of deployment. Their worlds have changed, and unfortunately, they don't understand all these changes and don't always make the best choices in how to handle situations. A camping experience on their level is not only fun but helps them to develop basic leadership and teamwork skills to use on a daily basis.

Camp experiences have been recognized by child development professionals as valuable in helping children mature socially, emotionally, intellectually, morally and physically. Camps can make a significant contribution to meeting priority needs of youth. Youth today feel they are too often treated as if they were incapable of making decisions, taking responsibility, acting independently, thinking seriously and having a serious conversation with others. Today's youth are interested in constructive involvement and decision-making. They have the need to be understood by peers and adults and to have a sense of identity. They need to feel productive and have opportunities to develop and express their creativity.

Youth who have loved ones deployed grow and change tremendously while the soldier is deployed. This makes the reunion time for a young person as difficult as the deployment. Camping experiences can help them learn to communicate their feelings and be comfortable with their individual development. It helps them to see that all people have different abilities but can still work together to achieve common goals. It gives these young people skills that help with the transition and the rebuilding of the family unit. This experience gives these young people an environment to develop new friendships. It gives them a time to express their fears and concerns and help them realize they are not alone. It also gives them a break – a break from the confusion and uncertainty they face every day. For this time they can be carefree in a positive and stable environment.

Stakeholder Input

Personnel from the United State Air Force Family Services recognized the need to provide youth of active military personnel an avenue to express their current situations through a camp experience. Staffs from military bases were evaluated for their input for the experience. On a state level, Guard and Reserve family services had input for their youth to be involved in the camping program. Also, the family program specialist at district sites was part of the planning process. Youth were evaluated to have feedback for the next round of camps.

Overview

The first camping experience is **USAF 4-H Adventure Camps**. The University of Arkansas Division of Agriculture, Cooperative Extension Service and the United States Air Force Services partnered during the summer of 2004 to provide children of active Air Force military personnel an opportunity to develop life skills in an adventure camp environment. 4-H faculty and USAF Youth Program specialists designed and initiated the second year of USAF 4-H Adventure Camps. This experience for both institutions has built a strong working relationship that will carry us into summer of 2007 for the fourth year of USAF 4-H Adventure Camps.

Two 2-week camps for youth 14-18 were conducted during June and July. Each camp had a staff of 14 (eight counselors, four Extension, two Air Force). Camp 1 had a total of 90 participants (youth and AF adults) and Camp 2 had 96 participants (youth and AF adults). The counselors were college age. They provided a positive environment, motivation, and served as role models for camp participants.

The camp was designed around an adventure theme which introduced participants to a wide variety of outdoor educational experiences. The educational tracks and camping activities were conducted utilizing experiential learning methods, individual and group participation, and achievement. Camp was designed not only to allow youth to learn new life skills, but also to be exposed to opportunities to develop socially, personal development, develop relationships with peers and adults, and increase responsibilities for self and others. For 2006, groups were divided according to birthday. This allowed the camp staff to plan a more challenging experience for the older youth, but at the same time push the younger groups out of their comfort zone in a safe setting.

The camps were held at the C.A. Vines Arkansas 4-H Center nestled in the foothills of the Ouachita Mountains just 10 miles west of Little Rock. One educational track experience is ExCEL (Experience the Challenge Experience the Leadership). ExCEL, with its ropes course, climbing tower and other activities, is an adventure into self-confidence, clearer communication and new perspectives. ExCEL teaches trust in self and others, develops team players and spirit, increases motivation and personal performance, provides experiential, effective communication, and offers a greater appreciation and awareness of the relationship between people and the environment.

The older participants traveled to the Buffalo National River for canoeing. The Buffalo River is one of the few remaining unpolluted, free-flowing rivers in the lower 48 states offering both swift-running and placid stretches. Following what is likely an ancient riverbed, the Buffalo cuts its way through massive limestone bluffs traveling eastward through the Ozarks and into the White River. The younger groups participated in flat-water kayaking on Lake Dardanelle. Lake Dardanelle is a sprawling 34,300-acre reservoir on the Arkansas River. It features a striking 10,527-square-foot visitor center on the lakeshore overlooking Lake Dardanelle. Engaging interpretive exhibits and state-of-the-art touch screen kiosks share information on the park, the area's water resources and its history. A major aquatic exhibit in the center features four aquariums that hold fish found in the lake, the Arkansas River and the Illinois Bayou.

Another educational track was held at the Little Rock Climbing Center. It is the premier indoor rock climbing gym in Central Arkansas. With over 4,000 square feet of climbable terrain, LRCC offers routes for beginners as well as seasoned pros.

The GPS/Photography/Journaling track explores the 4-H Center's many trails, such as the Southern Ridge Nature Trail or the Deer Meadow Trail for a special look into the natural world of Arkansas. Participants had the opportunity to discover the special animals and their signs, plants, communities and geologic features of the 4-H Center. The class blends sensory experiences and hands-on activities to convey appreciation and awareness of the forest as a community of living things.

Another educational track where participants use their imagination is the cardboard boat building. Each group starts with a design idea, a vision of what they want their cardboard creation to look like. They then build a model using a manila folder or other heavy paper or lightweight cardboard. That way, they can fold, re-fold and fold again to their heart's content. They can cut it up, glue it together and try out their design idea in small scale before working on a full-sized creation. The team is required to place two participants in the boat for the final test of their design. The team must race other boats on the final evening on the lake at the Center.

Through this camping program, the youth learn to problem-solve, make social adjustments to new and different people, learn responsibility and gain new skills to improve their self-esteem. One of the many advantages of camping is that it helps young people discover and explore their talents, interests and values. Young people who have had the opportunity to participate in camping experiences tend to develop healthier lifestyles and attitudes, experience fewer problems adjusting to social situations and are more likely to develop an appreciation for exploration and creativity. Camp is one of the most exciting and rewarding experiences of a young person's life.

The two camps were designed around six main activities with evening activities that culminated in the final night's celebration event. The six main activities were:

Paddling Around – This activity was flat water kayaking. Younger participants traveled to beautiful Arkansas State Park Lake Dardenelle. Lake Dardenelle is a man made lake built around the Arkansas River. The older participants canoed on the Buffalo National River.

Float Your Boat! – This activity gave teams limited supplies (cutting utensil, 2 6/5 cardboard pieces, 90 yards duct tape) to build a boat. The teams were challenged to construct a cardboard boat that would float transporting two of the team members. Teams had to design, choose team members to float and work as a team to have success floating their boat. The boats were displayed throughout the week and on Thursday evening raced in the lake as part of the celebration events.

Finding Your Way – Participants spent four hours experiencing digital photography, working with GPS (global positioning systems) and incorporating journal writing as part of the overall experience.

Climbing High – This activity was located off-site at the Little Rock Climbing Center. Participants traveled 12 miles to the center which had 28 different climbing stations for degrees of difficulty. Participants were given instructions on belaying, proper equipment management and climbing instructions. The participants then had time to climb stations of their choice with a climbing partner.

Learning the Ropes – ExCEL Ropes Course at the C.A. Vines Arkansas 4-H Center teaches youth teamwork, trust, listening, synergy, communication and crisis management. This activity was eight hours with four hours spent in the low elements and four hours working in the high elements.

On Thursday evening, all four groups came together to float their boats and participate in fun competitive water events. The end of the evening was spent reflecting on the week's activities, and then each camper was recognized for their participation in the camp. Time was given for participants to share thoughts in their journals and secure friendships for a lifetime.

The second information is for **Arkansas 4-H High Adventure**. The Arkansas 4-H High Adventure Program is an outdoor leadership program for teens. The purpose is to develop character and integrity in young people through the teaching of teamwork, leadership and outdoor skills and allows them to share their knowledge and skills with others. It is a comprehensive educational program that encompasses many 4-H project areas and develops in young people an appreciation for and respect of others, themselves, the outdoors and other areas of nature. Required one-day training was held in March for participants and parents along with weekend training for all participants in April. The climax was a 9-day trip to the Pecos Wilderness area in New Mexico August 3-13,

2006. Plans were to have four backpacking crews. The Pecos Wilderness Northeast of Santa Fe is located in both the Carson and Santa Fe National Forests. It encompasses approximately 230,000 acres and is one of the 54 units designated in the Wilderness Act of 1964 as a part of the National Wilderness Preservation System. Primitive conditions are preserved for the use, enjoyment and spiritual refreshment of people. Travel is, therefore, limited to foot and horseback only. There are no roads, homes, developed campsites, timber cutting or commercial uses allowed.

The third military experience for Arkansas was **the Operation Military Kids Camp** held in August of 2006 at the C.A. Vines Arkansas 4-H Center. Sixty youth took part in the four-day, three-night camping experience to help young people cope with current family situations by involving them in leadership, teamwork, adventure and recreational activities.

Extension Program Results and Accomplishments

Output Indicators

270 participants involved in programs.

Outcome Indicators

Below are the comments and evaluation results from the camps.

List portions of the experience most helpful to you:
GPS, Rock Climbing, Ropes Course, Teamwork, Camping, Everything, Communication, Leadership, Team Building Games, Decision Making, Trust and Float Your Boat

What did you like the most?
Ropes Course, Everything, Float Your Boat Race, Camping, Climbing Wall, Making New Friends, Campfire Songs, Swimming, GPS, Canoeing/Kayaking

What did you like the least?
Camping, Canoeing, HEAT, Curfew, No TV, GPS, Weather, Food, Waking Up Early, Bugs

In one sentence sum up your overall experience:
It was cool!
It was fun and it taught me teamwork.
I met new friends that I will keep in contact with forever.
I had fun, but saying goodbye was hard – but I still had an awesome time.
Nifty.
FUN.
Awesome experience.
My love my new friends.
Fun and Scary.
It was AMAZING!
One of the greatest experiences of my life.
Fun and Exciting.
A new experience that pushed me to try different things.
Taught me about life.
Incredible!
Well worth it.
I want to come back next year.

The best camp I have ever attended.
Got me out of my comfort zone.
It was fun and full of adventure and I will use my new skills in the future.

Source of Funds

These activities are funded through two USDA grants with both the USAF and Army 4-H projects.

Scope of Impact

Dissemination – Programs were open to Active Military Youth, Guard and Reserve Youth. Programs were advertised through Air Force bases and counties at the local level.

Scope of Program –
State Specific: Guard and Reserve youth from all counties.
Multi-state Extension: Bases from all 50 states and foreign bases.

Program Response: Youth Community Service

Contact: Brian Helms, Instructor - 4-H Youth Development, bhelms@uaex.edu, 501-671-2289

Situation

In an increasingly complex and competitive world market, the human capital of the United States is its most important resource. And while young people under 18 years of age represent only 26 percent of the population, they represent 100 percent of America's future. Yet too many youth are reaching adulthood unprepared to be productive workers, effective parents or responsible citizens.

Stakeholder Input

Stakeholders are involved at all levels in the development of community service programs. At the local level, clubs work with parent and community leaders to determine needs. Each county involves their county advisory committees.

Overview

Community service has always been an important component of the 4-H program, with adults and youth working together with community organizations. Participating in activities to improve their surroundings empowers youth to make a difference and to connect with the civic life of their communities and country. Recent research reports that youth who are involved in service just one hour or more a week were found to be half as likely to engage in a variety of negative behaviors such as alcohol and drug use, vandalism and school truancy.

Extension Program Results and Accomplishments

Output Indicators

1,775 Number of youth who participated in community service projects.

Outcome Indicators

1,373 Number of youth who reported spending one or more hours a week in providing service to their community or others.

Source of Funds

Smith-Lever 3b and 3c provide support for professionals. Additional program costs are supplied via local clubs and county 4-H foundations.

Scope of Impact

Dissemination – Statewide availability of program to interested youth and adults. Local 4-H clubs and county programs provide opportunities for youth to give back to their communities through service to others.

Scope of Program – Statewide – 11 counties submitted written Community Service Reports. These counties were Washington, Craighead, Greene, Sharp, Sevier, Columbia, Lincoln, Fulton, Logan, Cleburne and Searcy. Additional community service projects conducted were service projects (eight) at the annual Teen Leader Conference. A total of 257 youth participated in the Teen Leader Conference service projects: bookmarks and placemats for nursing homes, letters to Armed Forces, Pillows for Austin, 4-H camp preparation, 4-H Center trail maintenance and t-shirts for Arkansas Children's Hospital.

Program Response: Youth Leadership

Contact: Brian Helms, 4-H Youth Development, 501-671-2289, bhelms@uaex.edu

Situation

In an increasingly complex and competitive world market, the human capital of the United States is its most important resource. And while young people under 18 years of age represent only 26 percent of the population, they represent 100 percent of America's future. Yet too many youth are reaching adulthood unprepared to be productive workers, effective parents or responsible citizens.

Stakeholder Input

Teens – the primary stakeholders – are involved in all aspects of the program planning. The state 4-H officers meet four times a year for program planning. State 4-H officers serve as members of the Arkansas 4-H Foundation (another major stakeholder group, which also meets four times per year). The Arkansas Adult 4-H Volunteer Leader's Association holds two meetings per year and is utilized as a sounding board for programs relating to leadership development.

Overview

The Youth Leadership Program involves working with teens between 14 and 19 years of age. Teens learn and practice leadership skills by participating in a variety of programs. The State 4-H Officer Program involves the election of nine individuals who provide leadership to many of the district and statewide 4-H activities. A two-day training is held for those elected by their peers to provide 4-H officers with the leadership skills they will need to

carry out their duties and to begin plans for the Teen Leader Conference. State 4-H officers also meet to plan state activities, participate in promotional activities and assist with ongoing youth development programs.

In FY06, 90 teens participated in the 4-H Ambassador Program. Candidates for the program must have demonstrated significant accomplishments in their project work, leadership and community service and then go through an interview process demonstrating their knowledge of the 4-H program and ability to promote the program mission and goals. Sixty-five ambassadors and four adults participated in a two-day workshop with the objective of planning the three-day Teen Leader Conference held in June.

A highlight of the Teen Leadership Program is Teen Leader Conference. This is a three-day conference for 4-H members ages 14 to 19. The conference is planned and conducted by state 4-H ambassadors and focuses on specific topics of interest to teens. In 2005, the conference focused on developing skills to promote healthy, caring and responsible citizens for themselves and others. Participants included 207 youth and 13 adults.

Extension Program Results and Accomplishments

Output Indicators

220 Youth receiving Volunteer Core Competency Training.

70 Number of Certified Teen Volunteers.

Outcome Indicators

6,903 Youth enrolled in Leadership Development.

328 Number of youth serving on Advisory Management Groups.

Source of Funds

Smith-Lever 3b and 3c provides funding for professionals' salaries. Conference fees are participant provided and limited funding is provided by the Arkansas 4-H Foundation.

Scope of Impact

Dissemination – Statewide availability of program to interested youth and adults. 4-H program information is available through the UAEX web site.

Scope of Program – 31 counties had youth serve in a state 4-H ambassador or state 4-H officer leadership role including Baxter, Benton, Clark, Columbia, Craighead, Cross, Faulkner, Fulton, Garland, Greene, Hempstead, Hot Spring, Independence, Jefferson, Johnson, Lawrence, Lonoke, Mississippi, Pike, Polk, Pope, Saline, Sebastian, Sevier, Van Buren, Washington, White and Yell.

Program Response:
Youth Poultry Program

Contact: Jerry Wooley, Extension Poultry Specialist, P.O. Box 391, Little Rock, AR 72203, jwooley@uaex.edu, 501-671-2189

Situation

Poultry is Arkansas's largest industry and employer. Our youth are likely to be future employees, leaders and problem solvers in the poultry industry. Yet many young people have a limited understanding of the opportunities available or the skills necessary to realize those opportunities.

