FY 2005 Annual Report of Accomplishments and Results

Arkansas Division of Agriculture

University of Arkansas System

April 2006

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University of Arkansas Division of Agriculture

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EXECUTIVE SUMMARY

The University of Arkansas Division of Agriculture is dedicated to improving the lives of Arkansans by generating knowledge through research and putting the knowledge to use through applied education. The Division is a statewide campus, with faculty based on University campuses, at Research and Extension Centers and in county Cooperative Extension offices in every Arkansas county.

The University of Arkansas Division of Agriculture serves over 2.5 million stakeholders through research and extension education. During 2004-2005, over 650 Arkansans participated in strategic planning groups. Stakeholders voiced their concerns, opinions and perspectives related to the challenges and issues Arkansans encounter every day, including maintaining a competitive edge in agriculture, maintaining viable communities, providing opportunities for rural and urban youth, and addressing childhood obesity and health problems. The stakeholders participating in our 2004-2005 strategic planning process represented the geographic, racial and cultural diversity of our state, including local officials, legislators, agricultural producers, educators, community leaders, partner agency representatives, interested citizens and heath professionals. Division of Agriculture faculty also participated in the planning process, providing support and sharing insight into community and statewide issues.

As a result of this strategic planning process, five goal areas were identified for the Division of Agriculture to focus on from 2005-2010. This provided critical input for the development of the CSREES 2007-2011 Plan of Work, prepared in 2005-2006 by the Division.

The five goal areas produced as a result of the stakeholder input and strategic planning process include:

Goal 1: Making Arkansas Agriculture Competitive in a Global Economy
- Trade Policy
- Technology
- Public Awareness of Impacts of Agriculture
- Sustainable Agricultural Production Systems

Goal 2: The Safety and Security of Arkansas Food and Fiber
- Production, Post-Harvest Storage, and Handling
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EXECUTIVE SUMMARY

Agriculture is big business in Arkansas. Arkansas leads the nation in the percentage of agricultural income that contributes directly to the state's economy. The economic impact of agriculture in Arkansas is $13.6 billion, or about 22 percent of the Gross State Product (GSP), compared to an average of 6.3 percent in the Southeast region and 4.2 percent nationwide. One in five Arkansans depends on agriculture for their livelihood. Agriculture in Arkansas accounts for 327,146 jobs, or an annual payroll of $8.7 billion dollars.

The U.S. Department of Agricultural Statistics Service reported that in 2005 nearly 47,000 farms in Arkansas occupied 14.4 million acres. More than half of the state is forestland, which supports industries that are included as part of the agricultural sector. Agriculture provides the economic foundation for many communities and is a vital part of the state's economy. With its 1.643 million acres of rice, 220,000 acres of wheat, 1.050 million acres of cotton and 3.030 million acres of soybeans harvested in 2005, Arkansas produces a significant portion of field-grown food and fiber in the United States. Arkansas is the largest rice-producing state in the U.S., averaging 1.5 million acres per year. The Rice Research Verification Program yields averaged 171 bushels per acre, resulting in an average net return of $178 per acre. Arkansas rice growers produced the second highest state average yield of 148 bushels per acre in 2005. The 2005 Rice Verification Program yields averaged 170 bushels per acre, approximately 22 bushels per acre more than the state average. Farmers used the U of A Soil Testing Lab and Extension's recommendations for fertilizer applications on 69 percent of the rice acreage.

Arkansas ranked second in the United States for cotton production. Arkansas harvested a record 2.19 million bales of cotton. The UA Division of Agriculture cotton program includes an integrated approach that includes variety selection, fertility and soil management, Integrated Pest Management (IPM), harvest management and reducing production expenses. Shifts in pest management technologies and labor shortages have forced a change in conservation tillage practices. The Cotton Verification Program (CRVP) conducted on nine fields continues to make a major impact for cotton growers. Arkansas state yields during the last five years have exceeded those of the other mid-south states (Louisiana, Mississippi, Missouri and Tennessee), yielding 1,011 pounds per acre in 2005.

Soybean yields were impacted largely by weather, but pest management, irrigation techniques and fertility were huge contributors. Arkansas farmers produced an average yield of 34 bushels per acre in 2005. Only 65 percent of the soybean acreage was irrigated, and 92 percent of the acreage was produced using transgenic soybeans. The 2005 Soybean Research Verification Program consisted of 18 commercial soybean fields. A number of production practices (varieties, fertilizer applications, reduced tillage, weed control, irrigation, etc.) were evaluated based on Extension's recommendations. The average yield per acre for these fields was 44.5 bushels, which is 10.5 bushels per acre higher than the state yield.

Agricultural chemicals, pesticides and plant nutrients comprise a major portion of the dollars spent by producers of all Arkansas crops. Integrated pest management is an important aspect of agriculture in Arkansas. Pest management is an essential part of cotton, soybean, rice and livestock production in the state in helping producers farm more efficiently and reduce reliance on pesticides. Soybean IPM programs had approximately 45 percent of Arkansas soybean farmers in attendance. Agricultural production outside of the traditional row crop systems of the Delta in Arkansas is very diverse. These agricultural systems have unique and complex pest problems. Pest problems range from several species of flies that impact dairy production in Arkansas to grape producers dealing with grape berry moths, grape scale and grape root borer. Experiment station researchers and Extension specialists and agents work together to address these complex and environmentally significant issues.

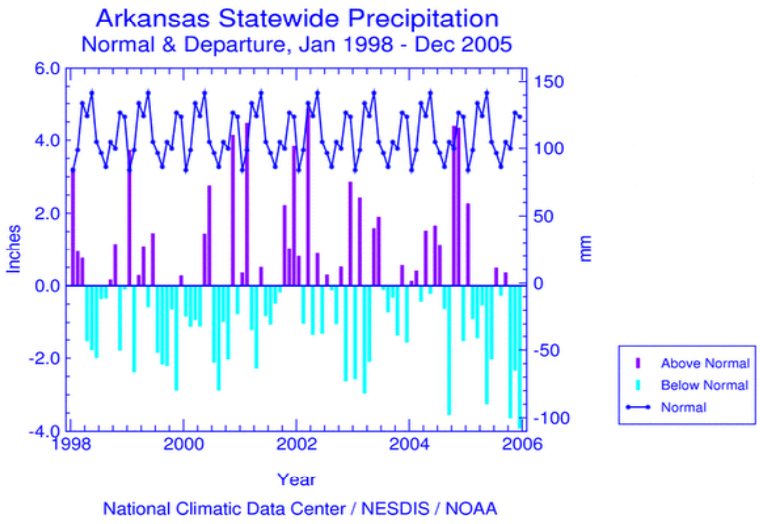
Arkansas agricultural producers play a key role in supplying food for the state, nation and world. The largest segment of livestock produced in the state is poultry and eggs, contributing over $674 million to the economy. Cattle production is the most widespread segment of livestock enterprises and contributes $139 million. The total

impact of agriculture on the gross state product is over $13 billion and accounts for 15 percent of the state's total payroll. A single disease outbreak could drastically affect the state's 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. 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 – Experiment Station and Extension through continued collaborative research and consumer education.

The forest products industry in Arkansas contributes millions of dollars annually in salaries to employees in value-added dollars and 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. The forestry best management practice program is a vital program to protect and conserve water quality.

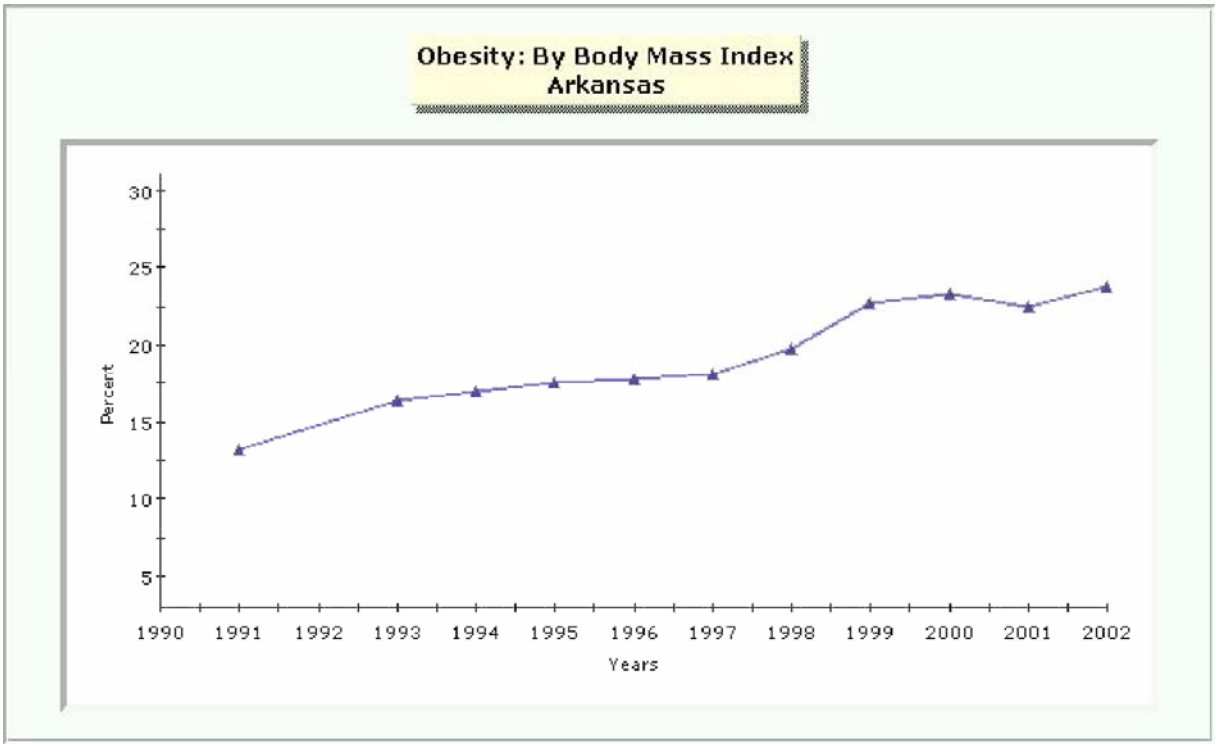
Arkansas agricultural producers faced a difficult year in 2005 as the state incurred a major drought, severe hurricane damage and a significant rise in production costs associated with the natural disasters and higher energy prices. Division of Agriculture economists documented at least $980 million in losses for Arkansas agriculture due to these causes. 2005 was recorded as the driest year in the 111-year record (maintained by the National Climatic Data Center, U.S. Department of Commerce) for southwestern Arkansas, southeastern Oklahoma, and northeastern Texas. The USDA and governor declared a drought disaster in Arkansas.