Stakeholder Input

Youth programs are a well-established part of poultry Extension. In recognition of the effectiveness of the program, industry clientele regularly sponsor youth events.

Overview

The youth poultry program includes the youth broiler programs, the poultry chain project, the broiler BBQ, the poultry judging contest, and embryology projects. The youth poultry program provides young people with an opportunity to enhance their life skills and learn about the industry. The program also educates youth in life sciences and embryology.

Extension Program Results and Accomplishments

Output Indicators

26,237 Laying pullets placed with youth participants.

8,703 Broilers placed with youth participants.

5 Barbecue contests involving youth participant.

15 Judging contests involving youth participants.

Outcome Indicators

1044 Youth participants learned the principles and responsibility necessary to care for laying birds.

203 Youth participants learned broiler care principles.

693 Youth BBQ participants learned the cooking and poultry product handling techniques.

Source of Funds

Industry sponsorships, local community supporters, participant fees, and Smith-Lever.

Scope of Impact

Dissemination – This program is available to 4-H'ers statewide.

Scope of Program – State of Arkansas.

KEY THEME: YOUTH MENTORING AND FAMILY STRENGTHENING

Program Response: Family and Community Connections

Contact: James P. Marshall, Assistant Professor of Family Life, Family & Consumer Science Section, 501 671-2202, jpmarshall@uaex.edu

Situation

American children and families face unprecedented challenges. The frustrations and demands of a fragile economy, heavy work schedules, stress overload, family dissolution, and personal uncertainties put a heavy load on young Americans. The problems are further aggravated by the lack of opportunity for youth in some rural areas to participate in positive, structured, youth programs. Cooperative Extension, with its extensive network and research-oriented personnel, is uniquely qualified to respond to the challenge.

Stakeholder Input

A meeting of FCS agents and a meeting of the Marriage, Parenting, and Family Life Initiative Team determined that a high priority in Arkansas communities was to strengthen family and community connections. Some of that need was addressed by providing a host of informational units on the Arkansas Families (www.arfamilies.org) website that can be used in various media: newspaper, radio, newsletters, and trainings. A major way we have addressed this need is through a multifaceted youth mentoring program.

Mentoring programs have been shown to benefit youth in several ways (i.e., Higginbotham, Harris, Marshall, & Lee, 2006; Riggs, Lee, Marshall, Serfustini, & Bunnell, 2006). However, most mentoring programs fail to engage families of the youth participants. When families are engaged in the mentoring process this may help to sustain program benefits for the youth across time.

Overview/Description of the Program

Family and Community Connections (FCC) is an intergenerational mentoring program that matches youth, ages 10-14, and their families with young adult and senior mentors. The goal of the program is to strengthen relationships and connect youth with their families and communities through civic engagement, community service, and strength-based programming.

Opportunities for youth to build connections are created through monthly family activities (called Family Night Out), quarterly service projects, 4-H programming, one-on-one mentoring, and academic tutoring. Unlike many mentoring programs, FCC is for rural communities and is different in a number of ways from traditional

mentoring programs: First, it is family focused. Although mentors have regular one-on-one time with youth, other activities are for the whole family. Second, it is intergenerational. The program builds relationships across generations. Each youth and their family are assigned two mentors. One is a responsible young adult and the other is a senior community member. Third, the program is strength-based. The focus of the program is on nurturing the talents and strengths of youth and their families, and only indirectly addresses their problems. Finally, the program encourages families and youth to be actively involved as citizens and volunteers in their communities.

The multi-component approach to FCC was designed to provide youth with opportunities to accept new roles (e.g., leadership roles in 4-H clubs), build new relationships (e.g., with mentors, fellow FCC/4-H club members, and community members), and experience new activities that will lead to new competencies (e.g., arts, agriculture, technology, etc).

Each component of the FCC program targets at least one of the program objectives while simultaneously reinforcing the efforts of the other programmatic components (i.e., mentors encourage and facilitate participation in 4-H activities, community service projects, etc.).

Extension Program Results and Accomplishments

Output Indicators: (2005-2006 program year)

- 22 youth enrolled
- 20 Family Night Out activities held
- 4 community services projects held
- Youth spent an average of 3 hours a month with their mentor
- Youth spent an average of 3.75 hours a month participating in FNO activities and/or service projects.
- 100% of youth surveyed indicated they would recommend FCC to a friend and that they would participate in FCC again.

Outcome Indicators

FCC has contributed to significant positive changes in the lives of youth and their families (See primary and secondary program outcomes below).

Primary Outcome Outcomes: Fifteen youth participated in the 2005-2006 post-then-retrospective-pretest evaluation. There were statistically significant improvements in FCC youth participants' perceptions of their emotional strength, caring, school importance, school grades, and socially responsible behavior from Time 1 (before FCC participation) to Time 2 (after FCC participating) – a span of 10 months.

- **Emotional Strength** - Time 1 ($M = 38.20$, $SD = 9.06$) to Time 2 [$M = 45.60$, $SD = 6.49$, $t(14) = 8.00$, $p < .001$]. Eta squared of (.82) indicates large effect size.
- **Caring -** Time 1 ($M = 44.73$, $SD = 4.93$) to Time 2 [$M = 48.47$, $SD = 5.62$, $t(14) = 5.44$, $p < .001$]. Eta squared of (.68) indicates large effect size.
- **School Importance -** Time 1 ($M = 17.87$, $SD = 5.74$) to Time 2 [$M = 21.13$, $SD = 4.56$, $t(14) = 6.27$, $p < .001$]. Eta squared of (.74) indicates large effect size.
- **School Grades -** Time 1 ($M = 2.53$, $SD = .64$) to Time 2 [$M = 3.00$, $SD = .85$, $t(14) = 2.43$, $p < .029$]. Eta squared of (.30) indicates large effect size.
- **Socially Responsible Behavior -** Time 1 ($M = 2.27$, $SD = 1.53$) to Time 2 [$M = 1.00$, $SD = 1.07$, $t(14) = 6.14$, $p < .001$]. Eta squared of (.73) indicates large effect size.

Secondary Outcome Outcomes: Fourteen parents participated in the 2005-2006 post-then-retrospective-pretest evaluation. There were statistically significant improvements in parent's perceptions of their children's emotional

strength, caring, school improvement, school grades, and socially responsible behavior from Time 1 (before FCC participation) to Time 2 (after FCC participation) – a span of 10 months.

- **Emotional Strength -** Time 1 (M=36.68, SD=6.98) and Time 2 [M=47.00, SD 6.04, $t(13) = 6.99$, $p<0.001$]. Eta squared statistic (0.79) indicates large effect size.
- **Caring -** Time 1 (M=44.71, SD=6.91) and Time 2 [M=52.43, SD=7.57, $t(13) = 3.06$, $p<0.01$]. Eta squared of (0.41) indicates large effect size.
- **School Importance -** Time 1 (M=18.36, SD=4.89) and Time 2 [M=22.57, SD=5.15, $t(13) = 8.18$, $p<0.001$]. Eta squared of (0.84) indicates large effect size.
- **School Grades -** Time 1 (M=2.64, SD=0.84) and Time 2 [M=3.36, SD=0.93, $t(13) = 2.92$, $p<0.01$]. Eta squared of (0.40) indicates large effect size.
- **Socially Responsible Behavior -** Time 1 (M=2.21, SD=1.53) and Time 2 [M=0.64, SD=1.15, $t(13) = 5.79$, $p<0.001$]. Eta squared of (0.72) indicates large effect size.

Source of Funds

100% funded by CSREES.

Scope of Impact

Dissemination – FCC serves at-risk youth in Monroe, Howard, and Polk counties.

Scope of Program – Connect youth with their families and communities (Monroe, Howard, and Polk counties) through intergenerational mentoring, family activities, and community service projects.

Program of Excellence

Success Stories

- Quote from adult mentor “I am able to help others and make a difference in some kid’s life. It’s a good thing for kids. Great community involvement. This is a really good program.”
- Quote from college age mentor “I think I’ve gotten as much out of this program as the kids have.”
- Quote from high school senior mentor “I really get a lot out of helping people and making them feel better about themselves. I feel that FCC is a great way to do it.”
- FCC mother “We have enjoyed our time at Family Night Out and Family Camp a lot. We think it has been really good for Amanda and are so thankful she is doing better in school and everywhere now. Her mentor has been good for her too.”

Management Goals

Total FTEs
6.5

Total Budgetary Amount
$122,445.19

KEY THEME: AGRICULTURAL COMMUNICATIONS

Program Response: http://www.uaex.edu

Contact: Contact: Bob Reynolds, Director of Communications and Marketing, 501-671-2128, breynolds@uaex.edu

Situation

The University of Arkansas Cooperative Extension Service reaches out to every Arkansas community with educational programs designed to improve the quality of life. Technology plays an increasingly important role in delivering our educational information quickly and efficiently. Web-based technology has been employed to extend our reach to Arkansans who have not traditionally participated in Extension programs.

Stakeholder Input

Since unveiling our new web site in March 2006, we have continued to see hits to our site increase to where they average on the weekly news articles alone to more than a quarter of a million hits each month compared to 10,500 hits in February 2006. The communications staff reviews hits to each section of the site on a regular basis, providing us with information upon which we are able to continuously improve the site. This information is provided programmatic sections. We initially took feedback from Extension specialists, agents, administrators, support staff and clientele to help make our site customer-centric and move away from the traditional organizational-centric thinking. Since then we have sought input through a survey of county agents and have added a survey which will enable us to gather more imput, providing us opportunities to alter the site in our constant search for better ways of delivering information. We incorporated radio and video podcasts to our site along with our news stories that provide links to additional information found within the web site. The numbers indicate this approach is successful. Each news article also contains an e-mail to a friend option, but there is no direct data to determine this features impact.

Overview

The University of Arkansas Cooperative Extension Service web site, http://www.uaex.edu, continues to deliver research-based education to Arkansas and beyond. Extension specialists, counties and support staff provide the content of the different areas of focus:

- Arkansas Agriculture, http://www.aragricuture.org
- Arkansas Families, http://www.arfamilies.org
- Arkansas Communities and Businesses, http://www.arcommunities.org
- Arkansas Home and Garden, http://www.arhomeandgarden.org
- Arkansas Natural, http://www.arnatural.org
- Arkansas Youth, http://www.kidsarus.org

One web developer marks up the content to conform to existing standard and both state and federal accessibility regulations. Through a partnership with the University of Arkansas at Little Rock, located next to the Extension state office (Arkansas' Extension is not located on its Land Grant campus) a Rhetoric and Writing professor, along with paid and un-paid interns, works in communications in proofing and editing all material submitted for placement on the web. In addition, all publications on the web site are proofed by communications staff members. The process improves the quality of written material on the web in two ways: it corrects grammatical errors; it alters some copy to better fit the Internet as a delivery of the written word.

Extension Program Results and Accomplishments

Output Indicators

Web pages are designed in Microsoft FrontPage. All pages contain menus and branding to present a consistent look and feel. Federal and state regulations are followed to meet accessibility guidelines.

Outcome Indicators

- More than 6.1 million visits (hits) accessed information concerning publications, news and county office areas. News received the biggest increase at 786 percent. Overall this area received a 17 percent increase.

- More than 2.5 million visits (hits) accessed information concerning agriculture. Commercial horticulture, agricultural newsletters and diseases received the most attention. This is a 39 percent increase.

- More than 2.2 million visits (hits) accessed information on homes and gardens. The popular Plant of the Week and landscaping sections were the most visited. This is a 69 percent increase.

- Over 938,900 visitors (hits) accessed information on families. Health & Nutrition as well as Family Life sections were the most popular. This is a 56 percent increase.

- More than 662,300 visits (hits) accessed information on communities and businesses. Information provided Arkansans on county taxes garnered most interest. This is a 72 percent increase.

- Almost 829,130 visits (hits) accessed information on youth with the volunteerism and 4-H youth development sections being the most popular. This is a 114 percent increase.

- Approximately 246,870 visits (hits) accessed information on natural resources. Environmental management and recycling were popular topics. This is a 45 percent increase.

Source of Funds

State operating funds and Smith-Lever.

Scope of Impact

Dissemination – The Arkansas Extension web site is accessed worldwide.

Scope of Program – The web site is state specific. Arkansans with Internet access find and take advantage of the educational wealth offered to them on the web site. However, the information is available worldwide.

Program Response: Mass Media Education Programs

Contact: Bob Reynolds, Director of Communications and Marketing, 501-671-2128, breynolds@uaex.edu

Situation

The University of Arkansas Cooperative Extension Service uses various strategies for providing relevant information to Arkansans. While Extension county agents and content specialists provide information one-to-one or in small group meetings and workshops, there are many Arkansans who can be reached only through mass media. Extension extends its educational efforts into thousands of homes through media outlets and through the Internet.

Stakeholder Input

Relationships with broadcast news media representatives have led to Extension positioning itself as a source of research-based information and expertise on a variety of issues important to listeners and viewers in the various markets within Arkansas. Radio and television clippings are maintained to determine the frequency and audience penetration of information broadcast. In addition, central Arkansas television broadcasts are taped, content analyzed and records kept to measure frequency and patterns of story placement. Audiences that attend events are queried as to the means by which they learned of any given event. The information is analyzed, which influences the use of media for given audiences and content. Newspaper editors and publishers were surveyed at a press association convention in 2006, to determine subjects where there is a continuous interest and how newspapers want releases delivered, mail, e-mail with attachments, or e-mail with links. Based upon the results and follow-up queries that have accompanied our weekly news packet, the delivery at most newspapers in Arkansas has been personalized, with positive results.

The central Arkansas communications team comprised of county faculty, content specialists in specific programmatic areas and communications specialists continue to meet and adjust the central Arkansas communications efforts that include various strategies and tactics that include use of mass and niche media. The concerted efforts of the committee have resulted in increased placement of stories and in appearances of content specialists on various commercial media outlets.

Overview

Using the power of mass media, to include the Internet, the Cooperative Extension Service quickly disseminates research-based and timely information to Arkansans throughout the state. The communications and marketing section has established and maintains a comprehensive system for distribution of information in the format requested by individual representatives of the broadcast media in all markets within Arkansas. The Extension Service places stories with the broadcast media and coordinates efforts to make specialists and county agents available for interview on topics and issues relevant to Arkansans. The media specialists have developed excellent relationships with newspaper and broadcast reporters, producers, editors and web masters. Several statewide

television news stations have linked from their web sites to Extension's web site, at our recommendation, on specific "hot" topics, such as flooding that damaged or harmed crops.

The University of Arkansas Cooperative Extension Service worked with commercial television and radio stations in the Little Rock region and partnered with KUAR/KLRE public radio based on the campus of the University of Arkansas at Little Rock and the University of Central Arkansas-based Arkansas Educational Telecommunications Network, which broadcasts statewide, in scheduling content specialists to provide information to thousands of households throughout the year. Communications and Marketing also works with and provides information through statewide commercial radio, cable and television broadcast stations. Topics selected reflect the curriculum and content provided through Extension programs conducted statewide and draw upon the expertise of content specialists, providing timely information. Samples of topics discussed and public service announcements and video news releases produced and broadcast are listed.

- Horticulture
- Row Crop Production
- Market Trends
- Beef Production
- Environmental Practices
- Public Policy Issues, with increased interest in water quality
- Rural Community Development
- Recycling
- Family Life Issues
- Food Safety and Nutrition
- Child Care Providers
- Parenting Practices
- Public Issues
- 4-H and Youth Development
- Financial Planning

Extension Program Results and Accomplishments

Output Indicators

60 Appearances by content specialists on statewide commercial television.

96 Radio public service announcements produced and aired on KUAR/KLRE public radio affiliates housed at the University of Arkansas at Little Rock. Topics included information on healthy weight, nutrition, financial management, public policy issues, personal and family health, youth development, pet and animal care, horticulture and agriculture.

53 Video News Releases produced and placed on the Cooperative Extension Service website. The majority of VNRs contain on camera interviews with content specialists. Information contained in the VNRs are consumer oriented and include topic from financial management, horticulture, and health and safety.

7 Links to Extension's web site by several large-audience television broadcast stations.

Outcome Indicators

730,000	Households per commercial television station in the Little Rock region that watch the evening news when public service announcements and/or video news releases are played.
300,000	Households that watch morning news programs per station in the Little Rock region when specialists and county agents appear as guests or video news and/or public service announcements are played.
22	Commercial radio stations located statewide in Arkansas, which are sent radio produced announcements for airing and some of which air programs produced by county faculty using prepared scripts.
5	Non-commercial radio stations located statewide in Arkansas, which are sent radio produced announcements for airing, and some of which air programs produced by county faculty using prepared scripts.
12	Commercial television stations sent public service announcements and video news releases for distribution via airwaves.

Source of Funds

Federal, state and grant funds.

Scope of Impact

Dissemination – Statewide via broadcast media; nationally via RadioSource web site.

Scope of Program – Anyone with a radio or television and who resides within defined broadcast zones for each radio or television station has access to the information.

Program Response: Print Media Programs

Contact: Bob Reynolds, Director of Communications and Marketing, 501-671-2128, breynolds@uaex.edu

Situation

The University of Arkansas Cooperative Extension Service offers a host of educational programs and information to Arkansans. The traditional method of delivery is through the county or state faculty in one-on-one or small group workshops and classes. By using the print media, Extension expands its outreach to targeted clientele in agriculture, community development, family and consumer sciences, 4-H and youth development and public policy issues.

Stakeholder Input

Newspaper editors are surveyed to determine interest in content and article length for the following year. They were also surveyed to determine their preferred method for receiving Extension's weekly newspack. Content specialists and county faculty provide input as well, and article content is determined based upon current events

and issues that impact Arkansans. A clipping service provides weekly input as to the use of news articles.

Overview

The University of Arkansas Cooperative Extension Service produces and delivers a weekly media package and timely spot news stories to all weekly and daily newspapers in Arkansas and to numerous magazines. Extension delivers its feature package and spot news stories to each newspaper in a format requested by the newspaper.

News articles and spot news stories are posted each week on the Arkansas Press Association's electronic bulletin board and on the Extension Service's web site under News.

In addition, the feature articles and spot news stories are distributed via e-mail or by mail, depending upon the specific needs of each news outlet. Photographs are posted electronically with the news stories for downloading by news outlets. Articles cover current issues in agriculture, family and consumer sciences, community development, 4-H and youth development and public policy issues.

Extension Program Results and Accomplishments

Output Indicators

50	News packages written, edited and distributed statewide to all weekly and daily newspapers in Arkansas and to various magazines. Each feature package contains approximately six to eight news articles each week, for a yearly total of 300 news stories during the year that provide readers with information such as the abatement of fire ants, West Nile Virus, beef production, row-crop production, money management, nutrition, child care and youth development.
112	Number of spot news stories that were distributed statewide for use by weekly and daily newspapers.
400	Number of direct media contacts during 2005 and 2006 to generate interest in garnering news coverage in print and non-print on issues related to agriculture, family and consumer science, public policy issues and 4-H and youth development.
151	Number of news stories successfully pitched to large daily newspapers with wide readership.
1,006,649	Number of households in Arkansas subscribing to daily newspapers in Arkansas; the articles distributed to the daily newspapers are accessible by these households.
296,855	Number of households in Arkansas subscribing to weekly newspapers in Arkansas; the articles distributed to weekly newspapers are accessible to these households.

Outcome Indicators

$370,300.20	Total market value of editorial coverage about the University of Arkansas Cooperative Extension Service in central Arkansas media.
10,400	Number of newspaper clips, which indicates the number of times articles appear in print in the weekly and daily newspapers.

Source of Funds

Federal, state and grant funds.

Scope of Impact

Dissemination – News features and news articles about issues and programs important to Arkansans are available statewide through the newspapers and internationally through the Extension web site.

Scope of Program – Readers use the news articles to make decisions regarding agriculture production, family and consumer sciences, community development and 4-H and youth development. In addition, many readers participate in Extension programs after reading about their availability.

Program Response: Support Material

Contact: Bob Reynolds, Director of Communications and Marketing, 501-671-2128, breynolds@uaex.edu

Situation

The University of Arkansas Cooperative Extension Service enhances its educational program at the county level by providing up-to-date and research-based fact sheets in agriculture, family and consumer sciences, 4-H and youth development, community development and public policy issues.

Stakeholder Input

County Extension agents have requested a ready and consistent supply of fact sheets delivered quickly upon request.

Overview

The University of Arkansas Cooperative Extension Service has been transferring fact sheet titles from printed versions, which reside in the warehouse, to electronic versions that are printed upon demand only on request from county Extension offices and from content specialists. Electronic versions of the fact sheets are posted on Extension's web site as well, allowing immediate access to clientele who have access to the Internet. The content of some fact sheets becomes the core of news releases to further disseminate information.

56 Number of new fact sheets written, designed, made available for print-on-demand and placed on the Web for public access.

101 Number of fact sheets revised, updated, designed, made available for print-on-demand and placed on the Web for public access.

Sample titles of fact sheets include:

- Establishing Wildlife Food Plots
- Controlling the Eastern Mole
- Sunflowers Grown for Dove Hunting
- Natural and Organic Beef
- Ultrasound Scanning to Measure Body Composition in Beef Cattle

- Computerized Herd Management Software for Cow-Calf Producers
- Cooling Dairy Cattle in the Holding Pen
- General Traits of Winter Annual Clovers Grown in Arkansas0
- Canola Production in Arkansas
- What Should I Know About Selling My Timber?
- Forest Landowner's Guide to Field Grading Hardwood Trees
- Hedge or Screen Plants for Arkansas
- Landscape Trees for Specific Uses
- Nursery Series: Weed Control in Container Nurseries
- Anthracnose Diseases of Common Shade Trees
- Cedar-Apple Rust
- Home Pecan Diseases and Control
- Arkansas Retiree In-Migration: A Regional Analysis
- Sampling Poultry Litter for Nutrient Content
- Home Water Conservation
- Workplace Readiness Series: Exploring Job and Career Possibilities

When fact sheets are made available for print on demand, county Extension agents are provided a copy and notification to increase awareness of availability for county residents.

Extension Program Results and Accomplishments

157 New and revised fact sheets designed and made available for print-on-demand and for Web access.

9 Miscellaneous publications designed for a combination of publication by offset press, Web and print-on-demand. Included are the MPs that are frequently used by county faculty and agriculture producers relative to pesticide and chemical applications.

71 Issues of Extension newsletters directed at targeted clientele.

Sample titles of newsletters include:

- Extension News (web only)
- Extension Cord
- Dairy Digest
- Arkansas ReLeaf
- Beef Cattle Research Update
- Beef Champs
- Bootstraps
- River Valley Healthy Living

17 Brochures supporting the promotion and recruitment of clientele for Extension's educational programs to include workshops and agriculture field days held throughout the state. Titles include Beef IQ, Income Tax School, Methamphetamines, Breakthrough Solutions, Best Care and Winthrop Rockefeller Foundation.

19 Programs used by county faculty in conducting workshops and information for clientele in meeting locally driven educational programs and needs (includes State 4-H O-Rama programs).

2,583 Signs and displays that are used by county agents and specialists during events and workshops.

11 Notebooks including Best Care, Crisis Plan, and Disaster Handbook revision.

5 Larger reports and publications such as Strategic Plan, Arkansas Land & Life magazine, Arkansas Rice and Soybeans Today tabloids.

18 Other projects including covers, tabs, t-shirts, logos, posters, pocket folders, recognition plaques, advertisements, Web graphics and PowerPoint presentations.

208,021 The quantity of fact sheets printed and distributed to county Extension offices through print-on-demand services for distribution to clientele and for use in workshops provided for clientele at the county level.

Outcome Indicators

75 Every county Extension office has ordered and taken advantage of print-on-demand, allowing quick access to current, updated and research-based information for walk-in clientele and clientele attending workshops provided by county faculty.

Source of Funds

Federal, state and various grants.

Scope of Impact

Dissemination – Statewide at the county level.

Scope of Program – Statewide at the county level.

KEY THEME: INFORMATION TECHNOLOGIES

Program Response: Agriculture Decision Tools

Contact: Nina R. Boston, Department of Information Technology, 501-671-2135, nboston@uaex.edu

Situation

The University of Arkansas Cooperative Extension Service enhances the delivery of its educational programs by creating software decision tools that help clientele interpret and manage their information.

Stakeholder Input

Extension specialists and agents who have worked directly with the research and have received requests from agricultural clientele communicate the needs to the Department of Information Technology.

Overview

The University of Arkansas Cooperative Extension Service maintains computer software that translates research-based data into focused recommendations or assists clientele in managing information critical to their business operations. Some of the most popular programs include:

- DD50 Rice Web predicts critical events during the season based upon variety and temperature data.
- Irrigation Scheduling uses temperature, rainfall and past irrigation data to predict timing and amount of irrigation.
- Farm Management organizes soil, water and manure testing, fertilizer and pesticide applications and budget data for producers.
- The Pest Management Trap and Survey Summary System was designed to help cooperators enter trap data and compare against other areas of the state.
- Soybean and Rice Variety Selections recommends the appropriate varieties to plant based upon location, plant date, soil type and disease resistance.
- Rice Seeding Rates calculates volume of seed needed based upon variety, location, planting date, soil type, seeding method, drill width and seedbed preparation.
- The web-based Arkansas Hay Producers Directory was created to allow Arkansas producers to share information about their available hay.
- The web-based Arkansas Beef Breeders Directory was created to allow Arkansas producers to share information about their available breeds.
- The Glossary of Agricultural Production, Programs and Policy at http://agglossary.uaex.edu/ provides clear explanations of key agricultural terms, acronyms and policy.

With the exception of the Glossary, links to these and other programs can be found on the web at http://www.aragriculture.org/computer_programs/default.htm. The software decision tools are delivered to clientele, in coordination with county Extension offices, to run on home/office computers or through interactive web pages.

Extension Program Results and Accomplishments

Output Indicators

The web-based software products delivered are developed using Microsoft InterDev and run on a Microsoft NT server running Internet Information Server, supported by a Microsoft Visual FoxPro database structure. Standalone products are primarily developed using Microsoft Visual FoxPro.

1,716	Standalone decision tools delivered.
22	States requesting copies of tools.

15 Foreign entities requesting decision tools.

1,256 Rice producers enrolled in the web-based DD50 Rice Web decision tool.

558,992 Rice acreage supported by DD50 Rice Web decision tool.

Outcome Indicator

Producers across the state of Arkansas use the research-based decision tools to manage the selection of variety, determine seeding rates, manage critical event dates, analyze irrigation needs and organize soil, water, manure and forage testing results. The impact of these tools is a better-informed clientele base, a more efficient handling of resources and time. Producers using the Farm Management decision tool accumulate the necessary data required by the Environmental Protection Agency and the Arkansas Department of Environmental Quality (ADEQ). The report output from the program has been endorsed as an accepted format for submission to ADEQ.

Source of Funds

State operating funds, Smith-Lever, grant from Rice Promotion Board, Soybean Improvement grant, Integrated Pest Management funds.

Scope of Impact

Dissemination – The decision tools are used statewide and have been shared internationally.

Scope of Program – The decision tools are state specific to Arkansas, but can be exported with modifications.

Program Response:
AIMS – Arkansas Information Management System

Contact: Nina R. Boston, Department of Information Technology, 501-671-2135, nboston@uaex.edu

Situation

The University of Arkansas Cooperative Extension Service is regularly required to produce reports to federal, state and county entities concerning the educational programs being delivered and, more importantly, the impact of those programs. Disparate methods of gathering the information for such reports resulted in duplication of efforts and loss of vital data. A centralized system to tie plan of work to program delivery and then to impact reporting was needed to more efficiently manage the information of Extension.

Stakeholder Input

Input was garnered from the following stakeholders:

- Associate Vice President for Agriculture – Extension
- Associate Directors for ANR, FCS and 4-H
- District Directors
- Extension Specialists
- County Extension Agents
- Extension Evaluation Specialist

- Director of Information Technology
- Extension Computer Specialist

Overview

Evaluation of the situation resulted in three findings:

1. Extension subject matter specialists and agents needed a tool that would allow them to enter plans of work and tie them to event schedules, program delivery and impact reporting.

2. Dynamic report generation was vital to meeting the frequent reporting demands throughout the year.

3. Civil rights reporting and performance evaluation reports must be incorporated with the subject matter reporting.

Although employees are located in offices throughout the state, central management of the information was critical. The aging inventory of computer equipment in county offices also had to be taken into account, as well as the varying technology skill levels of Extension employees.

The solution was a web-based management system, accessible to all Extension employees. The Arkansas Information Management System [AIMS] uses a simplified menu system to aid faculty in stepping through the different constructs of the system.

When a faculty member submits a plan of work, an e-mail notification is automatically sent to the appropriate supervisor, who will review and approve the plan. As a faculty member sets up a program event, an appointment for that event is automatically sent from the program to the individual's GroupWise calendar. Impact data must be entered by the fifth day of each month. Reports can be generated on-demand at any time from any Internet-ready desktop.

Extension Program Results and Accomplishments

Output Indicators

The software product delivered was developed using Microsoft InterDev and runs on a Microsoft NT server running Internet Information Server. It is web-based, menu driven, supported by a Microsoft Visual FoxPro database structure.

23 Extension programs from which faculty may choose for plans of work to which they will post outcomes throughout the year. The offerings include:
- 4-H Youth Development
- Agricultural Marketing, Management and Farm Policy
- Agronomic Crops Production and Management
- Alternative Agricultural Enterprises
- Child Care
- Community and Economic Development
- Couple and Marriage Relationships
- Expanded Food Nutrition Program (EFNEP)
- Family Resource Management
- Farm & Home Biosecurity
- FF-NEWS

- Food Processing, Quality, and Delivery
- Food Stamp Nutrition Education (FSNE)
- Forest Management
- Horticulture Production and Management
- Human Nutrition
- Improving Human Health
- Individual Development
- Leadership Development
- Livestock and Forage Production and Management
- Natural Resource Conservation and Environmental Protection
- Parenting and Family Relationships
- Poultry Production and Management

Outcome Indicator

The primary impact of this program is increased data integrity in reporting. As a result of the program, Arkansas Extension faculty have one place to go to plan and report program information, significantly improving accuracy and accountability.

Source of Funds

State operating funds, Smith-Lever.

Scope of Impact

Dissemination – 100 percent of Extension faculty have access to the program.

Scope of Program – This program is state specific to Arkansas, but can be exported to other states with minor modifications.

Program Review

Stakeholder Input

Arkansas Extension has operational, county-specific advisory councils for each of our 75 counties. Each County Council is comprised of local elected officials and stakeholders representing agriculture, youth, family and consumer science interests. Each county council annually evaluates the results of Extension programs through formal program reviews and provides input into program planning for the next fiscal year. Formal presentations of program results are made by Extension faculty to guide this process. This focused evaluation and planning process is conducted from June-August of each year.