Statewide Precipitation Ranks for Arkansas , 2005	
Period	**Rank**
Dec	1st driest
Nov-Dec	2nd driest
Oct-Dec	1st driest
Sep-Dec	2nd driest
Aug-Dec	3rd driest
Jul-Dec	4th driest
Jun-Dec	3rd driest
May-Dec	1st driest
Apr-Dec	1st driest
Mar-Dec	1st driest
Feb-Dec	1st driest
Jan-Dec	2nd driest



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.

According to the U.S. Department of Health and Human Services, unhealthy eating habits, coupled with physical inactivity, is now the nation's second leading cause of death. Arkansas has one of the highest obesity rates in the United States, with 61 percent of adults being either overweight or obese (see chart and graph below). The adult diabetes rate in Arkansas is 7.9 percent – one of the highest rates in the U.S. Childhood obesity in Arkansas has likewise reached epidemic proportions. Body Mass Index (BMI) data was collected on more than 90 percent of Arkansas school children in grades K-12. Data revealed a much higher percentage of children than expected are overweight or at-risk of becoming overweight, or clinically obese. Arkansas ranks sixth in the percentage of adults who do not participate in any physical activity. Almost 79 percent of adult Arkansans are at risk for health problems related to a lack of physical activity. Through research and consumer education on nutrition and the preparation and selection of more nutritious foods, Division of Agriculture faculty and staff enabled Arkansans to make heath-promoting choices. Extension faculty delivered food and nutrition programs in all 75 Arkansas counties in 2004-2005. Through research and consumer education on nutrition, the preparation and selection of more nutritious foods, healthy life style choices and food resource management, UA Division of Agriculture faculty and staff enable Arkansans to improve their overall health and well-being.



Weight classifications based on BMI (Arkansas Youth)

	Neither overweight nor obese (bmi le 24.9)	OVERWEIGHT (bmi 25.0 - 29.9)	OBESE (bmi 30.0 - 99.8)
% CI n	**37.5** (35.7-39.3) 1491	**36.4** (34.6-38.2) 1430	**26.1** (24.4-27.8) 1015

Improving the economic well-being and quality of life for Arkansans and Arkansas communities is increasingly challenging in today's world. Issues such as globalization, changes in information technologies, government regulatory and fiscal policy, demographic shifts, threats of terrorism and critical social needs all impact our society. According to the 2000 Census, Arkansas ranks seventh in the nation for the highest percent of persons living in poverty. Arkansas continued to have a higher rate of poverty in 2004 (15 percent) as compared with the U.S. as a whole (12.7 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.

Cooperative Extension faculty and staff work collaboratively with local stakeholders to empower individuals, families, and communities, through research-based information and education, to address the economic and social challenges encountered by communities today. Specific programs include youth and adult leadership development, community and economic development for current and evolving leaders; family resource management; workforce preparation programs for youth; youth technology programs; programs which address financial planning for the long term; and programs which assist parents in improving their parenting skills.

The Division of Agriculture is one of 14 units of the University of Arkansas System. The Division includes the Arkansas Agricultural Experiment Station (AAES) and the Cooperative Extension Service (CES). The Division has statewide faculty and staff based on three University campuses, at five regional Research and Extension Centers, seven Branch Stations and other locations. An Extension office is located in each of the 75 counties in cooperation with county governments.

The 2004-2005 CSREES Report of Accomplishments provides a comprehensive report of the University of Arkansas' annual accomplishments, with program information organized under the five national goals for the Cooperative Extension Service and the Agricultural Experiment Stations.

Respectfully submitted,

Milo J. Shult
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FY 2005 Annual Report of Accomplishments and Results

Arkansas Division of Agriculture
University of Arkansas System

April 2006

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 2004-2005 Extension faculty made 2,364,921 educational contacts, which represents 987,614 4-H and youth development contacts, 514,123 contacts for commercial agricultural programs, 189,855 non-commercial agriculture and natural resource program contacts, 147,340 community development contacts, and 523,515 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.

Contact Person:

Dr. Ivory W. Lyles
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2301 S. University Avenue
Little Rock, Arkansas 72203

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

Agriculture is a very large and diverse industry in Arkansas. The industry provides 20 percent of the jobs with the added value of $13.6 billion. Arkansas agriculture contributes approximately 12 percent of the state's gross product. The University of Arkansas Cooperative Extension Service conducts numerous educational programs to improve the efficiency of production for a very diverse agriculture industry.

Educational programs to better position Arkansas row crop growers (rice, cotton, soybeans, wheat, corn and grain sorghum) in a world economy are a major effort of the Cooperative Extension Service. Arkansas rice growers produced the second highest state average yield of 148 bushels per acre in 2005. Areas of educational emphasis included rice variety selection, groundwater management and conservation, nutrient management and controlling of rice diseases. These excellent yields were attributed to improved varieties and improved management practices, even during extreme drought conditions. The Rice Verification Program yields averaged 170 bushels per acre, approximately 22 bushels per acre more than the state average. Farmers used the U of A Soil Testing Lab and Extension's recommendations for fertilizer recommendations on 69 percent of the rice acreage.

Arkansas ranked second in the United States for cotton production. Arkansas harvested a record 2.19 million bales of cotton. Extension's cotton program includes an integrated approach that includes variety selection, fertility and soil management, IPM, harvest management and reducing production expenses. Shifts in pest management technologies and labor shortages have forced a change in conservation tillage practices. The Cotton Verification Program (CRVP) conducted on nine fields continues to make a major impact for cotton growers. Arkansas state yields during the last five years have exceeded those of the other mid-south states (Louisiana, Mississippi, Missouri and Tennessee), yielding 1,011 pounds per acre in 2005.

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Feed grain crops (wheat, corn and grain sorghum) were planted on 457,000 acres in 2005, which is down primarily because of poor wheat planting conditions. Arkansas wheat farmers harvested 165,000 acres of wheat which averaged 52 bushels per acre, which is 0.10 bushels per acre greater than the national average. The Wheat Research Verification Program included seven fields in 2005 and, through improved management, improved the yield to 70 bushels per acre. Arkansas farmers harvested 230,000 acres of corn in 2005. Grain sorghum acreage was up.

Livestock production in Arkansas consists primarily of beef cattle, dairy cattle, swine and horse production. The Arkansas Beef Improvement Program continues to demonstrate cost effective management practices. The program focuses on the beef cattle enterprise using an integrated resource management team approach to solving problems. Some of the accomplishments of the program included reducing specified cost per animal unit by 32 percent, reducing herd break-even per pound of beef sold by 29 percent from year two to year three of the program, and increasing the average 205-day adjusted weaning weight by 12 percent from year one to year four. County workshops, programs and popular press articles are methods used to transfer ABIP knowledge gained to other producers.

Extension dairy programs helped dairy producers and related industries identify areas to enhance production efficiency and compete in an increasingly competitive national milk market. The number of dairies decreased but herds increased in size. Udder singeing, improving cow comfort and the Dairy Herd Improvement Program are just a few of the educational topics addressed by Extension.

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 4,600 horse owners last year.

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 Bermuda grass stand demonstrations and forage youth programs.

Horticulture (commercial and recreational) not only contributes to the state's economy but also improves the quality of lives for many Arkansans. A broad selection of fresh market vegetable crops (tomatoes, melons, squash, peppers, etc.) continues to increase in acreage. In addition, ornamental horticulture, including turf grass related businesses, nursery retail and landscape services, is one of the fastest growing segments of agriculture. Extension activities are centered on marketing, production systems, maintaining quality, cultivars selection, and retail business (nursery, greenhouse, landscape, etc.), enhancing current businesses and starting new businesses.

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, and Impact of Water Quality in Poultry Production, among others.

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

Total FTEs
120.53

Total Budgetary Amount
$7,156,810.76

KEY THEME: AGRICULTURAL COMPETITIVENESS

Program Response: Agricultural Economics and Agribusiness (AEAB)

Contact: Dr. Mark Cochran, Department Head, Agricultural Economics and Agribusiness, mcochran@uark.edu, 479-575-2258

Situation

Arkansas agricultural producers faced a difficult year in 2005 as the state incurred a major drought, severe hurricane damage and a significant rise in production costs associated with the natural disasters and higher energy prices. AEAB documented at least $980 million in 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 is 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 website.

Farm Management and Marketing Newsletter – The 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 presentations 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, mangement and resource development problems of Arkansas farm firm systems and supporting infrastructure with specific emphasis 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 2005, Extension policy specialists were involved in providing agricultural policy and outlook information to clientele through the 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 page 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 and information to producer consultants (county agents, University faculty and government agency personnel) 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 businesses. The brochure serves as a buyers' guide for the industry and was a

collaborative effort between the University, the 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

92,319 Number of total contacts reported related to management, marketing and/or farm policy.

220 Number of educational meetings held in which farm and risk management information was presented.

1,045 Number of participants attending educational meetings and reciving educational materials related to farm and risk management.

430 Number of educational materials produced.

Outcome Indicators

163 Number of producers that implemented changes in management practices as a result of farm management educational efforts.

642 Number of producers that implemented changes in management practices as a result of farm policy educational efforts.

78 Number of producers that implemented changes in management practices as a result of commodity marketing 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 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 2005. 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 drought of 2005 adversely affected some crops. Growers using irrigation had successful and consistent production.

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 industry. Southern peas, green beans, greens and spinach were the major processing crops in 2005. The number and quality of farmers' markets in the state continued to expand in 2005 with 47 markets being identified. The establishment of a statewide farmers' market organization will allow the markets and growers better accesss to resources and information.

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

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.