State specialists serve on advisory committees and work regularly with diverse stakeholder groups, including Farm Bureau, commodity promotion boards, state agency and regulatory groups, and program specific advisory groups, to assist in the evaluation of current efforts and to provide feedback related to changing needs. Specialists likewise meet with county faculty, district administrators and experiment station scientists to facilitate linkages between local needs and research priorities.

The University of Arkansas Division of Agriculture's 2005-2010 Strategic Plan was developed with the input of over 600 stakeholders from across the state of Arkansas. These individuals included external stakeholders who participated in 16 strategic planning listening sessions held across the state. Division of Agriculture faculty and staff were also included in the strategic planning process through a Web-based survey and participation on strategic plan writing teams.

Fifteen of the external stakeholder listening sessions were organized by multi-county clusters. Participants in the stakeholder sessions were identified by asking county Extension staffs to identify individuals in their communities who were representative of one or more of the following 15 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 15 categories who were representative of the racial makeup of the counties, to include individuals of both genders and to identify potential participants by their level of involvement in Division of Agriculture Extension programs in the county (i.e., low, moderate, high).

Lists of potential stakeholder session participants were submitted by all 75 counties to their respective district director, creating a large pool of possible invitees to each multi-county session. The district directors and associate directors then selected individuals from the pool of possible participants who would be invited to attend the session held in their multi-county cluster. These invitees were selected using the same selection criteria as was used by the county staff to ensure that participants in the stakeholder sessions would be representative of a broad base of interests from across the state.

The 15 multi-county stakeholder strategic planning meetings were conducted in February 2005. A total of 447 external stakeholders participated in these sessions. Using the nominal group process, participants at each session were asked to identify: 1) trends and issues they felt would most likely impact, either positively or negatively, the future of people in Arkansas; and 2) the trends and issues they felt should be addressed by the University of Arkansas Division of Agriculture and the Bumpers College of Agriculture, Forestry and Life Sciences during the next five years. After responding to these questions, the participants were allowed to vote for the trends and issues

identified for each question that they thought were most important. The results of this process were lists of ranked issues and trends that could be used in the strategic planning process.

One additional stakeholder meeting was conducted at the state Extension Service office in Little Rock. The 56 participants in this session were representatives from a variety of public agencies and private organizations that are involved in work related to the mission areas of the Division of Agriculture. The selection of these participants was done using similar criteria as that for the multi-county stakeholder meetings. Participants represented a variety of interest areas, constituencies, involvement with the Division of Agriculture, and races and gender. This meeting was conducted using the same nominal group process and questions as those used in the multi-county stakeholder meetings.

Input from internal stakeholders, including faculty and staff of the Division of Agriculture's Agricultural Experiment Station, Cooperative Extension Service and the Dale Bumpers College of Agriculture, Forestry and Life Sciences, was solicited by developing an on-line, Web-based survey instrument that faculty and staff could complete anonymously. The questions on the survey were similar to those asked of external stakeholders and were in an open-ended format. A total of 103 faculty and staff personnel responded to the survey.

Data collected from the external stakeholder strategic planning meetings and the internal stakeholder survey were summarized for use in the development of goals and objectives in the Division of Agriculture's strategic plan. A decision was made to organize stakeholder responses into categories based on the five goal areas of the existing federal plan of work to facilitate the creation of strategic plan writing teams. Additional data that could not be identified within one of the five goal areas were categorized into three additional administrative-related categories for use in the strategic planning process. Data related to the Bumpers College were also compiled and provided to a College strategic planning writing team.

Members of the nine strategic planning writing teams were identified and appointed from the faculty and staff of the Division of Agriculture units. The writing teams were charged with using the information from the stakeholder sessions to identify strategic goals and objectives for the Division of Agriculture to be accomplished over the next five years. The teams were also charged with the task of identifying multi-disciplinary and multi-organizational opportunities that need to be addressed over the life of the strategic plan.

The strategic planning writing teams completed their efforts in December 2005. The University of Arkansas Division of Agriculture Strategic Plan document was published in January 2006.

Program Review Process

Programs are reviewed by internal Extension and Research faculty committees appropriate to the subject area. Programs are also reviewed by County Councils at the end of the program year for impact to the local clientele. Based on these inputs, programs may be changed to more appropriately address clientele needs. Programs are reviewed by various stakeholder groups who invest time and funds into support of the programs. Each program is reviewed on a normal five-year schedule by a disciplinary outside review team of scientists from other universities. These teams bring a scientific and very unbiased view of the needs, future direction and conduct of the programs.

Evaluation of Success of Multi and Joint Activities

Extension Planned Programs have been evaluated for the past three years through a process related to the identification of cross-discipline Focus Programs. Each Focus Program is guided by a multi-disciplinary committee that formally reviews needs, outcomes and impacts and facilitates statewide planning support for multiple program efforts within each Focus Program. Focus Program committees are comprised of both Extension

and split-appointment AES/UAF faculty to link research and extension practice. A description of Extension program specific need identification, stakeholder input, outputs, outcomes and evaluation results for 2005-2006 is included in the individual Extension program narratives reported by federal goal and key themes.

To assist in the evaluation of planned programs, a Web-based planning, reporting and evaluation system, the Arkansas Information Management System (AIMS), was developed to generate a searchable database that could examine outputs, outcomes and impacts as well as populations served. AIMS data for 2005-2006 allows Extension to evaluate "all reasonable efforts" by program, county, district and/or statewide. Arkansas Extension efforts are audited annually, on a county specific basis, to assure that minority populations are served. As a result of this database tool, Efficiency and effectiveness data can now be produced through the combination of financial and outcome data. AIMS provides "real-time" data access to support these evaluation efforts.

Integrated Research and Extension

Research and Extension programming is integrated through multiple mechanisms, including split-appointments, joint departmental and program administration, applied research teams, program planning, Focus Program management, and joint committee and task force membership. All Arkansas Extension (CES) sections worked with Arkansas Experiment Station (AES) faculty in 2004-2005 to increase affiliation and partnership linkages, to insure a comprehensive integration of efforts.

Multi-state Extension Activities

Program Statements

21st Century Families Conference: From Research to Reality

This triennial conference is a tri-state (Arkansas, Louisiana and Mississippi) collaborative effort that will address current issues with the latest proven solutions. Nationally known speakers will offer leading-edge advice for real-world concerns. Conference tracks include community nutrition, family and child development, rural health, family resources management and youth development. Conference is to be held in Little Rock April 17-19, 2007 and in Louisiana or Mississippi in 2010.
Funding: $71,381.50
FTEs: 1.09615

4-H Cooperative Curriculum System

The National 4-H CCS develops, reviews, evaluates and distributes research-based, peer-reviewed curriculum for youth. Arkansas participates as jury members and committee members in developing, piloting and reviewing curriculum. In addition, during FY06 Arkansas had one faculty member serving on the National Curriculum Committee Board of Directors.
Funding: $6,902.74
FTEs: 0.08462

4-H Technology Conference

The Arkansas 4-H Technology Team provided the leadership for a three-state youth Technology Conference in March. Forty-five youth participated in technology workshops designed to feature community service.
Funding: $5,166.62
FTEs: 0.06923

4-H Volunteer Core Competencies

A design team of Arkansas Extension agents and specialists was put together to see about adapting the Oklahoma 4-H Core Competency Training Curriculum. The team attended training in Oklahoma, then reviewed and adapted Oklahoma's training materials. The resulting curriculum (Unit 1 – This is 4-H and Unit 2 – Getting the Most Out of the 4-H Experience) is now in use for training in Arkansas.
Funding: $7,530.26
FTEs: 0.09231

Agricultural Aviation PAASS Program

PAASS (Professional Aerial Applicator Support System) has been set up to help agricultural aviators be safer and mitigate potential drift. Washington, Illinois, Kansas and Arkansas teamed up to develop the national program to be presented in the fall of 2006 and spring of 2007. This year's topic is "Reading and Understanding the Chemical Label." This team also spent two days training (Train-the-Trainer) the presenters for this year's program(s). This program will be presented at the annual conventions all over the U.S.
Funding: $3,765.15
FTEs: 0.04615

AR-MO-OK Dairy Tour/Meeting

Arkansas, Missouri and Oklahoma Extension specialists and county agents plan and conduct tours annually for farmers and others. This continues to be a successful program to stretch limited resources by demonstrating technology to the dairymen of the region in Oklahoma, Missouri, Kansas and Texas.
Funding: $627.52
FTEs: 0.00769

Beef Industry Tour

The Arkansas Beef Industry Tour is designed to introduce cattle producers to the feeding and processing industries. Participants traveled (Texas) to a commercial feedyard, packing facility and processing facility. A tour was conducted at each facility to give each participant an in-depth understanding of the operation.
Funding: $5,166.62
FTEs: 0.06923

Delta HOPE (Healthy Options for People through Extension)

Delta HOPE is a tri-state (Arkansas, Louisiana and Mississippi) collaborative effort addressing childhood obesity in the Mississippi Delta. The project is funded through a four-year grant from the Kellogg Foundation. In FY06, the third year of the four-year intervention, the project was in seven Arkansas counties (Ashley, Desha, Drew, Lafayette, Monroe, Phillips and Woodruff) and reached 2,623 youth in 160 K-5 classrooms in 11 schools. Teachers incorporated nutrition and physical activity education into core curriculum subjects an average of 2.5 times per week. Participating students accumulated an additional 16 hours of physical activity during the school year compared to non-participating students.
Funding: $40,444.39
FTEs: 0.64615

Delta Region Farm Management and Agricultural Policy Working Group

This collaborative multi-state effort with Arkansas, Mississippi and Louisiana addresses issues to: (1) work jointly on the development, estimation and publication of production costs for major agricultural commodities in the Delta Region of Arkansas, Louisiana and Mississippi; (2) evaluate implications of farm policy changes on the production economics of major crops in the region, particularly cotton, rice and soybeans; and (3) communicate ongoing research and extension programs in farm management and

production economics, identify research and extension needs, and discuss approaches for addressing those needs.
Funding: $8,157.78
FTEs: 0.10000

DHIA (Dairy Herd Improvement Association)

Dairy Herd Improvement Association (DHIA) utilizes production testing and record management to improve the efficiency of milk production. Multi-state activities with Heart of America DHIA, Manhattan, Kansas, and Dairy Records Management Systems (DRMS), Raleigh, North Carolina, include primarily training activities for specialists and DHIA personnel.
Funding: $2,116.15
FTEs: 0.02692

Disease Risk Management

The Center for Food Security and Public Health at the Iowa State University College of Veterinary Medicine presented a program to increase awareness of bioterrorism, agroterrorism and foreign animal diseases among veterinarians, farmers, medical personnel and the general public. Materials were gathered to use in training producers and Extension faculty on disease risk management. As a result of this training, disease risk management trainings are being conducted in Arkansas.
Funding: $627.52
FTEs: 0.00769

EPA – Drift Reduction Technology

EPA is in the process of implementing a new program to encourage applicators, chemical formulators, and spray equipment manufacturers to utilize technologies and practices that will minimize drift. Several meetings have been held to develop the guidelines for this new national program. Dennis Gardisser is serving as the agricultural aviation representative.
Funding: $1,882.57
FTEs: 0.02308

Four-State Heartland Community Development Conference

Currently this is an information exchange group of Extension specialists and community development professionals in the four-state region (Arkansas, Kansas, Missouri and Oklahoma). One roundtable discussion was held in Fayetteville, Arkansas, on October 25, 2004. The topic of this roundtable discussion was water supply and disposal in the four-state Heartland region.
Funding: 313.76
FTEs: 0.00385

HorseQuest.info

HorseQuest.info was developed through the cooperative effort of equine extension specialists and associates at 13 land-grant universities in the Southern Region. Initial funding was secured for $75,000 from USDA Agriculture Telecommunications/ADEC Awards. HorseQuest.info is an interactive Web site that provides up-to-date information for horse owners. In 2005, HorseQuest.info received funding to pilot the program nationally through e-Extension. Working committees were established with representation from specialists throughout the United States. This program was launched nationally in October 2006.
Funding: $2,510.09
FTEs: 0.03077

Horticulture Industry Show (HIS)

Arkansas continues to participate in the annual conference and trade show for HIS. The conference is sponsored by academics, grower associations and industry stakeholders working in the horticulture

industries of Arkansas and Oklahoma. The two-day event attracts commercial horticulture producers, university researchers and extension specialists from Arkansas.
Funding: $4,859.82
FTEs: 0.06154

Kansas City 4-H Global Conference

Arkansas, Missouri, Kansas, Iowa and Nebraska continue to provide leadership to the 4-H Global Conference held in Kansas City. Youth delegates participate in educational and competitive events, interact with youth from other states and participate in leadership activities.
Funding: $5,239.84
FTEs: 0.07308

KOMA Beef Cattle Conference

Kansas, Oklahoma, Missouri and Arkansas plan and conduct this successful program biennially. Arkansas hosted the 2005 KOMA conference on February 24 in Dardanelle, Arkansas. Arkansas will host KOMA again in 2007.
Funding: $627.52
FTEs: 0.00769

MALTA Regional Production Budget Project

Arkansas continues to participate with Mississippi, Louisiana, Tennessee and Alabama to jointly develop enterprise budgets. The project builds on the synergies of five land-grant universities to standardize methodologies and coordinate the expertise of the institutions' agricultural economists and horticulturalists. The project seeks to update existing and develop new fruit and vegetable budgets for the Southeast region.
Funding: $2,823.85
FTEs: 0.03462

Mid-America Grassland Evaluation Contest

The Grassland Evaluation Contest teaches students concepts of grassland and resource management. In 2006, 31 youth competed in the Arkansas Grassland Contest, and 14 of those competed in the Mid-America Grassland Evaluation Contest in Missouri. Students have learned identification of plants used as forage and wildlife foods, soil evaluation for forage production and evaluation of pastures for livestock and wildlife use. This contest teaches decision-making skills based on real-life conditions in the field.
Funding: $22,925.77
FTEs: 0.35769

Mid South Dairy Show

This continues to be an excellent opportunity for farmers and youth to view results of cattle breeding. States involved are: Arkansas, Missouri, Texas, Louisiana, Mississippi, Tennessee, Kentucky, Illinois and Indiana.
Funding: $1,561.85
FTEs: 0.02308

Mid South Fair 4-H Day

Arkansas, Tennessee, Missouri and Mississippi continue to provide leadership to 4-H Day activities at the Mid-South Fair held in Memphis, Tennessee. Youth from all states participate in educational and competitive events in family and consumer sciences and agriculture and natural resources.
Funding: $8,109.09
FTEs: 0.12692

Mid South Greenhouse Conference

Mid South Greenhouse Conference is a multi-state extension program involving stakeholders and extension faculty from Arkansas, Mississippi and Louisiana. The program involves seminars, grower tours and a trade show. The audience for this multi-day conference is commercial greenhouse growers, garden center/retail employees and landscape professionals. Seminar topics typically include new plant varieties, IPM, energy conservation and general business topics. Tours include visits to nursery or greenhouse production facilities, retail establishments or plant evaluation trials. This regional conference serves as a critical source of information for these stakeholders, especially those who cannot attend larger conferences in Greenville, South Carolina (Southeast Greenhouse Conference) and Columbus, Ohio (OFA Short Course).
Funding: $1,255.04
FTEs: 0.01538

National 4-H Conference

Five Arkansas youth delegates and one Extension faculty member participated in National Congress held at the National 4-H Center. 4-H Youth have the opportunity to visit their Congressmen and discuss issues facing youth in their home communities.
Funding: $4,626.23
FTEs: 0.05769

National 4-H Congress

National 4-H Congress provides youth with the opportunity to increase their knowledge, acquire leadership skills, interact with youth from across the nation and participate in cultural events. The national event involved youth from 48 states and two territories. Forty youth and five adults attended the event held in Atlanta, Georgia.
Funding: $5,473.42
FTEs: 0.07692

National 4-H Dairy Conference

Arkansas continues to support specialists and a team of 4-H youth to participate.
Funding: $313.76
FTEs: 0.15084

National 4-H Forestry Contest

The National 4-H Forestry Invitational is the national championship of 4-H forestry. Each year since 1980, teams of 4-H Foresters have come to Jackson's Mill State 4-H Conference Center in Weston, West Virginia, to compete in the four-day contest. The event is organized and conducted by a management committee comprised of Cooperative Extension Service specialists and agents, International Paper Company employees and professional foresters from the U.S. Forest Service, the West Virginia Division of Forestry and forestry agencies from other state governments. Arkansas sent a team to the National Contest in 2006 and placed 5th in the contest.
Funding: $1,715.25
FTEs: 0.02692

National 4-H Shooting Sports Instructor Training

Arkansas, along with approximately 43 other states, sends State 4-H Shooting Sports Instructors to National 4-H Shooting Sports Instructor Training. Training site varies, and Arkansas sends 10-15 trainees every four years or so. We sent 14 trainees to Manhattan, Kansas, in May, 2006. Nationally trained instructors form the core of the State 4-H Shooting Sports Training Team, which trains all 4-H shooting sports instructors who work in the county programs in Arkansas.