Increasing 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 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:

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
6	Advanced training
145	Annual training
34	Civic programs
2	Demonstrations
106	Educational meetings
27	Educational workshops
67	Farm visits and site visits
20	Flower and garden shows
2	Garden tours

Outcome Indicators

381	Number of participants that adopted new production technologies.
160	Number of participants that reduced their chemical and fertilizer inputs.
4	Number of participants that reduced their chemical and fertilizer management inputs.

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: Dr. William C. "Bill" Robertson, Extension Agronomist - Cotton, 501-671-2186, wrobertson@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 2005:

Demonstrations:

9 Cotton Research Verification
18 Variety
4 Plant growth regulators
2 In-furrow/seed treatment protectants
1 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
7 Fertility
8 Harvest aid
1 Subsurface drip irrigation

Outcome Indicators

- Arkansas cotton growers harvested a record 2.19 million bales of cotton from 1.04 million harvested acres. Our statewide yield of 1,011 pounds of lint per acre is second only to that of last year in which 1,114 pounds of lint per acre was produced. Arkansas leads the Mid-South in lint production per acre and trails only to California and Arizona when comparing one- and three-year yield averages.

- Arkansas ranked second in bales of cotton produced nationwide in 2005, producing 9.23 percent of the total U.S. crop from only 7.59 percent of the U.S. harvested acres. The Arkansas cotton and cottonseed crop is generally 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% to 25.2% 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% to 53.5% during the same time frame. 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 exceeded that of all other Mid-South states including Mississippi, Louisiana, Tennessee, and Missouri (81.3% vs. 78.5%, 78.4%, 74.8%, and 71.8%, respectively).

- The Cotton Research Verification Program (CRVP), developed in Arkansas in 1980, continues to be a well-accepted program by all clientele. Nine fields were enrolled in the program in 2005. 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 $0.39 per pound in Lee County to $0.68 per pound in Lonoke County. The average cost of production for the nine fields was $0.52 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*, and by producer meetings, conferences and seminars. Publications and Extension support materials developed include:

3 Presentations/posters at professional meetings
6 Extension publications
2 Articles in research bulletins
3 Educational materials
8 Individual articles
12 Article interviews
7 Television and radio interviews

2 Computer software
4 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.

Programs of Excellence

Cotton Variety Demonstration

Cotton variety selection is the first step towards producing a profitable cotton crop. This demonstration allows Greene County producers to compare the top cotton varieties side by side in Greene County and assists them in selecting the most profitable cotton variety to grow.

Locations – Greene County

Impact Numbers – 1 town was involved. 25 producers served. 25 producers impacted. Correct cotton varieties were selected. Cotton yields have been increased by 300 to 500 pounds per acre.

CES Section Contact Person – Mark Brawner, 870-236-6921, mbrawner@uaex.edu

New Cotton Grower

Mark Nix farms along the foot of Crowley's Ridge in Cross County, hence the name of his operation, Foothill Farms. This area of the county does not have the soil fertility problems of high salt and high pH that the rest of the western side of Cross County has. It does have one major problem that makes rice production expensive. Water, deep water, costs more to keep his rice fields irrigated than in other parts of the county, plus Mark's well water levels are going down. With the high cost of fuel and nitrogen fertilizer, rice is becoming a very expensive crop for Foothill Farms to produce. With increasing fuel costs, decreasing water supply and increasing fertilizer costs, Mark chose to change his cropping scheme – to cotton. Cotton takes less water and nitrogen than rice, which reduces production costs. Cotton also likes good drainage. That Foothill Farms has. It looked like cotton would be a good fit for the operation. Because of high capital outlay for equipment to convert to cotton, Foothill Farms planted over 1,200 acres of cotton their first year. Initial plans were for 1,500 acres, but because Nix grew Clearfield rice in 2004, he had to plant those fields to soybeans. Before totally committing to cotton, Mark contacted County Extension Agent Rick Wimberley to find out just how feasible the switch would be.

Location – Crowley's Ridge in Cross County

Impact Numbers – After crunching the numbers and comparing returns with Mark's expected rice and cotton yields, Wimberley and Nix determined that net returns for cotton should be twice what he could expect with rice. This would mean an extra $100 per acre. These figures were before the increase in fuel costs, but returns are still expected to net out over $50 per acre. Another comparison Nix and Wimberley did was irrigation pumping comparisons using different energy sources. With a spreadsheet developed by Phil Tacker, Extension irrigation specialist, the two determined that wells and center pivots going in on some of the ground that was going to cotton should be powered by electricity. Total savings over diesel would be $39.21 per acre on over 500 acres. As a result, cotton is being grown north of Wynne for the first time in over 40 years, and Foothill Farms should be able

to remain competitive in an area of diminishing water in a time of diminishing returns.

CES Section Contact Person – Rick Wimberley, 870-238-5745, rwimberley@uaex.edu

Cotton Variety Selection

Growers need help in sorting through information on selecting cotton varieties. This program helps growers make informed decisions on variety selection. Growers are selecting appropriate varieties based on local demonstrations and trials. State variety trials, grower meetings, variety demonstrations and field days are methods to help growers in selecting cotton varieties.

Location – Craighead County

Impact Numbers – 250 cotton growers

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

COTMAN Regularly Used To Manage Cotton Crop

Being on the northern end of the cotton-growing belt, local producers often have a difficult time in determining timing and need for inputs toward the end of the growing season. Through the use of the COTMAN program, producers have become more in tune to manage their crop, especially at season's end. The farmers participating in the program were better able to track the growth and development of their crop. Timing of inputs was more finely tuned based upon heat unit accumulation for a specific field, particularly late in the season. Due to extensive educational efforts the past few years, similar to this program, many growers and consultants are sold on the COTMAN program.

Location – The COTMAN expert computer system was used to help manage the timing and need for inputs for fields in Mississippi County. Four farms participated in the COTMAN program conducted by the Extension Service in Mississippi County in 2004. COTMAN data was collected on five fields weekly throughout the growing season. Five farmers and two consultants were involved in the program.

Impact Numbers – It is estimated the program is used on 50,000 acres of cotton grown in Mississippi County. Producers and consultants praise the program for helping them determine whether that last insect application is needed and for figuring out when to apply harvest aid materials. They like the fact that the program is fairly simple. Late season insecticide termination and time to begin harvest aid application are based on heat units past node above white flower five. The program is expected to eventually be used on up to half the county's cotton acreage.

CES Section Contact Person – Dave Freeze, 870-762-2075, dfreeze@uaex.edu

Do Not Spray Blind, Know the Pest

The Cotton IPM Moth Trapping program in Lee County has been a good tool for the cotton producers. Information on moth numbers and type, budworm or bollworm, allows the producer to know which worm he has, and this will keep him from possibly spraying for the wrong pest. The moth trap report was sent out via e-mail and fax to producers and agribusinesses to alert them of numbers and type. Moth numbers proved to be low in 2004, and this information saved the producer input per acre in insect control cost. The Cotton IPM Moth Trapping program is a part of the overall IPM program that covers cotton, rice and soybeans. These programs are

there to assist producers in planning and carrying out an Integrated Pest Management program on their farms. IPM can save input costs by lowering the amount of capital outlaid for pest management.

Location – The IPM program was conducted over the entirety of Lee County.

Impact Numbers – The trap reports were sent out via fax and e-mail to 14 producers, agribusinesses and consultants twice a week. Around 90% of those receiving the reports used them in making production decisions pertaining to insect pests. More producers are aware of the IPM program, and the moth trapping program is now a part of the process of cotton pest management in Lee County.

CES Section Contact Person – Mike English, menglish@uaex.edu

Cotton Variety Field

One of my goals this year was to test cotton varieties for nematode resistance. I tested ST 5599 against DP 451, the variety my producer had always used. This year he used the ST 5599 and is averaging 2.85 bales per acre, the most he has ever made on that particular field. He is most interested in the results for the other varieties we used in our cotton variety field. My cotton variety field is located on the same field that I had my cotton verification field, and I knew it had a big problem with nematodes so I chose ST 5599 because of its nematode resistance.

Location – Chicot County

Impact Numbers – More and more producers are becoming aware of the nematode problems, but some landlords do not understand that you should rotate crops. They want only one crop raised on their land. In the case of the variety field that is cotton, the nematodes eventually cause a yield reduction. If more varieties are nematode resistant, then yields should go up.

The producer in this research program will be using a nematode-resistant variety from now on. He is very happy with the results this year.

CES Section Contact Person – Fran Tomerlin, 870-265-8055, ftomerlin@uaex.edu

Cotton Moth Trapping Program

Flights of boll- and budworm moths have historically been indicative of a pending worm outbreak in the cotton-growing regions. By monitoring these flights, the information can be used to know when to scout for the worms, which can do considerable damage in the Non BT cotton. The goal of this program is to monitor the flights of boll- and budworm moths in order to provide farmers and consultants an idea of how many moths are in the area at a particular time so that they can monitor for worms in their cotton.

Location – 4 towns/ Poinsett county. Moth trapping in eastern Poinsett County was conducted at four locations deemed to be areas prone to high infestation levels of moths in the past: Tyronza, Marked Tree, Trumann and Weona. This information was available on the University web site, as well as being distributed at our bi-weekly cotton consultant meetings.

Impact Numbers – Information was also made available to the 96 growers in the county. The consultants and farmers are able to plan and time their scouting programs around the trapping information so they can be prepared to make informed decisions and spray on a more timely basis, thereby resulting in substantial savings.

CES Section Contact Person – Craig Allen, (870) 578-4490, callen@uaex.edu

New Bollgard II Cotton Varieties Tested in the County

Cotton bollworm and tobacco budworm are major pests in cotton every year. With the introduction of Bollgard cotton several years ago, tobacco budworm pressure on fields planted to the Bollgard varieties has begun to taper off. However, cotton bollworm pressure continues to be a threat. The introduction of Bollgard II, a type of cotton that has more resistance to both tobacco budworm and cotton bollworm, will help many producers reduce the number of insecticide applications to reduce worm pressure.

Bollgard II versus Bollgard Cotton County Demonstration – The goal of the program was to determine the economic differences in planting Bollgard II varieties versus Bollgard varieties. The demonstration was conducted at one location within the county.

Location – Desha County

Impact Numbers – Once the data from the study is analyzed, many cotton producers within the county will benefit from the information obtained. There will be a broader knowledge on the economical efficiency of Bollgard II and Bollgard cotton varieties.

CES Section Contact Person – Wes Kirkpatrick, (870) 222-3972, wkirkpatrick@uaex.edu

Cotton Variety Testing

While University yield testing gives the grower a survey look at potential yield, only on-farm analysis gives the true picture. Our on-farm demonstration served to give the grower a firsthand look at each variety's potential on his farm.

Location – 1 town/1 county

Impact Numbers – Results of the demonstration will help the grower decide which varieties to plant in the coming growing season, along with which ones to forego planting. Variety selection is now more important to the grower.

Contact Information – Wes Kirkpatrick, (870) 222-3972, wkirkpatrick@uaex.edu

CES Section Contact Person – William C. "Bill" Robertson, Extension Agronomist - Cotton, 501-671-2186, wrobertson@uaex.edu

Program Response: Extension Soybean Educational and Applied Research Program

Contact: Dr. Chris Tingle, Extension Agronomist – Soybeans, 501-671-2278, ctingle@uaex.edu

Situation

In 2005, producers planted 3.1 million acres, which is only slightly up 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. Production efficiency in 2005 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.

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 2005 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 2005, 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 yields is the overall goal of Arkansas soybean producers. Research identifying areas of minimizing input costs while maximizing yields remains an area of importance.

- **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:

Demonstrations:

18 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 2005, Arkansas harvested 3.03 million acres of soybeans with an average yield of 34 bushels per acre. This average yield is down 5.5 bushels from 2004. Arkansas ranks ninth nationally in soybean production, and soybeans are produced in 42 counties in Arkansas. Only 65% of the soybean acreage in 2005 was irrigated, and 92% of the acreage was produced using transgenic soybeans.

The 2005 Arkansas Soybean Research Verification Program (SRVP) consisted of 18 commercial soybean fields. The Early Season (ESPS), Full Season (FSSPS) and Double-crop (DCSPS) production systems were utilized in the 2005 SRVP. In 2005, the SRVP program accurately represented all production systems and percent transgenic varieties utilized throughout the state's 3.1 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 49.9 bushels per acre. In the non-irrigated environment, the average yield was also 30.5 bushels per acre. As with previous years, the average SRVP yield was 10.5 bushels per acre higher than the projected state average yield of 34 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). 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.

Programs of Excellence

Success With Soybean Verification Program

Profitability of soybean production requires producers to maximize yields while holding expenses to a minimum. Following research-based recommendations for soybean production as used in the Soybean Research Verification Program allows cooperating producers the opportunity to learn the latest information and maximize profitability. A second-year soybean verification field was conducted on an early-season irrigated field. Timely implementation of recommended production practices and weekly scouting for potential problems held production expenses to a minimum with the prospect of good yields being obtained. The soybean verification field was located on a busy highway with signage located to make area producers aware of the program. The participating father and son cooperators became aware and implemented the latest research-based recommendations on their field, and local producers also became aware of the effectiveness of recommendations being applied in a timely manner. The cooperating producers and other area producers have seen the positive results of following recommended production practices

General Program Information – SRVP fields were conducted in 15 different counties in 2005. This marks the 22nd year of the SRVP. During this period, 360 commercial soybean fields in 38 Arkansas counties have been enrolled in the program. The SRVP links soybean producers to the Cooperative Extension Service and ultimately to the Agricultural Experiment Station. Together, a team is formed with the goal of increasing soybean profitability in the state of Arkansas. Results obtained from the SRVP include examination of the University of Arkansas's recommended production practices on commercial size fields, strengthening the Cooperative Extension Service's knowledge on soybean production, and increased technology transfer as it relates to soybean production efficiency in Arkansas.

Locations – These success stories highlight the Phillips and Pope County programs.

Impact Numbers – Planted soybean acres in Phillips County were 146,000 and 10,000 for Pope County in 2002. Planted acres statewide were approximately 2.99 million acres, while 2.8 million acres were harvested in 2002.

CES Section Contact Person: Dr. Chris Tingle, Extension Agronomist - Soybeans, 501-671-2278, ctingle@uaex.edu

Early Soybean Production System

The early soybean production system (ESPS) is a relatively new approach to mid-south soybean production and is often a more profitable option to many areas of the state. This system typically consists of planting indeterminate maturity group (MG) III and IV varieties in April. This system can be more profitable in years when moisture is adequate until mid- to late-July. By doing this, many producers that do not have irrigation capabilities have observed satisfactory yields. Other benefits include increased flexibility in tillage, planting and harvesting,

allowing for better management for soybeans and other crops produced on the farm. There has been rapid adoption of this system throughout the state.

Specific examples include Randolph County where 40 producers were affected by implementing this system. Early estimates indicate that an increase of $637,000 was a result of implementing this production system. Another example is Chicot County. There are approximately 200 soybean producers in Chicot County, and almost 80% of these are taking advantage of this production system. Approximately 60% of the planted soybean acreage was planted to MG IV varieties. Traditionally, soybean yields in Chicot County have increased 15% increase in county yields. (Does he mean: Traditional soybean yields in Chicot County have increased 15% using this system.) Additional benefits also include reduced pesticide applications (primarily for stink bugs) with this system and resulted in an average savings of $7.50 per acre. One final example is Crittenden County. Approximately 40% of the soybean acreage in Crittenden County is produced using MG IV soybeans. Savings of $25 per acre have been observed using this technology.

General Program Information – The Cooperative Extension Service assists producers by implementing numerous county variety demonstrations evaluating early-maturing soybean varieties and their adaptability to many Arkansas environments. Additional work, identifying economic pest management strategies, irrigation techniques and soil fertility options is also conducted each year in multiple counties.

Locations – These success stories highlight the Chicot, Crittenden and Randolph County programs.

Impact Numbers – Planted soybean acres in Chicot County were 111,000 in 2002. Crittenden County planted 162,000 acres and 48,000 acres were planted in Randolph County in 2002. Planted acres statewide were approximately 2.99 million acres, while 2.8 million acres were harvested in 2002.

SOYVA Helps Soybean Farmers

For several years, Conway County farmers needed better information on soybean varieties in a timely fashion. The SOYVA Computer Program has made a big difference in how soybean varieties are selected and how yields and net farm income have increased for area farmers. The goal of the SOYVA program was to help producers select the proper soybean variety for each field on their farm. SOYVA was utilized at the annual farm production meeting in the Arkansas River Valley at the Conway County meeting. Five counties were involved in the program, and we estimate 12 to 15 farmers used the program for two to three fields each. Two different farmers reported that their yields increased this year by an average of 12 to 15 bushels per acre. Just these two alone would amount to over 2,500 acres. Conservatively, this is about a $150,000 to $200,000 increase in farm income. Yield have increased and the value of the program was realized. Plans are for more farmers and more acres to be included in 2006 production year.

CES Section Contact Person: Tommy Thompson, 501-354-9618. tthompson@uaex.edu

New Soybean Producer Receives Advice From Extension

A first-time farmer had rented about 600 acres of heavy clay soil to raise soybeans on. He needed help with everything, from calibrating his drill to irrigation scheduling. The goals of this program were to relay to this producer the best research-based information towards maximizing yield.

This producer farms around Earle. Three people were served with this program.

This producer had never farmed before, but still managed to average above 35 bushels per acre. With soybean prices about $5.60 per bushel, this producer made about $45 per acre profit. This producer now knows how to

make a good soybean crop. Next year he will likely make even higher yields and increase his bottom line.

CES Section Contact Person – John McFarland, 870-739-3239, jmcfarland@uaex.edu

Soybean Sentinel Plots

Soybean rust was introduced to the United States in the fall of 2004. The disease is very costly to South American producers. The plots were set up in our county to monitor the disease development. The plots were to determine when rust was introduced into our county.

Locations – Lonoke County

Impact Numbers – This information was very valuable to producers. Even though rust never developed in the 2005 growing season, this was excellent information for the soybean producers. The program was a success because of the valuable information that was available to all producers to track the development of soybean rust.

CES Section Contact Person – Keith Perkins, 501-676-3124, kperkins@uaex.edu

Program Response: Extension Weed Science Educational and Applied Research Program

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

Situation

In 2005, producers treated over 90% 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 and soybean 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 2005 were hampered by dry conditions but largely successful in rice, soybeans, cotton and other crops due to 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 2005 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 2005.

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 non-tolerant 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 2005, yellow nutsedge in soybean, glyphosate-resistant horseweed in reduced tillage systems, texasweed, red rice in rice and several others are examples of weeds currently in the difficult-to-control column. In addition populations of common and giant ragweed tolerant to glyphosate were identified. 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 yields 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 an unbiased 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 2005, a new weed, common ragweed, was discovered to be resistant to glyphosate. Current research is focused on this and the discovery and control of other weeds with herbicide resistance. Also, in 2005 several populations of palmer amaranth were identified as possibly resistant to glyphosate; however, to-date none of these populations are resistant.

Extension Program Results and Accomplishments

Output Indicators

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

Demonstrations:

22 Soybean weed control
53 Rice weed control
8 Wheat weed control
2 Sunflower weed control
22 Cotton weed control
8 Corn weed control

Applied Research:

3 Herbicide drift

3 Conservation tillage evaluations
1 Red rice competition
18 Weed control

Educational Meetings:

1 Arkansas Crop Management Conference
62 County production meetings
15 Field day/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 was also 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:

2 Extension publications (MP44 and glyphosate-resistant horseweed materials)
12 Educational materials (consisted of e-mail, PowerPoint presentations and various bulletins)
45 Article interviews
20 Popular press articles
20 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 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 researched 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 may exceed 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 and 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.

Impact Numbers – This program has been adopted by over 75% of growers in these and other counties.

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

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.

Stakeholder Input

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

Overview

A comprehensive short course program was established. The program included lectures on the components of a poultry production system from breeders through further processing, as well as tours of operating commercial production and processing facilities.