Funding: $16,978.23
FTEs: 0.27692

National and Southern Region 4-H Program Leaders Committee

State 4-H Program Leaders meet for a three-day national and a three-day southern region program planning session on an annual basis. Quarterly phone conferences are held to maintain communication and coordinate joint activities.
Funding: $2,196.63
FTEs: 0.02692

National and Southern Region FCS Program Leaders Committee

State FCS Program Leaders meet for a three-day national and a three-day southern region program planning session on an annual basis. Quarterly phone conferences are held to maintain communication and coordinate joint activities.
Funding: $4,706.41
FTEs: 0.05769

National Network of Forest Practitioners

The National Network of Forest Practitioners is an alliance of rural people working on the ground to build a forest economy that is ecologically sound and socially just. Members include foresters, harvesters, Extension specialists, advocates and policy makers interested in sustainable forestry. Participation in this network connects UA Extension to a broad-based clientele and positions us to have access to the latest information and issues about sustainable forestry including marketing non-timber forest products. In 2003, an Extension Forester was elected to the board and serves as the chair of the Non-timber forest products working group of the NNFP. Currently other Extension representation includes New York, Tennessee, Virginia and Colorado.
Funding: $6,275.22
FTEs: 0.07692

NatureMapping

NatureMapping is an experiential learning program that promotes natural resource awareness using spatial technologies to inventory and monitor wildlife and associated habitats in local communities. NatureMapping began in 1993 at the University of Washington and the Washington Department of Fish and Wildlife. Five states have taken strong leadership roles and are in the process of formulating a national structure for the program.
Funding: $9,378.04
FTEs: 0.13462

Pesticide Applicator Training

Arkansas is participating with Mississippi, Oklahoma and Louisiana in the development of regional pesticide educational materials for the turf and ornamental categories. The goal is a single study/reference manual that will meet the educational objectives for training pesticide applicators in all four states.
Funding: $21,719.43
FTEs: 0.31538

Plant Health Clinic

The Plant Health Clinic is a diagnostic laboratory located at the Lonoke Agricultural Center that provides plant diagnostic services for Arkansas, but also is a triage laboratory for the Southern Pest Detection Network (SPDN) – one of four regional networks of the National Pest Detection Network (NPDN). SPDN includes all of the states in the southeastern U.S. plus Puerto Rico and the Virgin Islands.

Funding: $35,472.91
FTEs: 0.55769

Risk Management Training for Absentee Landowners

This collaborative multi-state effort with Arkansas, Mississippi and Louisiana addresses risk issues facing absentee landowners and producers working with absentee landowners. This program will help absentee landowners in the Delta states understand rental arrangements, production and marketing alternatives, government programs, conservation and legal issues.
Funding: $3,137.61
FTEs: 0.03846

SERA – 19 Health

This continues to provide for the exchange of information among Extension health and health related specialists. The group is working with other groups in the planning and promotion of the national Priester health conference.
Funding: $2,510.09
FTEs: 0.03077

SERA-IEG for Dairy

This continues to provide for the exchange of information between dairy Extension and related specialists usually working in conjunction with the planning of the Southern Dairy Conference.
Funding: $941.28
FTEs: 0.01154

Site-Specific Nematode Management

Arkansas leads an effort to determine the practicality of precision agriculture technology in managing nematodes in cotton that includes South Carolina, but has utility in all cotton states in the U.S.
Funding: $11,734.73
FTEs: 0.16154

Society of American Foresters Ouachita Chapter Executive Committee

The Ouachita Chapter of the Society of American Foresters (SAF) includes members in Oklahoma and Arkansas. Arkansas is represented on the executive committee of the chapter and helps develop area programs for members of the chapter.
Funding: $4,392.65
FTEs: 0.05385

Southern Dairy Conference

Southern Region Dairy Conference continues to be an active educational activity, primarily for dairy marketing, which involves Extension dairy production specialists, economists, milk marketing cooperatives and milk manufacturing personnel from the southern region.
Funding: $1,255.04
FTEs: 0.01538

Southern Dairy - Filth Fly IPM Program

Arkansas, Mississippi and North Carolina are cooperating in a research and education program aimed at managing filth flies in southern dairies. Insecticide resistance and the loss of labeled insecticides have made fly management a top priority for southern dairies. These concerns are being addressed through research and education of county agents and dairymen on IPM strategies such as biological control, sanitation, population monitoring and compatible insecticide use. Collection of baseline data on naturally occurring filth fly natural enemies (parasitic wasps) was completed in fall 2005. During the 2006 fly season, commercially available

parasitoids were released in Arkansas, Mississippi and North Carolina demonstration dairies to determine percentage parasitism of filth flies and effectiveness in managing filth fly populations.
Funding: $55,012.87
FTEs: 0.70385

Southern Region 4-H Volunteer Leader Forum

Twenty volunteer leaders and three Extension faculty participate in this three-day training for 4-H volunteer leaders in Rock Eagle, Georgia. Assistant Director-4-H Youth Development serves as the administrative liaison for the planning committee.
Funding: $6,568.11
FTEs: 0.09231

Southern Region ANR Committee

The ANR State Leader continues to be an active participant in planning southern region Extension ANR committee activities.
Funding: $1,882.57
FTEs: 0.02308

Southern Region American Society for Horticultural Science Annual Conference

Arkansas is one of 14 states in the southern region and an active participant in and planner for this educational effort. The conference, sponsored by the Southern Region American Society for Horticultural Science, involves exchange of information between horticulture Extension, research and teaching faculty, as well as presentations by graduate and undergraduate students. The conference location rotates among participating states.
Funding: $2,823.85
FTEs: 0.03462

Southern Region Cooperative Extension Curriculum Project

Collaboration of 13 Southern Region states to develop on-line staff development training. Arkansas served as a member of overall design team and has three specialists serving in key roles.
Funding: $4,706.41
FTEs: 0.05769

Southern Region Extension Forester/Master Tree Farmer

Arkansas continues to participate with the other southern region states to support the regional forester. The Southern Region Extension Forester, in cooperation with the Arkansas Forest Resources Center, hosted a regional Technology Transfer symposium in Hot Springs, August 2006.
Funding: $1,568.80
FTEs: 0.01923

Southern Region Farm Management Marketing and Policy Committee Meetings

Specialists attending this conference gain valuable knowledge about Extension programs across the Southern Region.
Funding: $1,568.80
FTEs: 0.01923

Southern Region Fire Ant Management

The Southern Region's Fire Ant Management program includes an annual imported fire ant conference, multi-state publications, sharing of educational materials and, most recently, eXtension. Much of the educational materials being used have been developed and shared by the Arkansas Cooperative Extension Service and other Southern Region Extension programs. Arkansas, along with other southern states, is also involved in collaborative

efforts with the USDA-ARS and USDA-PPQ in releasing three biological control organisms against imported fire ants: *Pseudacteon tricuspis*, *Pseudacteon curvatus* and *Thelohania solenopsae.*
Funding: $79,242.74
FTEs: 1.13846

Southern Region Plant Nutrient Management Conference

Soil scientists, agronomists, environmental specialists, crop consultants and private labs, and other interested parties meet to exchange information on soil fertility, plant nutrition trends and new technology and research to improve fertilizer use efficiency. The meeting is normally held during the month of October in Olive Branch, Mississippi. More than 50 participants hear invited speakers and Extension specialists from 13 southern states sharing their experiences on plant nutrition, water quality and nutrient management.
Funding: $1,255.04
FTEs: 0.01538

Southern Region Program Leadership Network (PLN)

The Southern Region Program Leadership Network has responsibility for planning the annual three-day conference. The committee also reviews and approves action and information items from the seven individual committees before they are sent to the directors for approval or consideration. Nine Extension specialists participated in the meeting held in August, 2005, in Charleston, South Carolina.
Funding: $14,119.24
FTEs: 0.17308

Southern Region Watershed Resources Management

The Southern Region Extension Watershed Resources working group consists of the 13 states in EPA Regions 4 and 6. The purpose of this group is to facilitate regional coordination among the Land Grant Universities to combine and foster more efficient use of our resources. This work group is currently funded through the CSREES' 406 Regional Facilitation Grant Program. This work group works closely with partners such as EPA to address water quality issues. In fact, by combining resources the group has been able to fund an EPA liaison position for both Region 4 and 6. Each state has an appointed water quality coordinator. These coordinators work together to develop and implement regional plans such as a bi-annual Water Quality Conference, joint county agent training workshops and information sharing through a regional Web site.
Funding: $200,035.17
FTEs: 2.97692

Southern Regional 4-H Horse Show

Arkansas is one of 13 states in the Southern Region that is an active participant and planner of this activity. The team of specialists involved with the Southern Regional Horse Show met in January, 2006, to plan future shows dates, add activities, revise activities and submit budgets through 2006. An additional meeting was conducted in August, 2006, prior to start of 2006 Southern Regional 4-H Horse Championships. The 2006 Southern Regional Horse show was conducted July 29-30 in Raleigh, North Carolina. This event attracts over 600 youth to participate in horse classes, judging contest, public speaking contest, team presentations, individual presentations, quiz bowl and hippology events. The 2007 Southern Regional Horse Show will be in Memphis, Tennessee.
Funding: $3,911.58
FTEs: 0.05385

Soybean Rust Management

Arkansas cooperates in the National Soybean Sentinel Plot Monitoring Program as well as the Southern Pest Detection Network efforts on soybean rust detection and tracking, including the states of Louisiana, Texas, Mississippi, Tennessee, Alabama, Georgia, Florida, South Carolina, North Carolina and Virginia.
Funding: $63,171.01
FTEs: 0.89231

Steer Feedout Program

The Arkansas Steer Feedout Program is designed to allow producers to collect postweaning performance information on their calves. This information can help the producers make more informed breeding decisions and produce more profitable calves.
Funding: $7,209.54
FTEs: 0.09231

Sustainable Agriculture for the Southern Region

The Southern Region SARE program is conducted as a comprehensive program incorporated into many of the Extension programs within Arkansas. Some efforts include the SARE program resources/grant funding opportunities training for county agents statewide, training for small farm managers in vegetable production and marketing, and training on farm support program availability and access for county agents, small farm program specialists, farmers and community leaders in South and Central Arkansas.
Funding: $79,487.29
FTEs: 1.26923

Tri-State Community Development Initiative

Community and Economic Development faculty from Mississippi, Louisiana and Arkansas have continued to work on a multi-state effort in economic development and entrepreneurship.
Funding: $1,882.57
FTEs: 0.02308

Tri-State Soybean Forum

The Tri-State Forum is held each year and provides soybean producers, ag-industry and Cooperative Extension Service personnel the opportunity to learn about current soybean production and marketing practices being conducted in soybean producing areas of the Mississippi Delta. This meeting is held on the first Friday of January, rotates between Arkansas, Mississippi and Louisiana and involves Extension soybean specialists, county Extension agents, soybean producers and ag-industry representatives.
Funding: $6,240.44
FTEs: 0.09615

Urban Forestry Council

The Southeastern Urban Forestry Council is comprised of urban forestry councils throughout the Southeast. Extension personnel from different states participate, including Georgia, Clemson, Arkansas and CSREES, participate in the Regional council through their local or state urban forestry council or organization. The Arkansas Urban Forestry Council is part of this larger umbrella organization. Extension faculty has served on the council board since 1994. AUFC is a non-profit organization dedicated to the ecological preservation of urban and community trees. The council's role is to educate and promote good urban forest policies and management principles to Arkansas' communities. AUFC works at local, regional and state levels with citizens and public officials alike on important natural resource and tree care issues. County agents worked with the chair of the conference committee to plan the 2006 Annual Conference.
Funding: $5,633.78
FTEs: 0.07692

Wildlife Enterprises

Wildlife enterprises can help producers diversify their income through fee hunting and fishing, wildlife watching and associated recreational activities. However, wildlife enterprises are not for everyone. The purpose of this program is to provide landowners with an overview of considerations before deciding to start an enterprise including habitat improvements, legal aspects, financial planning and marketing. In cooperation with Mississippi State University, we conducted a multi-state natural resource enterprise landowner workshop in Chicot County. An additional workshop and in-service training was conducted in St. Francis County with a speaker from Mississippi State, and a workshop is planned for 2007 in White County.

Funding: $67,710.47

FTEs: 1.04231

March 9, 2007

FY2005-2006 Report of Accomplishments and Results

Arkansas Agricultural Experiment Station
Division of Agriculture
University of Arkansas

April 2007

FY 2006 Annual Report of Accomplishments and Results

Introduction

The Arkansas Agricultural Experiment Station is the research arm of the Division of Agriculture, University of Arkansas System. The FY 2006 Annual Report of Accomplishments provides the necessary elements identified in the guidelines. For purposes of this reporting, the ten program areas identified in the Plan of Work submission under the five national goals have been condensed into the original five goals. Only selected key themes and specific examples have been included in this annual report and as such represent only a small cross-section of our total research programs.

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PLANNED PROGRAMS

Goal 1: An agricultural production system that is highly competitive in the global economy

Program Area 1. Sustainable plant and animal production systems

Plant Systems

Arkansas continues to be the largest producer of rice in the nation and remains a major producer of soybeans, cotton and soft red winter wheat. Fruits, vegetables and ornamentals remain a small but important part of the agricultural economy. Row crop farmers had a mixed year with high input costs and the LL601 event dampening gains. Integrated research and extension teams, working closely with our commodity organizations and farm groups, continue to focus on developing improved crop production systems that are as efficient and cost effective as possible.

In this regard, a new faculty member (joint experiment station/extension appointment) in plant pathology has been recently employed at our Rice Research and Extension Center (Stuttgart) and will focus on statewide plant disease.