Extension Program Results and Accomplishments

Output Indicators

1 Short course program conducted.

21 Presentations on poultry production provided by faculty.

2 Popular press articles 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 short course program is available to any interested party.

Scope of Program – The program is presented in Arkansas.

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

Contact: Phil Tacker, Biological and Agricultural Engineering, 501-671-2267, 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 ultiple 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

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

30 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.

35 Producers involved in MIRI field demonstrations.

30 MIRI field demonstrations.

Outcome Indicators

Multiple Inlet Rice Irrigation (MIRI) Saves Energy, Water and Labor

Four rice producers cooperated with Extension to conduct field comparison studies on MIRI during the 2005 season. Following are the farms, the counties and the results.

- Parrish Farm, Craighead County – used 18% less water during the season on MIRI field with silt loam soil.
- Hall Farm, St. Francis County – used 19% less water during the season on MIRI field on silt loam soil. Fuel use savings for diesel power unit was $17.50 per acre.
- Imboden Farm, Cross County – used 29% less water during the season on MIRI field on silt loam soil.
- Taylor Farm, White County – used 27% less water during the season on MIRI field on silt loam soil.

Average water savings in percent for the four field comparisons was 23%

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.

Multi-state Integrated Research and Extension: Mississippi and Arkansas are involved in a three-year project that uses the MIRI system to study intermittent flooding of rice.

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

Contact: Dr. Leo Espinoza, 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 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.

- **Water Quality Issues –** Current environmental regulations, particularly in northwest Arkansas, will require the use of soil testing. During 2005, a significant amount of time was devoted to revising current fertilizer recommendations and to implementing 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.

- **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.

- **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
4 Corn fertility demonstrations
1 Bahia grass fertility demonstration
1 Fescue fertility demonstration

Educational Meetings

23 Production meetings
4 Staff trainings
6 Field day/crop tours

Applied Research Studies

5 Grain sorghum (irrigated) fertility trials
4 Grain sorghum (dryland) fertility trials
3 Cotton no-till trials
3 Cotton fertility trials
1 Corn no-till trial
5 Corn fertility trials
1 Soybean no-till trial
3 Soybean fertility trials
2 Wheat fertility trials
1 Bahia grass fertility
1 Fescue fertility
1 Rice fertility

- Nearly 200 soil and tissue samples were received for diagnostic purposes. Assistance was provided to those samples that required further consideration.
- More than one thousand Arkansans received information on soil testing and best management practices for lime and fertilizer application and plant analysis via production meetings in 2004.
- Nearly 100 Arkansans were trained in soil fertility within the Master Gardener program.

Outcome Indicators:

- Nearly 190,000 acres of soybean were sampled and provided with fertilizer and lime recommendations. This represents nearly 8% of the total soybean acres planted in 2005.

- Nearly 385,000 acres of cotton were sampled and provided with fertilizer and lime recommendations. This represents nearly 30% of the acres planted in 2005.

- 615,000 acres of rice were sampled and provided with fertilizer and lime recommendations. This represents nearly 50% of the acres planted in 2004.

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

- 60,000 acres of corn were sampled and provided with fertilizer and lime recommendations. This represents nearly 25% of the acres planted in 2005.

- 13,000 acres of grain sorghum were sampled and provided with fertilizer and lime recommendations. This represents nearly 20% of the acres planted in 2005.

- 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.

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 $60,000, 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, demonstrations and/or educational activities were conducted in the following counties: Cleveland, Cross, Desha, Lee, Saline, St. Francis, Poinsett, Mississippi, and White.

Program of Excellence

Major Revisions to the Soil Testing and Fertilizer Recommendation Program

A significant amount of time and effort was devoted by Extension and Research faculty during 2005 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.

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. Each recommendation is revised by the Extension agent in each county before being 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 2005 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 165,000 acres during the 2005 wheat harvest with an average yield of 52 bu/acre. Harvested wheat acreage decreased dramatically due to a very wet fall during the planting season which prevented many acres from being planted. Wheat continues to be a profitable crop for many producers. A majority of wheat in the state is grown in a double crop rotation, following corn, grain sorghum, soybean, cotton or 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 2005 decreased to 230,000 acres, which is approximately 40,000 acres more than the 10-year average acreage. Average state grain yield was 131 bu/acre, a decline of 9 bu/acre compared to 2004. Yields declined because of drought conditions. Corn will continue to be a crop of interest as more producers see the rotational benefits to soybean and cotton when planted following corn. Grain sorghum acreage was up to 62,000 acres harvested for grain in 2005. Grain sorghum yields have continued to increase for the past several years with selection of high-yielding hybrids and proper management. The state average grain yield in 2004 was 80 bu/acre, compared to the 10-year state average yield of 75 bu/acre. 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 2005.

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 2005 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% to 50% 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 0new herbicide programs, which may not be as economical as current 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.

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

7 Wheat fields enrolled in the Wheat Research Verification Program.

3 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.

7 Corn field tours of demonstrations and/or hybrids.

20 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

15 Corn production practices.

3 Corn and wheat fertility.

8 Grain sorghum production practices.

2 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 52 bu/acre in 2005, 10 bu/a greater than the Unites States average. 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 seven producer fields during the 2004-05 growing season. The fields were located throughout the state in major wheat-growing areas. Fields enrolled in the WRVP averaged 70.0 bu/acre, yielding nearly 18 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 25th in production of corn in the United States, producing over 30 million bushels in 2005. 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 2005, 8 fields were enrolled in the program which was conducted in major corn-growing areas of the state. The average yield was 174 bu/acre in the program, 43 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 62,000 acres with an average yield of 80 bushels per acre in 2005. 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 2005 in eastern Arkansas. The fields with proper fertility, hybrid selection and irrigation produced an average of 114 bu/acre, which was 34 bu/acre greater than the state average of 80 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 where 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 Wheat Research and Verification and Corn and Grain Sorghum Research Verification Programs are funded by the Arkansas Wheat and Arkansas Corn and Grain Sorghum Promotion Boards. Funding for the verification programs was approximately $150,000 for 2005. 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 2005.

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

4 Television or radio interviews
24 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: Dr. Charles E. Wilson, Jr., Extension Agronomist – Rice, 870-673-2661, cwilson@uaex.edu

Situation

In 2005, rice was grown on 1.635 million acres with an estimated average yield of 6,650 lbs/A (148 bushels per acre). Rice acreage increased 5% from the 2004 acreage. The 2005 state acreage was the largest on record and still managed the 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 2005 crop marked the second time in as many years that reasonably good prices have been 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. Increased fuel prices and a season-long drought resulted in increased production costs nearly twice that for the 2004 crop, particularly for irrigation and fertilizer. The most significant production issues include 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 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 are 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. Arkansas has declared 11 counties as critical relative to groundwater depletion and has several more counties that are targets for future concern. 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. The potential to reduce costs while decreasing soil and nutrient runoff is great.

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% of the rice acreage in Arkansas and is expected to exceed 30% 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, will soon be 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.

- Rice diseases, 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.

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.

- A better understanding of zinc fertilization on clay soils is needed.

- 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.

- 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
22	Variety performance
4	Seeding rates
2	Agrotain urea stabilizer
3	Potassium fertilization
3	Phosphorus fertilization
20	Nutrient diagnosis/fertilizer response
3	Weed control
4	Rice disease management

Educational Meetings:

Number	Description
30	County production meetings
6	IPM meetings
12	Field day/crop tours
>100	Field visits with producers

Applied Research Studies:

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

Outcome Indicators

Arkansas harvested 148 bushels of rice per acre from 1,635,000 acres for a total production of 109 million cwt in 2005, the largest annual production ever in Arkansas. Arkansas is consistently among the leaders in the U.S. in rice production, ranking first in acreage and production. Arkansas also ranked second in average yield in 2005, second only to California.

Arkansas ranks first in acreage and total production, producing just over 48% of the U.S. crop. Arkansas' rice is generally valued at over $765 million annually.

Approximately 4,000 farms in Arkansas produce rice, 94% of which was dry seeded, 39% utilizing conservation tillage and 28% utilizing multiple inlet rice irrigation. Conservation tillage practices have increased slowly over the last 10 years. Adoption of the multiple inlet rice irrigation has increased about 5% each year for the past 5 years. Precision leveling continues to increase each year, with approximately 40% 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 2005, allowing growers to review information at any time from their homes.

A summary of county Extension programs during the 2004-2005 year showed that in excess of 12,000 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 2005 Rice DD50 Program was used by 1,337 producers on 9,112 fields representing 648,870 acres. The DD50 program was updated to include information for five 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 58 varieties, 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 2005 to include five new varieties, updated seed weights, and can be run from the Internet. This program was utilized by 247 produces to determine seeding rates on 55,765 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 37% of the states' acreage. Rice varieties developed by the University of Arkansas were planted on over 50% of the acreage in Arkansas, including Wells (37.3%), Francis (10.1%), Banks (3.1%) I Cybonnet (1.1%), Medark (1.2%), LaGrue (0.1%), Ahrent (0.3%) and Drew (0.2%). 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 16% 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 161, 19.1%) and one hybrid (Rice Tec CL XL8, 2.4%). Other varieties supported by the DD50 program that were grown in Arkansas, including the percentage of the 2005 rice acreage, were Bengal (4.9%), Cocodrie (9.4%), Cheniere (7.2%) and Rice Tec XL8 hybrid (1%).

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 914,770 acres from 2,653 producers. This represents 56% of the rice acreage in Arkansas in 2005. Water analysis is provided to farmers who are potentially facing problems with water quality. During 2005, 82 producers utilized water testing to determine the impacts of utilizing this water for irrigation. This represented approximately 27,000 acres. Plant analysis was performed for 287 clients representing 49,060 acres.

Applied research was conducted on new conventional varieties (Banks, Cybonnet, Medark, Cheniere), conventional hybrids (XP 710, XP 712, XP 716, XP723) and with herbicide resistance technology (CL XL8) 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 2005. 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 2005, 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
1	Rice information sheets
4	Fact sheets
15	Newsletters
7	Web-based educational materials
9	Articles in research bulletins
10	Other educational materials
3	Individual articles
37	Article interviews
5	Television and radio interviews
2	Computer software
3	Teaching aids

Scope of Program – 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.

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

Rice Educational Programs Yielding Results

A large part of the rice acreage in Lincoln County is grown on high pH clay soil. Yields on this type of soil have been erratic from year to year and from field to field in the same year. Currently, there is little research being conducted on this type of soil. In years past, farmers have been increasing nitrogen fertilizer rates in an effort to increase yields. In some cases this has worked and not in others. Experiencing these types of problems, Johnny McGraw approached me after the 2001 crop year asking for assistance in increasing his rice yields. Approximately 80% of his rice acreage is on this type of soil. In an effort to research this type of rice production and educate producers on production practices for maximizing yields, several educational demonstrations were conducted over the past three years. As a result of the demonstrations, the cooperator, Johnny McGraw, increased his rice yields by 30 bushels per acre during 2004 as compared to 2003. In 2002, McGraw agreed to enroll in the Rice Research Verification Program (RRVP). The goal of the RRVP is to maximize returns (increased yields/decreased inputs) by educating producers on Extension's recommended researched-based production practices. In 2003, a rice variety trial and variable nitrogen fertilizer rate study were conducted on his farm in an effort to select the best performing varieties and fine tune his nitrogen fertilization rates. In 2004, as required by RRVP, he again enrolled the same field in the RRVP. In addition, another variety trial and nitrogen study were conducted.

From 2001 to 2004, the RRVP field average yield has increased by 35 bushels per acre while input costs have decreased $25 per acre. With the USDA loan price on rice of $2.97 per bushel, McGraw realized a $103.95 per acre increase in gross profits just from increased yields in the RRVP field. By adding the savings from the decreased input costs, he realized a total increase in gross profits $128.95 per acre. In addition, by selecting varieties that performed well in the variety trial conducted in 2003 and implementing production practices learned from the 2002 and 2004 RRVP, McGraw increased his average rice yield by 30 bushels per acre across his entire 1.700 acres of rice. Again, with the USDA loan price, that is an increase of $89.10 in gross profits per acre, or a total increase in rice gross profits of $151,470. According to McGraw in 2004, "This is the best rice crop we have ever cut." McGraw, several other surrounding farmers and I now know there are real variety differences on this type of soil. In addition, we know there are some things we can do other than apply more nitrogen to increase yields.

Rice Education Programming Yielding Results

In 2002, Jeff Keeter approached me after the crop year asking for assistance on one particular field he was having trouble with when growing rice. Since it was going into rice production the next year (2003), I attempted to get him enrolled in the RRVP. However, the RRVP had no opening for fields in 2003. He did agree, however, that he would follow all of Extension's unbiased researched-based recommendations and I would scout the field weekly and make those recommendations (multiplier field). The same was done for the field again in 2005. As a result of the educational programming for that field in 2003 and 2005, the average yield for that field has increased 39 bushels per acre when compared to 2001, the last rice crop year before becoming a multiplier field.

The goal of the programming was to treat the field in the same manner that it would have been had it been enrolled in the RRVP. The goal of RRVP is to maximize returns by either increasing yields or decreasing inputs by educating producers on Extension's recommended research-based production practices.

Lincoln County. By increasing average per acre yield by 39 bushels and using the USDA loan price per bushel of rice, Keeter increased gross profits per acre by $115.83 on the problem field. Keeter can now use the information that he learned from the demonstration and apply it to the rest of his rice acreage.

County Rice Verification Program Successful

Learning to use the research data to produce the best yield is the purpose of having a verification field. Rice is a crop I knew very little about before this year. My producer, Clay Poole, is a young farmer with his own fields after farming with his father for many years. This is the first time he has had a verification field. He followed Jeff Branson's advice and produced a good yield. He had corn on that particular field last year. He rotates his crops each year. The rice was so thick that it looked like you could walk on the top of it, yet he used less seed per acre that previously. Clay is interested in the results of our other studies in that field, including variety performance studies and seeding rate studies. His overall average on his rice was 176 bushels per acre. If reducing the amount of seed per acre and not reducing the overall yield proves effective, then all the rice producers could save money on their crop.

Extension Program Increases Rice Yield By 45 Bushels

Local rice producer Tony Wilkie came to the St. Francis County Extension Office with a concern for his rice yields. He historically averaged 125 bushels per acre for his farm. Wanting more from his rice crop, he asked the Extension Service for help. After a discussion of his rice farming practices, the decision was made to enlist him in a rice multiplier field to help get his farming practices in line with Extension recommendations. In this time of low commodity prices and high production cost, it is imperative that producers produce their crops in the most economically feasible manner by producing the highest possible yield with the least amount of inputs. It is the goal of the St. Francis County Extension Service to help producers increase their production efficiency by using all available technical and cultural practices. These practices use all of the latest Cooperative Extension Service research information on variety selection, rice fertility, weed control, insect control and Integrated Pest Management to help streamline rice production in the county. The Rice Multiplier Field yielded 170 bushels of rice per acre. This is 45 bushels per acre above his 5-year average. With an average selling price this year of $3.40 per bushel, the 45 bushel per acre increase in yield also increased the profit by $153 per acre. Wilkie has now adopted more economical and research-based recommendations for his rice farm. By using Extension recommendations, he has become a more successful and higher yielding farmer and has a greater ability to sustain his farming operation in economically tough times.

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 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, Ashley, Chicot, Clay, Craighead, Crittenden, Cross, Desha Lawrence, Lee, Lonoke, Mississippi, Phillips, Poinsett, Pope, Prairie, Randolph, St. Francis, Woodruff and Yell.

Impact Numbers – Yields in the fields enrolled in the program ranged from -4 to 59 bushels per acre better than the state average of 154 bushels per acre, indicating that under recommended practices, the program can improve productivity. Most of these fields showed a positive net return, ranging from $210 to $388.

CES Section Contact Person – Branon Thiesse, 870-933-4565, bthiesse@uaex.edu; Chad Norton, County Extension Agent - Staff Chair, Lincoln County, (870)628-4247, cnorton@uaex.edu; Andy Vangilder, 870-598-2246, avangilder@uaex.edu; Fran Tomerlin, 870-265-8055, ftomerlin@uaex.edu; Kevin Norton, 870-261-1730, knorton@uaex.edu; Jeff Branson, 870-673-2661, jbranson@uaex.edu

Rice Varieties Demonstrated

A rice variety and disease-monitoring plot was established in Lafayette County in 2005. Twenty-five varieties were planted on the Stewart Bundrick farm, and a field day was held to show local growers the importance of selecting high-yielding, well-adapted varieties. Yields were taken and provided to local growers.

The major goal was to demonstrate the value of selecting well-adapted varieties in our area and to let local growers view progress of plots during the growing season.
Lafayette and Miller County rice growers.

Counties Involved – Lafayette County

Impact Numbers – Twelve growers visited the plots and indicated they will plant different varieties next season. Growers have reduced the need to apply some fungicides to resistant varieties, saving an average of $22.00 per acre on 6,500 acres.

CES Section Contact Person – Joe Vestel

Greene County Rice Meeting

The Greene County Rice Meeting continues to be one of the producers' highlights of the year with the largest attendance of all the crops meetings in the county. We usually have a great attendance with this year being 65 producers. We strive to provide the latest research-based information to our producers so they can make the most educational decisions for their next crop. These producers plan to attend this meeting to be able to express their concerns and ask our specialists and researchers for their input. The rice production meeting is conducted in Paragould, Arkansas, the last week of January. We strive to have the latest topics of weed control, disease control, water management, grain storage and marketing information. This program is located in Paragould, Arkansas, but we have producers and consultants from several surrounding counties. This program information is provided to this group of producers that produce the bulk of 70,000 acres of rice in this county. Over the past 15 years, I feel and the crop reporting service shows that yields in Greene County has continued to climb for these producers.

Locations – Greene County.

Impact Numbers – We usually have a great attendance with this year being 65 producers. Over the past 15 years I feel and the crop reporting service shows that yields in Greene County has continued to climb for these producers.

CES Section Contact Person – Allen Davis, Greene County Extension agent, 870-236-6921, ardavis@uaex.edu

Rice Seeding Rate Study

For years, the standard recommendation for seeding rice on silt loam soils has been 40 seeds/sq ft. Adjustments to this rate were made based on the time of year a field was planted, soil type and seeding method. With the rapid adoption of hybrid and Clearfield varieties, seed cost would increase dramatically if our standard recommended seeding rate was used to plant these varieties. Earlier studies conducted in the county on silt loam soils concluded there were not any significant differences in yield for Francis when seeding either 70 or 90 lbs/A. To further verify earlier results, seeding rate studies were again conducted in 2004 and 2005 on silt loam soils and were expanded to include popular rice cultivars. Data from these studies indicate that producers can lower their standard seeding rate for all varieties on silt loam soils from 90 lbs to 70 lbs per acre.

Rice Seeding Rate - The goal of the program was to determine if seeding rates could be reduced, thereby reducing the amount of money that producers have to spend on seed cost. Replicated studies were seeded in cooperation with Drs. Charles Wilson and Rick Cartwright.

Locations – Prairie County: 10 served.

Impact Numbers – Lowering the seeding rate on the more popular cultivars could result in a net saving of over $3.40/A to $10/A on CL 161. Reduced seeding rate also translates into reduce fungicide cost associated with sheath blight infestation and reduction in lodging potential. Possible changes in seeding rate recommendations for silt loam soils in Arkansas.

CES Section Contact Person – Hank Chaney, 870-998-2614, hchaney@uaex.edu

Improving Rice Fertilizer Use

Many rice producers have fields that are difficult to manage in regard to nitrogen fertilizer usage. Recent research by the University of Arkansas shows the use of Agrotain treatment of urea (nitrogen fertilizer) improves fertilizer use efficiency, especially in situations where the permanent flood is delayed for several days after fertilizer application. The major goal in establishing an Agrotain demonstration in Mississippi County in 2004 was to document the economic benefit of treating urea with this urease inhibitor product. A test was set up on Veach & Sons farm in Lost Cane. The silt loam demo field was precision leveled with levies established 150 feet apart. Paddies 2, 4 and 6 were fertilized with Agrotain-treated urea while urea used on paddies 3,5 and 7 was not treated. Many local rice producers recognize the benefit of using Agrotain on fields where it takes them a few days to establish the permanent flood. For fields they can typically flood up to 3 days, they know they will generally save money by not using Agrotain at these locations.