Animal Systems

Beef and poultry production remain closely linked in Arkansas. Beef operations are generally small in size and often are co-located with poultry production, with poultry litter being used as a fertilizer source for pastures. Animal waste management and potential nutrient runoff from pasturelands remain as significant challenges. A coordinated effort is underway to address phosphorus runoff and minimize potential impact on water quality. A new swine research unit funded by the Arkansas legislature has been constructed and is addressing animal waste issues in addition to research aimed at improving production efficiency. The facility has the capability to divert manure from the unit to separate holding ponds, which makes it a one-of-a-kind facility for waste management studies.

The University of Arkansas works closely with the poultry industry to maximize production efficiency and address issues related to poultry health, food safety and waste management. Through the Poultry Center of Excellence, multi-disciplinary teams conduct basic research on poultry biology and genetics, nutrition, poultry health and food safety. The poultry health laboratory has the ability to address poultry diseases requiring high levels of containment and is one of the few non-federal laboratories capable of conducting this type of work. With funds donated by the poultry industry, the University of Arkansas has constructed new state-of-the-art, broiler-breeder research facilities.

Production Development, Processing and Engineering

Through the Institute of Food Science and Engineering, station scientists are working directly with the food industry to address research needs in food processing and food safety and assist in the development of new uses for raw agricultural products. The institute provides matching grants for direct collaborations with food industry partners. New funding from the state legislature as part of the tobacco settlement has been directed to create the Arkansas Biosciences Institute. A portion of these funds has been directed to address agricultural research with

medical applications. Funding through the institute will give us the opportunity to greatly enhance our research efforts in agrimedicine, nutraceuticals and human nutrition.

FY 2006 Expenditures on Goal 1: $42,230,919; Scientist FTE: 80.7

KEY THEME: PLANT PRODUCTION EFFICIENCY

Situation

Arkansas farmers produce forty-five percent of the rice grown in the United States under dynamic production conditions that differ from those in other rice-growing areas. Because of our prominence in this crop, Arkansas rice farmers depend on scientists with the University of Arkansas' variety development program to provide a progression of improved varieties to meet the challenges of changing conditions in their fields and in the marketplace. 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.

Impact

Forty-four percent of the rice grown in Arkansas in 2006 was 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 4,110 lbs/acre compared to an average of 6,820 lbs/acre for 2006. Assigning a conservative value of 60 percent of this 2,710 lbs/acre yield increase to new varieties, the average monetary gain in 2006, at a rough rice price of $9.26/cwt, would be $251/acre or $351 million for the 1.4 million acres grown in Arkansas, of which some $154.6 million is due to the new Arkansas varieties.

Source of Funds

Hatch, state matching

Scope of Impact

Multi-state

KEY THEME:
PLANT PRODUCTION EFFICIENCY

Situation

Wheat is commonly grown in the crop rotation sequence following rice, corn and soybean. Corn and rice produce large residue amounts that have wide carbon:nitrogen residues which may influence the amount of N required to maximize wheat yields. Nitrogen fertilizer prices have increased in recent years and represent a significant proportion of wheat production expenses. Additionally, crop production costs incurred before the crop is established may represent direct economic losses if stand failure occurs.

Impact

Nitrogen applied at planting was needed to produce maximal yields only when wheat followed rice in the rotation. Generally, 40 to 80 lbs N/acre applied in the fall in addition to 80-120 lbs N/acre applied in late winter were needed to produce maximal wheat yields following rice. No fall-applied N was needed to maximize wheat yields following corn or soybean, suggesting that sufficient N is available to stimulate fall growth and tillering in these crop rotations. However, fall-applied N was capable of producing near maximal yields for wheat following corn and soybean, but the fall-applied N rates needed were greater than when N was applied only in the late winter. Based on this research, N fertilization recommendations were changed to denote the need for fall-applied N only when wheat follows rice in the crop rotation.

Source of Funds

Hatch, state matching

Scope of Impact

Multi-state

KEY THEME:
BIOTECHNOLOGY

Situation

Because rice is a warm-season crop, it is sensitive to low temperatures. The period during which it is most likely to experience low temperatures is in the spring during germination, the growth stage at which it is most susceptible to chilling injury. This can result in poor stand and low-vigor plants. In Arkansas this can be a key limiting factor in production.

Among 12 selected rice genotypes screened for low temperature tolerance, University of Arkansas scientists identified two with cold tolerance and selected one for further comparative evaluation with a temperature

sensitive genotype. Two genes were identified as being induced by low temperature, "Low temperature induced" (*OsLti*) and "Sodium lithium tolerant" (*OsSlt*), and these genes were cloned and characterized. Each gene belonged to a small gene family, and each gene produced a protein with protective functions against stress-induced cell damage.

Impact

The results of this research directly impact breeding strategies and objectives in that molecular targets are identified that can be selected in an applied breeding objective to improve tolerance to low temperatures. Molecular markers associated with cold tolerance will simplify screening of rice genotypes for tolerance, and will be invaluable in following transfer of critical genes from unimproved tolerant genotypes to elite genotypes of rice. Ultimately, producers will benefit from the availability of rice varieties that are genetically tolerant to cool temperatures. Less economic risk will be associated with early-season periods of low temperature during the critical period of germination, seedling growth and stand establishment.

Source of Funds

Hatch, state matching

Scope of Impact

Multi-state

KEY THEME: AGRICULTURAL COMPETITIVENESS

Situation

The University of Arkansas Division of Agriculture has developed a team approach to monitoring and analyzing market and policy events in the global rice economy. Baseline 10-year projections of the major rice producing, consuming and trading nations are developed on the basis of a supply and demand simulation model, AGRM (Arkansas Global Rice Model). This framework provides estimates of production, consumption, trade, prices and stocks based on historical supply and demand relationships, policies and macroeconomic variables such as population and income growth.

Impact

The research on the global rice economy and analysis of trade protection received considerable attention in 2005 from the World Bank, the United Nations and many policy decision-makers in the U.S. and the rest of the world. Domestic (USDA, ERS and FAFRI and Iowa State University) and international (World Bank, OECD and Government of Japan) organizations have requested assistance from the AGRM team in developing their rice and market analysis. The model is being used to assess the impact of the U.S. proposal to WTO trade negotiations.

The University of Arkansas' analysis is unique due to its recognition of both long and medium grain rice markets, which no other group conducts. It is unique because Arkansas researchers are not constrained to use "official" government data or policies in analysis and therefore maintain a greater degree of objectivity. The beneficial

outcomes of models include better production, processing and consumption decisions by market participants and better policy decision-making by the U.S. and foreign governments.

Source of Funds

Hatch, state matching, USDA Special Grant

Scope of Impact

Multi-state research

KEY THEME: PLANT PRODUCTION EFFICIENCY

Situation

Soybean is an important commodity in Arkansas and ranks on the top in acreage among all agricultural crops. Over three million acres of soybean are grown each year, generating approximately 110 million bushels in total production and $750 million in gross income. Choosing a proper variety is one of the most important decisions a grower has to make each growing season. There are many varietal characteristics such as yield potential, maturity, disease resistance, herbicide resistance and seed quality which need to be considered in matching the best variety for a particular cropping system or production environment. The numerous varieties available to Arkansas growers come from publicly funded breeding programs in the southern states and from private companies.

Impact

More than 20 varieties have been released from the University of Arkansas' soybean breeding program and have had significant impact on Arkansas soybean production. Growing a high-yielding variety does not cost more than growing an average variety. Every bushel of extra soybean yield produced by growing the high-yielding variety is a net income to the growers. Higher yields from new and improved varieties should translate into higher profits to Arkansas soybean producers, particularly when the commodity prices are low and production costs are high. Varieties with disease resistance and stress tolerance will also prevent yield loss under unfavorable production conditions. In addition, public programs supply thoroughly tested varieties with low cost seeds that can be saved for planting, which provides additional savings for the growers. A new conventional variety named "Ozark" has been recently released to the public. It ranked on the top in the 2006 Arkansas Soybean Verification Trials in farmers' fields.

Source of Funds

Hatch, state matching

Scope of Impact

Multi-state research

KEY THEME: NICHE MARKET

Situation

Blackberry sales in retail markets in the U.S. are expanding as more aggressive marketing of improved cultivars is pursued. Blackberries for the fresh market expand income options for small farmers and can be grown with fewer inputs than many fruit crops. A key component of this expansion has been the development of firmer-fruited cultivars that can be shipped to retail markets.

The University of Arkansas Division of Agriculture released 'Ouachita' thornless blackberry in 2003. This new cultivar added to the previous three Arkansas thornless releases, 'Navaho', 'Arapaho', and 'Apache, and can be shipped for retail marketing.

Impact

'Ouachita' blackberries were first shipped to commercial markets in 2005, and reports by growers and shippers indicated this cultivar performed very well for commercial shipping and sales. Fruits were found to be free from molds and decay, did not leak, and maintained black berry color during the marketing period. This cultivar also expanded the marketing season, with ripening between the cultivars 'Arapaho' and 'Navaho' allowing growers to have a continuous supply of fruits as the sequence of cultivars ripened. Acreage in the southern U.S. is expanding due to the high quality fruits produced by these cultivars.

Source of Funds

Hatch, state matching

Scope of Impact

Multi-state research

KEY THEME: ANIMAL HEALTH

Situation

Avian influenza (AI) virus H5N1 was discovered in the late 1990s, and it has been reported in more than 46 countries for animal cases and in 10 countries for human infection with 258 people infected and 153 deaths since 2003, according to WHO's report. In the U.S., a recent outbreak of low pathogenic AI in 2001 and 2002 resulted in the depopulation of over 4.5 million chickens and turkeys and cost the poultry industry approximately $125 million. World Bank estimated that more than 140 million birds had died or been destroyed due to AI H5N1, and losses to the poultry industry are in excess of $10 billion worldwide. A key in controlling the spread of avian

influenza is rapid detection of the disease followed by eradication of infected animals, quarantine and vaccination of animals.

Impact

A portable biosensor has been developed for in-field sensitive and specific detection of AI virus H5N1 in poultry samples. Magnetic nanobeads are coated with specific antibodies to target virus and used in the sampler to separate and concentrate target virus from a poultry swab sample. Red blood cells, as biolabels, are mixed with the captured target virus to form the bio-nanobead-virus-red blood cell complex. A microfluidic biochip is designed and fabricated as a flow-through device to deliver the complex to an embedded interdigitated array microelectrode for impedance measurement. University of Arkansas results showed that a positive signal was clearly obtained when the concentration of AI virus H5N1 in cloacal swab samples was equal to or more than 100 EID_{50}/mL. At the frequency of 10 kHz, the impedance of the sample containing AI virus H5N1 significantly increased compared to either the control (no any viruses) or the sample containing Newcastle virus and Infectious Bronchitis virus. A prototype of this biosensor has been designed and fabricated and will be evaluated in field tests.

Source of Funds

Hatch, state matching

Scope of Impact

Multi-state research

KEY THEME: ANIMAL HEALTH

Situation

Autoimmune disease is the result of a specific attack by the immune system against an individual's own body components, frequently resulting in the destruction of the target tissues. Mechanisms leading to autoimmune disease are not well understood and appear to involve many factors. The Smyth line (SL) chicken is the only animal model for human autoimmune vitiligo, an autoimmune disease involving the destruction of pigment cells and loss of pigmentation in the skin.

Impact

Arkansas scientists are currently conducting studies on immune factors produced at the site of pigment cell destruction that stimulate the autoimmune response against the pigment cells. These factors include intercellular communication molecules (cytokines) known to stimulate or suppress immune responses, cellular adhesion molecules that allow immune cells to leave the blood and enter the target tissue, and molecules that attract immune cells to come to the target tissue in the first place. Although this work is in progress, one important discovery made recently is the detection of high levels of interferon-gamma in the target tissue (feather) during active vitiligo when the pigment cells are being killed, but very low or undetectable levels in unaffected feathers and after all the pigment cells in an affected feather have been killed. These findings further support that pigment cell death is mediated by a cell-mediated immune response to pigment cells. Moreover, similar observations have

been reported in human vitiligo skin lesions, further emphasizing the many similarities between the etiopathology of chicken and human vitiligo.

The use of an animal model that is genetically susceptible to develop autoimmune disease and requires an environmental factor for expression of the disease provides an excellent opportunity to study the cause and effect relationship between genetic susceptibility and the factors leading to the onset and expression of autoimmune disease.

Source of Funds

Hatch, state matching, NIH

Scope of Impact

Multi-state research

KEY THEME: GRAZING

Situation

The majority of expense associated with producing beef calves results from the production, harvesting and storage of hay and purchasing of concentrate-based feeds to maintain cows. Decreasing stored feed requirements of beef cows is a topic that has received considerable attention in recent years; however, beef cattle producers in the southern United States still winter cows primarily with hay, plus a concentrate-based, high protein supplement.

Arkansas researchers continue to design complementary forage systems using the limit-grazing of winter-annual and tall fescue pasture infected with a non-toxic endophyte that was intended to supplement gestating and lactating beef cows and decrease hay requirements.

Impact

Cows limit-grazed on tall fescue pasture two days/week seemed to maintain body weight as well as cows supplemented on rye/ryegrass pasture. However, it was noted that tall fescue did not produce additional calf gain per cow as compared to those exposed to rye/ryegrass pasture. Because the use of limit-grazing perennial grasses produced cows that were as efficient as cows grazing rye/ryegrass pasture, the cows grazing perennial pasture should have a lower production cost.

Source of Funds

Hatch, state matching

Scope of Impact

Multi-state

KEY THEME: ANIMAL HEALTH

Situation

Concern about antibiotic-resistant pathogens has led to increased pressure to discontinue the use of antibiotics in animal feed as growth promotants. Studies investigating the presence of antibiotic-resistant bacteria in swine herds have been performed, and the Danish Integrated Antimicrobial Resistance Monitoring and Research Program has recently reported that discontinued use of antibiotics in swine herds has led to a decrease in antibiotic-resistant bacteria. In response to this pressure, there has been a demand for a replacement for antibiotics in feed. It is believed that probiotics, which are also known as direct-fed microbials, may provide an alternative for antibiotics in feed. Probiotics are bacteria that are normal inhabitants of the digestive tract and have been shown to increase growth and immune capabilities. One group, the lactic acid bacteria, has been studied widely and may offer an alternative to antibiotics.

Impact

University of Arkansas researchers have found that administration of direct-fed microbials such as lactobacilli and *Bacillus* strains may be a more direct approach to alter the intestinal microflora and decrease populations of bacteria having a negative impact on pig performance than antibiotic supplementation. Directly altering the microbial colonization of the intestinal tract could be a means to improve swine growth and efficiency, by reducing the level of specific pathogens while establishing a more diverse microbial population.

Source of Funds

Hatch, state matching

Scope of Impact

Multi-state research

Goal 2 – A safe and secure food and fiber system.

Food safety continues to be of utmost concern to most consumers with periodic well-publicized incidents maintaining a continual level of concern among consumers. Several product recalls in recent years have included Arkansas-based companies. The Food Safety Center within the Institute of Food Science and Engineering was created to focus multi-disciplinary research on food safety issues. The University of Arkansas has participated in a coordinated research effort with Kansas State and Iowa State as part of the Food Safety Consortium. Over the past decade, consortium scientists have addressed major issues of the pork, beef and poultry industries related to food safety. The University of Arkansas also is a charter member of the National Alliance for Food Safety. The university has created a number of internet-based, for-credit courses on food safety and quality for use by the food industry regionally and nationally. Certificates of proficiency are awarded by the University of Arkansas to post-baccalaureate students who complete a five-course sequence in food safety.

FY 2006 Expenditures for Goal 2: $4,466,429; Scientist FTE: 8.9

KEY THEME: FOOD SAFETY

Situation

Campylobacter is the one of the most commonly reported bacterial causes of human foodborne infections in the United States with an estimated 2.1 to 2.4 million cases reported annually. Epidemiological evidence indicates that a significant proportion of human infections result from the improper preparation of poultry products. Numerous studies have shown that a substantial number of retail chicken and turkey products are contaminated with *Campylobacter*. How *Campylobacter* is transferred between breeder flocks and progeny is unknown, but one potential mechanism of contamination which has received little attention is the possibility of pathogens introduced via the reproductive tract into fertile eggs.

Campylobacter was isolated from more than 90 percent of the pooled semen samples and female reproductive tracts obtained from turkeys on commercial production farms. Artificial insemination is used extensively for commercial turkey reproduction. Semen from multiple toms is pooled and then used to inseminate multiple hens, and therefore may be a critical source of *Campylobacter* contamination in turkeys. In an effort to reduce the incidence of *Campylobacter* contamination, procedures were tested to reduce *Campylobacter* in pooled turkey semen utilizing antibiotics and alternative semen-washing techniques or modified environments. Results indicate that the most effective treatment against *Campylobacter* was the treatment of pooled semen with a cocktail of antibiotics.

Impact

These results demonstrate that turkeys have a significant incidence of *Campylobacter* colonization in the reproductive tracts of males and females and in the semen of toms. These data further support the possibility that *Campylobacter* is vertically transferred in poultry. This is an important finding as commercial turkey production relies on artificial insemination and the random pooling of semen may be a source of *Campylobacter* contamination. The use of antibiotic combinations in pooled turkey semen may decrease *Campylobacter* contamination of offspring and reduce the potential for foodborne illness in humans.

Source of Funds

Hatch, state matching, USDA Special Grant

Scope of Impact

Multi-state research

KEY THEME: FOODBORNE PROTECTION

Situation

There is continuing concern among U.S. regulatory agencies with regard to the use of antibiotic drugs in food-producing animals. While some of these concerns are perhaps not well grounded, it is clear that continued restrictions on antibiotic drug use will be placed on farm production of poultry and food animals.

A team of Division of Agriculture scientists has continued to improve upon an existing concept of competitive exclusion, out-competing disease-causing organisms in the intestinal tract of birds. Using a novel laboratory screening technique, a combination of safe and beneficial organisms was selected. Investigations have shown that these organisms may markedly reduce *Salmonella* shedding in commercial poultry flocks and may effectively substitute for antibiotic therapy for treatment of some enteric diseases. Laboratory trials have indicated that these combinations were effective at reducing *Salmonella* contamination in chicken crops, the major source of carcass contamination at processing, prior to slaughter.

Impact

These technologies may provide new cost-effective opportunities for the replacement of certain antibiotics in commercial poultry and also for reducing the impact of poultry-borne causes of foodborne illness in humans.

Source of Funds

Hatch, state matching

Scope of Impact

Multi-state research

KEY THEME: FOOD SECURITY

Situation

University of Arkansas scientists have successfully developed a powerful genomic method for simultaneous identification of bacterial genes that are required for survival during infection in a host animal. As a demonstration, this method, called transposon signature profiling, was applied to a chicken infection model with *Salmonella enteritidis*.

Impact

This genomic method should find broad applications to many other bacterial species that are important for agriculture in the United States. We expect that whole genome scanning of a bacterium using this approach could be conducted in a matter of a few weeks to determine gene requirements during animal infection. We expect that identification of the factors in foodborne pathogens should provide insights on how they infect farm animals, persist in the tissues and eventually contaminate the animal food products.

Source of Funds

Hatch, state matching, USDA Special Grant

Scope of Impact

Multi-state

KEY THEME: FOODBORNE PROTECTION

Situation

Conventional microbial detection methods are time-consuming and expensive, and they cannot match rapid food processing and distribution systems. To minimize product recalls, clear international trade barriers due to microbial contamination, and to ensure food safety, the food industry needs rapid, sensitive and specific methods to detect pathogens in food products on line or even in real-time.

Impact

An immuno-electrochemical biosensor system coupled with immuno-magnetic separation has been developed for detection of *S. Typhimurium* in chicken carcass wash water. The method can enumerate Salmonella in two hours with a detection limit of 1x102 cell/ml. A bienzyme electrode was developed for the biosensor system to improve

sensitivity. A capillary bioseparator/bioreactor was also developed to enhance the binding efficacy of antibodies/antigens and the enzymatic reaction, and to design an automated instrument, which resulted in the detection limit of 10 CFU/ml for E. coli O157:H7. The results of this project will provide food processors with new technology to detect pathogens in foods in less than two hours with acceptable detection limits (10 cells/ml).

Source of Funds

Hatch, state matching

Scope of Impact

Multi-state Research

KEY THEME: FOOD QUALITY

Situation

Because of its production characteristics, rice is harvested at moisture contents (MCs) greater than those safe for long-term storage. Consequently, rice must be dried immediately after harvest to approximately 12 percent (w.b.) MC. During drying, kernels are typically exposed to elevated temperatures to produce rapid drying rates. After drying, rice is hulled to produce brown rice and then milled by removing the bran layers and germ, a severe frictional and/or abrasive process. The drying process is critical to the value of rice as fissures in the kernel endosperm can form during drying, which generally result in kernel failure during hull and bran removal. Broken kernels drastically reduce milling quality, which is quantified primarily by the mass percentage of non-processed, rough rice that remains as head rice (milled kernels three-fourths or more of the original kernel length) after complete milling and grading. This mass percentage is referred to as the head rice yield (HRY), which directly determines economic value of a rice lot.

A protocol was developed to measure glass transition temperatures (Tg) and mechanical properties of rice kernels. This work, along with knowledge gained through previous laboratory drying trials, has been synthesized into a hypothesis, referred to as the "glass transition hypothesis," which explains the cause of fissure formation in rice kernels during the drying process. The hypothesis states that if kernels are heated above their Tg, as is typical during commercial drying, they will transition from a "glassy" to a "rubbery" state. In the rubbery state, diffusion of moisture occurs at a much greater rate, causing drying and tempering to proceed much more rapidly than in the glassy state. As drying proceeds in the rubbery state, intrakernel MC gradients develop and the kernel ***periphery*** will transition back to the glassy state. If too great a volume of the kernel periphery transitions into the glassy region while the rubbery center core remains in the rubbery region, the tremendous differences in properties between the glassy and rubbery states will produce kernel stresses that cause fissuring.

Impact

The Tg hypothesis has been validated in laboratory experiments and in commercial driers. It is being used in many parts of the world in providing guidance to minimize milling quality reductions in current rice driers. It is also being used in the design of new driers, particularly high temperature driers. One such example is the application of high temperature, fluidized bed driers for drying rough rice.

Source of Funds

Hatch, state matching

Scope of Impact

Multi-state research

Goal 3 – A healthy, well-nourished population.

Arkansas ranks high nationally as a state with significant nutrition-related health problems linked to poor diet and obesity, especially among under-served populations. The strong social aspects of this problem make this a difficult issue to address, and Arkansas has made little progress in reducing diet-related health problems. The state legislature has directed that a portion of the state tobacco settlement funds be used to address tobacco-related health effects through a research institute created for that purpose. A portion of these funds will be utilized to conduct agricultural research that improves human diet and health.

FY 2006 Expenditures for Goal 3: $1,018,270; Scientist FTE: 3.2

KEY THEME: NUTRACEUTICALS

Situation

Dietary CLA is well recognized for its anti-carcinogenic, anti-atherogenic properties and ability to increase lean body mass and protect against immune induced body wasting disease, chronic inflammatory diseases and cancer. Dairy and beef products are regarded as the primary source of naturally occurring CLA at levels of 0.2-2 percent in milk-fat or beef-fat. However, the current human intake of CLA is proposed to be 10 times less than the 3g/day minimum value proposed to have optimal human health benefit, as extrapolated from animal studies. Obtaining this level of CLA from naturally occurring sources of beef and dairy products would increase the total fat and saturated fat intake and increase the negative health risks associated with dietary saturated animal fats.

Impact

A team of University of Arkansas scientists produced soy oil with 23 percent CLA by a simple conversion of natural soy oil linoleic acid to CLA. The oil was used in a frying operation to produce potato chips that contained 2.4 grams of CLA per 1-ounce serving, as compared with 0.1 gram CLA in a 3-ounce serving of steak and 0.06 gram per 8-ounce serving of milk. They are now exploring the possibility of larger scale production and use of CLA-rich soy oil.

Source of Funds

Hatch, state matching

Scope of Impact

Multi-state research

KEY THEME: HUMAN HEALTH

Situation

The majority of Americans use some form of dietary supplement. These products, which include a vast array of compounds including medicinal herbs and vitamin and mineral supplements, are taken to both enhance the nutrient content of the diet and for their pharmacological effects.

Evaluating dietary supplement safety requires laboratory research, human clinical trials and consumer education. All of these areas are being addressed by University of Arkansas research.

Impact

Addressing dietary and supplement safety will have a direct benefit to consumers and the dietary supplement industry. Consumers will be able to use dietary supplements as appropriate and safe adjuncts to medical care. As consumer confidence in these products increases, the dietary supplement industry will realize consistent and increased sales. Dietary supplement suppliers, many of whom are involved in the agricultural production of the products, will benefit from an increased and diversified market for their raw materials. Information regarding the safety and efficacy of the products can be used by governmental regulators to develop and enforce appropriate standards for the manufacture, sale and use of dietary supplements.

Source of Funds

Hatch, state matching

Scope of Impact

Multi-state research

Goal 4 – Greater harmony between agriculture and the environment.

As the "Natural State," Arkansas has abundant natural resources, and outdoor recreation is important to residents and tourists. Intensive crop and animal agriculture make it imperative that plant and animal production systems have minimal impact on our natural resources. In our row crop areas, soil quality and water availability remain critical issues. A number of our most productive rice-producing areas have been designated as critical water use areas, and salinity is becoming an increasingly common problem. Multi-disciplinary research and extension teams have been working with farmers to address problems over the short-term, but a coordinated long-term effort is needed. Research partnerships are emerging with neighboring states to address these issues in a coordinated fashion.

The size of the poultry, swine and cattle industries in Arkansas has made waste management a critical issue to ensure that our water resources are protected. Multi-disciplinary research and extension teams have addressed the phosphorus issue related to poultry litter. Long-term test sites have been established to address phosphorus runoff that will establish a research base for voluntary monitoring and mitigation in collaboration with the industry and producers. A new swine research facility has been constructed that can segment the waste stream for nutritional and environmental studies.

Although long-term comprehensive pesticide monitoring has shown little impact on our ground water resources, reduction of chemical inputs through pest management programs remains a high priority.

FY 2006 Expenditures for Goal 4: $9,606,337; Scientist FTE: 24.6

KEY THEME: AGRICULTURAL WASTE MANAGEMENT

Situation

Many producers in eastern Arkansas who typically grow soybeans in a soft red winter wheat-soybean double-crop system choose to burn wheat residue immediately after harvest as a means of seedbed preparation. Burning residue adds a considerable amount of carbon dioxide to the atmosphere and prevents the return of much needed carbon to the soil. Alternative wheat-residue management practices have the potential to be as, if not more, environmentally sound, economical, time-efficient and productive as the traditional practice of burning wheat residue prior to growing a soybean crop. Alternative wheat-residue management practices may also improve the quality of the soil resource in the Delta region of eastern Arkansas.

A multiple year research project has been completed at two locations in eastern Arkansas to evaluate the effect of wheat-residue management practices on soybean growth and development and soil quality.

Impact

The results of this study have shown that there are good alternatives in wheat-residue management practices that can produce similar soybean growth, development and yield compared to traditional, less environmentally sound wheat-residue management practices such as burning. The results of this study will also indicate whether alternative wheat-residue management practices can improve physical, chemical and/or biological aspects of soil

quality. With enough evidence, we anticipate promoting wheat-residue management alternatives to burning that at least maintain, if not improve, the economic and environmental impact of soybean production in eastern Arkansas.

Source of Funds

Hatch, state matching

Scope of Impact

Multi-state research and extension

KEY THEME: NATURAL RESOURCE MANAGEMENT

Situation

Repeated applications of poultry litter to livestock pastures have led to elevated levels of soil phosphorus and potential reductions in surface water quality. To maintain or increase the current levels of poultry production, alternative areas are needed for poultry litter application and disposal.

Scientists in the Arkansas Forest Resources Center have conducted a multiple year study to evaluate the effect of poultry litter application on surface runoff and soil water chemistry in a loblolly pine forest. Four tons/acre of poultry litter was applied to plots in a 26 year old loblolly pine plantation and to plots located in pastures. Surface runoff and soil water was monitored for one year in the plots receiving the poultry litter as well as plots that received no poultry litter application.

Impact

Loblolly pine stands may reduce the risks of litter application on water quality. The amounts of phosphorus and nitrogen in runoff following poultry litter application were lower in the loblolly pine forest than the pastures. The amount of runoff water generated by these forests was approximately 25 percent of the amount generated by the pastures. As a result there was a three- to four-fold reduction in the amount of phosphorus and nitrogen transported off site by runoff in the loblolly pine plantation compared to the pastures.

Source of Funds

Hatch, McIntire Stennis, state matching

Scope of Impact

Multi-state Research

KEY THEME: WATER QUALITY

Situation

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.

For several years Division of Agriculture scientists have been monitoring water on the Mississippi, Arkansas, White, St. Francis, Cache and L'Anguille rivers for pesticides used in rice production.

Impact

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. This is the sixth year that the study has not observed any trends toward increasing frequency or amounts of pesticides 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.

Source of Funds

Hatch, state matching

Scope of Impact

State specific

KEY THEME: FOREST RESOURCE MANAGEMENT

Situation

Most landowners who sell their timber with the aid of a forester have the wood volume estimated in either board feet or in cubic feet. Industrial facilities buy the resulting logs on a weight basis. Conversion factors such as pounds per cubic foot or tons per 1000 board feet are used to estimate wood weight from wood volume estimates. Wood volume does not change with moisture content but wood weight does. If wood moisture content in the trees were to change with the season of the year, then wood weight of the resulting logs would change also. Therefore, the monetary value of the logs would change with the season.

A study was initiated in the fall of 2003 and extended through summer of 2006. Eight loblolly pine pulpwood stands were visited four times, once during each season (fall, winter, spring and summer). At each stand, during each visit,

six trees were cut and delimbed. The weight as well as various diameters and length of each tree-length log were recorded. Bulk density (green weight per cubic foot) values were calculated for each log.

Impact

If landowners were to sell their timber by weight at the mill, it would be to their advantage to harvest in the spring. The logs would be the heaviest for the year and some mills offer a premium for stands that can be harvested during wet conditions. If the stand cannot be harvested in the winter or spring because of wet conditions, it would be best to harvest in the fall before the wet conditions when the tree may be heavier than in the summer. Stands that can be harvested year-round may receive a premium if harvested in the winter over stands that can be harvested only in dry weather. This premium may be negated by the trees being the lightest at that time.

Source of Funds

Hatch, McIntire Stennis, state matching

Scope of Impact

Multi-state research

Goal 5 – Enhanced economic opportunity and quality of life for Americans.

Arkansas remains a rural state with a low average annual income nationally. Although several areas of the state are undergoing dramatic growth, many rural areas are dealing with declining populations, limited job opportunities and declining community services such as health care. The aging population creates particular problems in rural areas where access to quality health care and other services is limited. Multi-disciplinary research and extension programs have addressed many of these issues and have provided information to local communities and to policy makers as they work to address some of these endemic, complex problems.