Locations – Mississippi County

Impact Numbers – The Veaches, along with their friends and neighbors, were able to watch the test throughout the growing season. Yield results from the test will be discussed this winter at the Extension Service's local rice production meeting. A written test summary will also be mailed to local clients interested in rice production. The average yield of paddies receiving Agrotain-treated urea (166 bpa) was similar to those where untreated urea (164 bpa) was used. These results are in agreement with U of A research findings. The test field was completely flooded within 24 hours. University research shows that Agrotain is generally likely to be beneficial on fields where the flood is delayed for more that 4-5 days.

CES Section Contact Person – Dave Freeze, 870-762-2075, dfreeze@uaex.edu

Program Response: Turf, Rangeland and Pasture Weed Management

Contact: John Boyd, Weed Science Specialist, 501-671-2224, Pest Management

Situation

New, high-quality seeded bermudagrass cultivars have been developed for turfgrass and forage use, but there is no methodology for early weed control methods for these grasses. Weed control in sprigged bermudagrass, which has been the standard for many years, is based on preemergence herbicides that are not an option in seeded types.

In addition, it is not known how early in bermudagrass development that postemergence herbicides may be safely used to control weeds in seeded bermudagrasses. Lack of effective weed control is preventing many farmers from taking advantage of the new seeded varieties and the accompanying cost of establishment savings compared to sprigged bermudagrass.

Stakeholder Input

The Arkansas Cattlemen's Association, the Arkansas Forage and Grassland Council, the Arkansas Farm Bureau, Arkansas Turfgrass Association, Arkansas Golf Course Superintendents and hundreds of farmers and county agents have identified weed control in seeded bermudagrass as a major priority.

Overview

Experiments were conducted on the University Research Farm at Fayetteville and on a sod farm in Little Rock. Herbicides were applied at two weeks after bermudagrass emergence. "Riviera" bermudagrass was seeded at 1.0 pound PLS/1,000 square feet on July 1, 2003, at the University of Arkansas Research Station in Fayetteville, Arkansas. The site had been fumigated with methyl bromide. Herbicide treatments were applied at 2 weeks after emergence. Carrier volume was 50 gpa. Turfgrass cover was measured using digital image analysis. Herbicides applied to bermudagrass in a tank mix with MSMA at 2.0 lb/ai/a were flazasulfuron (0.046 lb/ai/a), foramsulfuron (0.026 lb/ai/a), trifloxysulfuron (0.026 lb/ai/a), clopyralid (0.38 lb/ai/a), triclopyr + clopyralid (0.28 + 0.094 lb/ai/a) and 2,4-D + dicamba + mecoprop (0.87 + 0.23 + 0.09 lb/ai/a), metribuzin (0.38 lb ai/a) and metsulfuron (0.028 lb/ai/a). Quinclorac was applied alone at 0.5 and 0.75 lb/ai/a. At 7 DAT (days after treatment), percent bermudagrass groundcover for metribuzin + MSMA, triclopyr + clopyralid + MSMA and 2, 4-D + dicamba + mecoprop + MSMA was 24, 64 and 79 percent, respectively compared to 95 percent for the untreated control. At 21 DAT, seedling bermudagrass cover was greater than 97 percent for all herbicide treatments except metribuzin + MSMA. Percent cover for the metribuzin + MSMA treatment was 89 percent compared to 99 percent for the untreated control.

A second "Riviera" bermudagrass trial was located on a non-fumigated site at a sod farm near Little Rock, Arkansas. It was seeded at 1.0 pound PLS/1,000 square feet on June 24, 2003. Herbicide treatments were applied at 2 weeks after emergence. Herbicide injury and weed control were rated on a 0 to 100 scale with 0 being no injury or weed control and 100 being dead turf or dead weeds. Carrier volume was 30 gpa. Metribuzin + MSMA produced 87 percent injury at 7 DAT. However, injury from this treatment dropped to 27 percent at 21 DAT. Injury from 2,4-D + dicamba + mecoprop + MSMA was 30 percent at 7 DAT, but declined to 7 percent at 21 DAT. Weeds at the Little Rock site included large crabgrass (*Digitaria sanguinalis*), purslane (*Portulaca oleracea*), tighthead sprangletop (*Leptochloa fasicularis*), rice flatsedge (*Cyperus iria*), barnyardgrass (*Echinochloa crus-galli*), broadleaf signalgrass (*Urochloa platyphylla*) and tufted lovegrass (*Eragrostis pectinacea*). Treatments containing MSMA provided 95 to 100 percent control of all weeds except tufted lovegrass. Quinclorac alone at 0.5 and 0.75 lb/ai/a gave 100 percent control of barnyardgrass, 80 percent control of broadleaf signalgrass and 50 percent control of large crabgrass, but failed to provide control of sprangletop, purslane and rice flatsedge.

Extension Program Results and Accomplishments

Output Indicators

The data resulting from this research gives Arkansas bermudagrass forage farmers a method of quickly establishing a quality bermudagrass from seed at minimal cost and weed interference.

Outcome Indicators

The door was opened for the use of seeded bermudagrass, thus reducing establishment cost significantly.

Source of Funds

Federal Smith-Lever funds and grants from chemical companies.

Scope of Impact

Dissemination – This data was presented at and published in the abstracts of the Southern Weed Science Society Meeting. A PowerPoint presentation of this data was prepared for distribution to all counties and also made available on the Extension web site. These results were distributed to all of the states in the bermudagrass belt including North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Oklahoma, Texas, Louisiana, Tennessee, Kentucky and Virginia.

Scope of Program – Results have been incorporated into recommendations for pasture management and used by counties in Arkansas.

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

46 Presentations at local, regional, and state meetings.

127 Farm visits.

13 Fact sheets, newsletter articles and popular press articles.

156 Training sessions and one-on-one consultations.

23 Newspaper, radio and television interviews.

685 Industry leaders who received factual information about disease prevention.

293 Individuals who received disease prevention information.

Outcome Indicators

0 Outbreaks of major poultry diseases in Arkansas.

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, Animal Science Section, 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 2005. The average cow herd size is 37 head with 80% 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 $1 billion 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, feedlot preconditioning, 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 30 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 nine 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

4 Farms enrolled in five-year ABIP whole farm program.

15 Farms enrolled in ABIP special projects.

5 County-level ABIP workshops conducted.

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

- Specified cost per animal unit decreased by 32% from $118 to $80.50 per animal unit.
- Herd break-even per pound of beef sold decreased 29% from $0.55 to $0.39 per pound from year two to year three of the program.
- The average 205-day adjusted weaning weight increased by 12% from 508 pounds to 567 pounds from year one to year four.
- The crude protein and TDN percentage improved from 12.7% to 13.8% and 56.3% to 60.0%, respectively, from one ABIP producer.
- One ABIP cooperator reduced supplemental feed cost per animal unit in year one by 48%.
- After attending the area ABIP workshop, 96% and 88% attendees were going to reevaluate their mineral and supplemental feeding program, respectively. Sixty-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 UAEX web site.

Scope of Program –

1) State Specific. 24 counties: Baxter, Calhoun, Cleburne, Columbia, Crawford, Dallas, Faulkner, Franklin, Howard, Izard, Lawrence, Lonoke, Madison, Marion, Montgomery, Nevada, Perry, Pope, Pulaski, Scott, Union, Van Buren, White, Yell.

2) Multi-State. Alabama, Kentucky, Louisiana, Missouri, Mississippi, Oklahoma, Tennessee, 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 – 4: Madison, Nevada, White, Yell

Impact Numbers – Although this producer just completed the first year of the ABIP whole farm program, changes in the area of mineral nutrition, sire selection and forage management have made a difference.

CES Section Contact Person – Dr. Tom R. Troxel, Section Leader - Animal Science, 501-671-2188, ttroxel@uaex.edu, and John Richeson, Program Associate – ABIP, 501-671-2180, jricheson@uaex.edu

ABIP Replacement Heifer Project

General Program Information – This project's goal is to demonstrate the management necessary to develop heifers from weaning to first breeding. The rising cost of replacement heifers is one of the most expensive and probably one of the most important aspects of a cow-calf herd. Replacement heifers are the future of the cow herd. Therefore, proper heifer management is critical to ensure success in the heifer's first breeding season. Management decisions during this development phase of replacement heifers can help ensure a productive cow.

Number and Names of Counties Involved – 1: Baxter

Impact Numbers – The total cash cost per head (including the purchase price) averaged $668. It was estimated that the producer saved $218 per head by raising replacements as compared to purchasing replacement heifers at a weight where they would be ready to breed.

Thirteen of the sixteen heifers were exhibiting estrous activity before the breeding season began.

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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 steers' and heifers' 205-day adjusted weaning weights for the first year were 515 and 477 pounds, respectively, with a herd average of 496 pounds. The second year's 205-day adjusted weaning weights did not change and were 505, 488 and 465 pounds for bulls, steers and heifers, respectively. It was speculated that weather (drought conditions) had a major impact on these weights.

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Program Response: Beef Cattle Management

Contact: Dr. Tom R. Troxel, Animal Science Section, 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 2005. The average cow herd size is 37 head with 80% 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 $1 billion annually.

Stakeholder Input

Beef production makes 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 livestock 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 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 Oklahoma Feeders Inc. in Coyle, 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 2005. The objective of the program is to demonstrate cost-effective beef cattle and forage management practices to reduce winter feed cost. This program focuses 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. 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 2004 (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

1,771	Number of clientele enrolled in the Beef Quality Assurance Program.
114	Number of clientele who are Beef Quality Assurance Certified.
85	Number of calves enrolled in Arkansas Steer Feedout Program.
12	Number of producers who enrolled steers in the Arkansas Steer Feedout Program.
425	Number of producers attending the Arkansas Cattle Growers' Conference.
93,659	Number of producers attending educational programs or who were contacted by Extension.
16,870	Number of producers attending educational meetings, demonstrations, farm visits and/or field days or who were contacted by Extension to educate clientele on beef cattle nutrition.
416	Number of producers cooperating with reducing winter feed cost demonstrations.