FY 2006 Expenditures for Goal 5: $2,005,686; Scientist FTE: 9.2

KEY THEME: AGRICULTURAL FINANCIAL MANAGEMENT

Situation

The Office of Management and Budget's 2005 Passback for the USDA Farm Service Agency (FSA) requested that an independent performance-focused review of farm loan programs be completed. Government programs typically need periodic assessments to indicate whether they are meeting their goals. The study has three major objectives: (1) identify groups being served by FSA direct farm loan programs, (2) examine the length of time borrowers remain in the programs and the proportion of borrowers who exit or "graduate" from the programs, and (3) measure and identify ways of reducing loan subsidy rates. The first objective required examining characteristics and creditworthiness of recent borrowers to determine if they are consistent with the creditworthiness of groups targeted by the program mission. The second objective measured duration of loans and how many borrowers exited the program and graduated to commercial sources of credit. The third objective emphasized reducing loan restructuring and default costs.

Impact

The analysis estimated the number of U.S. farmers who may be eligible for FSA direct loans when farm size, credit needs, years of farming experience and occupation are taken into account. FSA direct farm loan borrowers are estimated to have weaker financial characteristics than non-FSA borrowers, implying FSA is serving individuals likely to be denied credit elsewhere. The results also indicated that a majority of borrowers did exit FSA farm loan programs, but only slightly less than half remained in farming. Statistical models indicated that financial strength at loan origination resulted in greater likelihood of graduation to farming without direct loans. Farmers found to be greater risks of having their loans end in a loss—and hence increasing program costs—included those with higher relative indebtedness, less repayment capacity, less liquidity, crop farms and larger farms. The likelihood of a loan loss was negatively related to borrowers already having or receiving a real estate loan.

The study provides an independent assessment of the effectiveness of FSA direct farm loan programs. The study should guide management initiatives for FSA direct farm loan programs and budget requests in the future. It also provides information to legislators as they weigh various policy initiatives.

Source of Funds

Hatch, state matching, USDA Special Grant

Scope of Impact

Multi-state research

KEY THEME: AGRICULTURAL FINANCIAL MANAGEMENT

Situation

Nearly all broilers produced in the United States are grown under contract arrangement between broiler producers and integrated poultry companies. Extensive research addressing the pros and cons of the contracting arrangements has been pursued. Though some of the historic research has dealt with grower returns, much of the recent research has focused on specific allocation of input and output price risks and management risk between growers and integrators.

Impact

Results indicate that contract broiler production continues to be competitive with other farming operations, especially compared to options available for small family farms. The lower volatility of poultry production compared to other options also makes it an attractive alternative. These results can be used for insight into the approximate investment requirements and expected annual costs and returns of the business. Lending institutions can use these results in evaluation of loan applications for enterprise establishment or expansion. Broiler producers and integrated poultry companies can also utilize these results to compare costs and returns with past years and evaluate both the future state of the existing industry and opportunities for expansion.

Source of Funds

Hatch, state matching

Scope of Impact

Multi-state research

KEY THEME:
CHILDREN, YOUTH, AND FAMILIES AT RISK

Situation

It may be that no demographic trend in the United States has garnered as much attention from family researchers as the rise in post-WWII divorce rates and the increased prevalence of remarriages and blended families. Although divorce rates in the United States have recently remained steady, these rates are now about three times higher than in 1960. Accompanying this rise in divorce rates has been an increase in the formation of remarried and blended families and an increased likelihood that parents will have both children and stepchildren. Increasingly, researchers have been considering these demographic trends in the context of an aging population. This interest is likely attributable to the rapid aging of the population that will take place when those in the so called baby-boom generation reach retirement age, and the social policy challenges associated with the aging of the population.

One important aspect of relationships between generations is monetary transfers from households to their adult non-coresidential children and stepchildren. Understanding these transfers is important because they may be related to the financial well-being of adult children and stepchildren, may be factors in older adults' decisions to continue working or to retire, may have implications for the effectiveness of public policy, and may be related to the likelihood that older adults will receive monetary or caregiving assistance from their children and stepchildren when they experience age related declines in their economic well-being or health. With only a few exceptions, however, researchers have not considered the role of family structure in intergenerational exchange relationships between parents and their adult children.

University of Arkansas scientists have undertaken research to describe monetary transfers from households to adult children and stepchildren, as well as to identify important variables that predicted whether or not households had provided at least one transfer to one of their children or stepchildren. Using data from 11,056 households who participated in the nationally representative Health and Retirement Study, this study found that monetary gifts to stepchildren, although less frequent and smaller than gifts to children, were substantial, especially for stepchildren who had at least one kinship relationship to the household. Importantly, this study found that more than one in four households with stepchildren gave at least one substantive monetary gift to one of their stepchildren. One average, these gifts were over $3,000. Monetary transfers were positively related to maternal kinship ties to households, negatively related to the number of children and stepchildren of households, and less likely to be made by retired as compared to working parents.

Impact

The debate about the appropriate roles of family members in providing assistance to one another is growing. Some have suggested that increased rates of divorce and remarriage have weakened families, as well as the intergenerational kinship bonds between family members. While it is not possible to identify and discuss all relevant factors related to monetary transfers between generations, University of Arkansas researchers found that the economic relationships between parents and their adult children remained strong, even after parents were divorced and remarried. This is consistent with assertions that, although kinship is an important factor in how people construct intergenerational obligations, other factors are likely more important predictors of intergenerational transfers. For example, it may be that strong relationships between stepparents and stepchildren are based on sentimental instead of kinship relations. As competition for public resources increases, it is likely

that family members will be increasingly relied on to provide financial and other kinds of assistance that people need. This study will provide information about how policy changes are likely to impact families and intergenerational relationships.

Source of Funds

Hatch, state matching

Scope of Impact

Multi-state research

Attachments

Stakeholder Input Process

Our stakeholder input process has not changed from that described in our state plan of work. We continue to use formal and informal means to seek input from all stakeholder groups. The Division of Agriculture maintains an advisory committee of stakeholders that meets regularly to provide a forum for discussion and input on issues of importance to the stakeholder community. For farm-related stakeholders, public comments are solicited at county meetings and from farm-related associations. Stakeholder-developed materials, such as the Farm Bureau policy development process are used to identify research needs that may not be adequately addressed. Each year research and extension scientists meet with administration to discuss producer needs solicited at meetings throughout the year. Identified needs are integrated into the 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.

Several priority-setting activities are scheduled each year with specific commodity or stakeholder groups to seek input on the research planning process. Stakeholder representatives serve in 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 are 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.

Program Review Process

There have been no changes in our program review process since submission of our five-year plan of work.

Success of Multi and Joint Activities

The Arkansas Agricultural Experiment Station maintains a number of formal and informal mechanisms to ensure multi-state, multi-institutional and multidisciplinary collaborations as well as joint research and extension efforts.

Numerous multi-state collaborations take place through the regional project system. In addition, Arkansas is part of a number of multi-state consortia and direct research collaborations. For example, Arkansas is a member of the multi-state animal waste consortium that is addressing animal waste issues and environmental quality on a national basis. Arkansas has been part of the Food Safety Consortium along with Iowa State and Kansas State for over a decade. This research consortium has had a national impact on food safety issues.

All rice-producing states collaboratively share rice germplasm and conduct regional evaluations through the rice regional nursery. A formal agreement has been developed that facilitates germplasm exchange yet protects the public investment in these breeding lines. This system has ensured the rapid use of improved rice genetics throughout the U.S.

Numerous other multi-state and multi-institutional research collaborations exist that address regional or common problems. Many of these collaborations have been identified elsewhere in this report.

Multidisciplinary activities have been facilitated through the development of research institutes and centers at the University of Arkansas. These include the Poultry Center of Excellence, which includes disciplines such as economics and engineering in addition to poultry science, and the Institute of Food Science and Engineering, which brings together food scientists, engineers, microbiologists and nutritionists to address common problems faced by the food industry. In row crops research, joint research/extension production management teams meet regularly to jointly plan research activities. Often these activities include stakeholder input to ensure program relevance. Single-issue

meetings are held as needed to address emerging issues and to craft a research plan to promptly address the problem. These activities also serve to ensure close collaboration with extension counterparts.

Integrated Research and Extension Activities

The Arkansas Agricultural Experiment Station ensures integration of research and extension activities through the use of jointly appointed positions and numerous joint program planning activities. Joint positions are evaluated annually and changed as needed to ensure the appropriate balance between research and extension activities. Examples of progress for each of the planned program activities are provided that accompany the program activities listed on the included form CSREES- REPT.

For plant and animal production (includes plant and animal production, plant and animal genetic improvement, plant protection and animal health), joint program planning occurs annually by commodity in addition to specific program planning activities that address specific problems or production systems. In most cases, department heads also serve as the extension section leader to ensure program integration. In other cases, the department head and section leader work closely together to ensure program coordination.

Most institutes and centers include both research and extension faculty who work together in multidisciplinary teams. For example, product development and processing is addressed through the Institute of Food Science and Engineering. Through the Institute, research and extension scientists collaboratively address both large and small food industry firms.

Food safety is addressed through the Food Safety research center within the Institute of Food Science and Engineering, Poultry Center of Excellence and the Food Safety Consortium, as well as through direct collaborations with the food industry. Many issues are addressed by joint research and extension teams in a collaborative effort. Extension food safety scientists are co-located with AES and USDA scientists in the Poultry Center of Excellence.

Natural resource conservation is addressed by joint extension and research teams in collaboration with state government. Joint programs exist dealing with animal waste, water quality, soil quality and other issues. A joint research-extension task force has been formed to address environmental issues and to serve as a resource for state agencies.

U.S. Department of Agriculture
Cooperative State Research, Education, and Extension Service
Supplement to the Annual Report of Accomplishments and Results
Actual Expenditures of Federal Funding for Multistate Extension and Integrated Activities
FINAL Report

Fiscal Year: 2005-2006
Select One: □ **Interim** □**X Final**

Institution: **University of Arkansas Division of Agriculture**
State: **Arkansas**

State: Arkansas	**Integrated Activities (Hatch)**	**Multistate Extension Activities (Smith-Lever)**	**Integrated Activities (Smith-Lever)**
Established Target %	25%	2%	25%
This FY Allocation (from 1088)	$3,192,911.00	$5,640,935.00	$5,640,935.00
This FY Target Amount	$798,228	$112,819	$1,410,234.00
Title of Planned Program Activity			
21st Century Families Conference		$8,559.46	
4-H Cooperative Curriculum System		$827.72	
4-H Technology Conference		$619.54	
4-H Volunteer Core Competencies		$902.96	
Agricultural Aviation PAASS Program		$451.58	
AR-MO-OK Dairy Tour/Meeting		$75.25	
Beef Industry Tour		$619.54	
Delta HOPE (Healthy Options for People through Extension		$4,849.75	
Delta Region Farm Management and Agricultural Policy Working Group		$978.21	
DHIA		$253.75	
Disease Risk Management		$75.25	
EPA - Drift Reduction Technology		$225.74	
Four-State Heartland Community Development Conference		$37.62	
HorseQuest.info		$300.99	
Horticulture Industry Show		$582.75	
Kansas City 4-H Global Conference		$628.32	
KOMA Beef Cattle Conference		$75.25	
MALTA Regional Products Budgets		$338.61	
Mid South Dairy Show		$187.28	
Mid South Fair 4-H Day		$972.37	
Mid South Greenhouse Conference		$150.49	
Mid-America Grassland Evaluation Contest		$2,749.06	
National & Southern Region 4-H Program Leaders Committee		$263.37	
National & Southern Region FCS Program Leaders Committee		$564.35	
National 4-H Conference		$554.74	
National 4-H Congress		$656.33	

State: Arkansas	Integrated Activities (Hatch)	Multistate Extension Activities (Smith-Lever)	Integrated Activities (Smith-Lever)
National 4-H Dairy Conference		$37.62	
National 4-H Forestry Contest		$205.61	
National 4-H Shooting Sports Instructor Training		$2,035.88	
National Network of Forest Practitioners		$752.47	
NatureMapping		$1,124.53	
Pesticide Applicator Training		$2,604.41	
Plant Health Clinic		$4,253.61	
Risk Management Training for Absentee Landowners		$376.24	
SERA - 19 Health		$300.99	
SERA-IEG for Dairy		$112.87	
Site-Specific Nematode Management		$1,407.13	
So. Region 4-H Volunteer Leader Forum		$787.59	
So. Region Farm Management Marketing and Policy Committee Meetings		$188.12	
So. Region Program Leadership Network (PLN)		$1,693.06	
So. Region Watershed Resource Management		$23,986.51	
Society of American Foresters Ouachita Chapter Exec. Committee		$526.73	
Southern Dairy - Filth Fly IPM Program		$6,596.67	
Southern Dairy Conference		$150.49	
Southern Region 4-H Horse Show		$469.04	
Southern Region American Society for Horticulture Science		$338.61	
Southern Region ANR Meeting		$225.74	
Southern Region Cooperative Extension Curriculum Project		$564.35	
Southern Region Extension Forester/Master Tree Farmer		$188.12	
Southern Region Fire Ant Management		$9,502.11	
Southern Region Plan Nutrient Management Conference		$150.49	
Soybean Rust Management		$7,574.93	
Steer Feedout Program		$864.51	
Sustainable Ag for Southern Region		$9,531.44	
Tri-State Community Development Initiative		$225.74	
Tri-State Soybean Forum		$748.30	
Urban Forestry Council		$675.55	
Wildlife Enterprises		$8,119.26	
Agricultrual Marketing			$44,783.29
Agronomic Crops			$183,110.00
Alternative Agricultural Enterprises			$16,263.23
Forest Management			$18,055.44
Horticulture Production & Management			$95,342.48
Livestock & Forages			$119,480.95
Poultry Production & Management			$15,988.42
Safe Food - From Farm to Table			$21,194.86

State: Arkansas	Integrated Activities (Hatch)	Multistate Extension Activities (Smith-Lever)	Integrated Activities (Smith-Lever)
Improving Health			$177,144.32
Animal Waste Management			$8,214.70
Cotton Pest Management			$98,546.71
Maintaining Ag Sustainability			$54,689.04
Pesticide Applicator Training			$6,803.06
Solid Waste Management			$3,215.31
Developing Youth			$308,263.10
Economic Community Development & Public Policy Information			$71,930.36
Imported Fire Ant Education			$5,001.57
Leadership & Volunteer Development			$93,146.87
Managing Resources in Limited Resource Families			$3,386.42
Managing Resources in Limited Resource Families			$15,181.77
Strengthening Families			$50,492.10
Plant and Animal Production	$205,767.00		
Plant and Animal Genetic Improvement	$95,472.00		
Plant Protection	$183,961.00		
Animal Health	$34,709.00		
Agricultural Economics	$97,811.00		
Product Development and Processing	$41,510.00		
Food Safety	$58,928.00		
Human Nutrition	$12,490.00		
Natural Resource Conservation	$57,587.00		
Quality of Life and Community Development	$9,993.00		
Total	$798,228.00	$112,819.00	$1,410,234.00
Carryover			

Certification: I certify to the best of my knowledge and belief that this report is correct and complete and that all outlays represented here accurately reflect allowable expenditures of Federal funds only in satisfying AREERA requirements.

R. A. Rosser

Director

5/11/07
Date

C. Michael French

Director

5/24/07
Date

NOTE: Narrative summaries of Smith-Lever Multistate Programs, Hatch, & Smith-Lever Integrated Activites are included at the end of the Extension and Experiment Station program reports.