Outcome Indicators

$27.26	Average dollar loss per calf due to misused cow-calf management practices.

$1.3 million	Possible savings to the Arkansas beef cattle industry because of producers enrolled in the Arkansas Beef Quality Assurance Program.
$13 and $14	Average dollar amount per head winter feed cost was reduced due to stockpiling fescue and Bermuda grass forages, respectively.
88	The average number of days grazing per acre for rotational grazing compared to 35 days of continuous grazing.
418	Producers that adopted management practices to reduce winter feed costs.
3,184	Number of producers that changed beef cattle and forage management practices to improve efficiency.

- The average savings per farm for grazing stockpiled tall fescue compared to feeding hay and supplement was $900.
- The average reduction in winter feed costs due to planning winter annuals, stockpiling forages and forage testing hay was $139, $1,830 and $200, respectively.
- Steers enrolled in the Arkansas Steer Feedout Program graded 54% Choice, had an average daily gain of 3.10 pounds per head per day and had a feed cost of gain of $0.46 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. Forty-six percent of the steers fit the combined standards. Steers that met the industry standards averaged $130 per head more than those not fitting the industry standards.

Source of Funds

Smith-Lever, State Grants (Beef Council) and Arkansas Beef Improvement Grant (USDA-CSREES).

Scope of Impact

Dissemination – Program activities were available statewide as well as regionally through *Arkansas Cattle Business,* newsletters and 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, Yell.

2) Multi-State: Alabama, Kentucky, Louisiana, Missouri, Mississippi, Oklahoma, Tennessee, Texas.

Programs of Excellence

Utilizing Stockpiled Fescue to Reduce Winter Feed Cost

Success Story – A producer enrolled 34 acres where he grazed 86.3 animal units for 36 days. The actual cost to the producer for growing the 1,729 lbs/acre of dry matter was $1,105.00 or $23.23 per AU. The estimated feed cost (hay and supplements) to match animal performance was $27.02 per AU. The total estimated savings from this practice was $165.55 and $3.79 per AU.

The practice of stockpiling fescue saved a producer $12 per head. The producer normally fed hay from November to March. With the same number of cattle and same amount of land, he was able to cut the number of days feeding hay to less than 30. The next year, the producer stockpiled 78 acres for his 65 head of cattle and was able to save $12 per AU over feeding hay and supplemental feed.

A producer reduced winter feeding costs as a result of stockpiling Bermuda grass. In this herd of 37 cows, feeding cost savings were $27.79 per AU for a net increase in income of $1,028. Five producers adopted the practice.

Two producers fed cattle at a cost of $10.00 per animal unit compared to $20.00 per animal unit by using strip grazing to increase the efficiency of their operations.

Two producers set up three stockpiling demonstrations. One producer stockpiled a warm season and cool season grass. These producers saved an average of $1,567 for the period that they grazed the stockpiled forage.

A producer grazed his 62 head of cattle for 40 days without any hay or other supplementation. Without having to feed hay or any supplement, he was able to save $12.92 per head.

By stockpiling a Bermuda grass pasture, a Baxter County producer was able to extend his grazing by 40 days using strip grazing, which gave an estimated forage usage of 77%. The total estimated savings from this practice was $22.31 per AU.

A stockpiling Bermuda grass study to reduce winter feed costs was conducted. In Year 1, the producer saved $20 per cow on winter feed costs and $10 per head in Year 2. He plans to continue the practice after the study is complete.

A Hot Spring County cattle producer saved $627, or $10.03 per cow, by using stockpiled forages.

A producer in Hot Spring County saved $627 at his farm simply by stockpiling several fields.

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. The program required that there be at least a 50% stand of fescue, Bermuda grass or Bahia grass in the demonstration field. Rate of nitrogen applied was 50 to 60 pounds per acre for fescue and Bermuda grass and 30 to 50 pounds per acre for Bahia grass. Forage samples were collected to document nutrient value and yield estimates were determined. Budget information was collected to determine the cost effectiveness of stockpiling.

Number and Names of Counties Involved – 18: Baxter, Carroll, Cleburne, Faulkner, Franklin, Hempstead, Hot Spring, Madison, Montgomery, Perry, Pope, Pulaski, Searcy, Sevier, Union, Van Buren, White, Yell.

Impact Numbers – Producer saved $42.74 per animal unit in winter feed cost. Producer saved $8.76 per animal unit in winter feed cost.

CES Section Contact Person – Dr. John Jennings, Extension Livestock Specialist - Forage, 501-671-2350, jjennings@uaex.edu, and Doug Kratz, Animal Science Program Associate, 501-671-2179, dkratz@uaex.edu.

Forage Testing and Supplemental Feeding

General Program Information – The project's purpose is to demonstrate the value of determining the supplemental feeding program based on a forage test.

Number and Names of Counties Involved – 16: Bradley, Clark, Cleburne, Columbia, Howard, Faulkner, Franklin, Hempstead, Lafayette, Marion, Polk, Pulaski, Scott, Sevier, Sharp, Van Buren.

Impact Numbers – By adjusting the supplemental feeding program, the producer was able to reduce supplemental feeding cost by $24 per cow.

Through forage testing and properly determining supplemental feed needs, 11 producers saved an average $20 per head, or a total of $24,000.

Producing better quality hay to reduce winter feeding supplementation can greatly reduce cost in wintering the beef cow herd. Using advice from extension forage specialist in the first year of a native grass hay study, the producer was able to increase hay yield by 70%, protein content by 1.8% and TDN values by 7%. This will cut supplemental feeding needs by approximately 50 percent.

CES Section Contact Person – Dr. Tom R. Troxel, Section Leader - Animal Science, 501-671-2188, ttroxel@uaex.edu; Dr. Shane Gadberry, Extension Livestock Specialist, 501-671-2169, sgadberry@uaex.edu; Dr. John Jennings, Extension Livestock Specialist – Forages, 501-671-2350, jjennings@uaex.edu; Doug Kratz, Animal Science Program Associate, 501-671-2179, dkratz@uaex.edu and John Richeson, Program Associate - ABIP, 501-671-2180, jricheson@uaex.edu

Winter Annual Demonstration

Success Story – A Montgomery County farmer planted rye and grazed 35 extra days. Due to the success of the project, this farmer will now plant winter annuals each year and has purchased an electric fencing system to strip graze the winter forage area for maximum usage.

Twenty-two producers representing 952 acres increased carrying capacity of their land by using soil sampling and adequate fertilization for winter forage and summer forage crops.

Number and Names of Counties Involved – 3: Lonoke, Montgomery, Pulaski

Impact Numbers – Winter feed costs were reduced an average of 30%.

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Factors Affecting the Selling Price of Calves

Success Story – 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 - Benton, Boone, Carroll, Faulkner, Franklin, Hope, Independence, Logan, Pike, Randolph, Searcy, Sebastian, Sharp, Washington, Yell County

CES Section Contact Person – Dr. Tom R. Troxel, Section Leader - Animal Science, 501-671-2188, ttroxel@uaex.edu and Dr. Brett Barham, Extension Livestock Specialist, 501-671-2162, bbarham@uaex.edu.

Horn Fly Demonstration

Success Story – Fly control programs and demonstrations were conducted throughout Arkansas. Producers learned that not controlling horn flies could result in reduced weight gains and less profits. Controlling flies on cattle, which costs $1.00 to $2.00 per animal, often can return $20.00 per animal.

Number and Names of Counties Involved – 2: Scott and Sharp

CES Section Contact Person – Shaun Rhoades, County Extension Agent – Staff Chair, 479-637-2173, srhoades@uaex.edu and Joe Moore, County Extension Agent – Staff Chair, 870-994-7363, jjmoore@uaex.edu.

Choosing the Correct Cattle Feed Supplement

Success Story – Two meetings were conducted on balancing rations and developing strategies for dealing with limited hay supplies. Twenty-four hay samples were analyzed, and rations were developed. The results were presented and discussed at a meeting at the Extension Office. In late July, a meeting was scheduled to discuss winter annuals, by-product feeds, and program feeding cows. Cow/calf producers report $8 to $12 per head savings in feed cost by using custom rations. Three producers used by-product feeds to reduce the need for hay and plan to use the increased warm-season forage availability to expand cow numbers.

Number and Names of Counties Involved – 1: Pike

CES Section Contact Person – Mike McCarter, County Extension Agent – Staff Chair, 870-285-2161, mmccarter@uaex.edu and Dr. Shane Gadberry, Extension Livestock Specialist, 501-671-2169, sgadberry@uaex.edu.

Cow Herd Performance

Success Story – A Crawford County beef producer decided to make some positive changes to improve their herd and general management. They purchased good quality bulls, calved in the spring and sold their calves as yearlings after over wintering them. In year 1, the heifers averaged 533 pounds, and the steers averaged 589 pounds. In year 3, the herd average weaning weight increased by 121 pounds and frame size improved from 4 to 5.7.

These improvements in calf performance led to participation in the Steer Feedout Program to evaluate feed lot performance. After two years in the University of Arkansas Feedout Program, they had learned what calf types were profitable to retain ownership on and had expanded their marketing options to include selling their cattle through a retained ownership program

Number and Names of Counties Involved – 1: Crawford

CES Section Contact Person – Carey Wall, County Extension Agent – Agriculture, 479-474-5286, cwall@uaex.edu.

Program Response: Dairy Cattle Management

Contact: Dr. Jodie Pennington, Animal Science Section, 501-671-2190, jpennington@uaex.edu

Situation

The total annual economic impact of the dairy industry with heifers and dairy products is $450 million. Approximately 220 dairies with 24,000 dairy cows are located in Arkansas. With an average milk production per cow of 13,250 pounds in commercial herds, the Arkansas dairy industry produces over 300 million pounds of milk per year. Milk income is $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.

Stakeholder Input

The Cooperative Extension Service worked 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.

Since many agents are relatively new and have had limited exposure to large dairy farms, a tour of the dairy industry in California was provided for agents in major dairy-producing counties. The week-long tour allowed agents to view some of the best dairy facilities and management in the U.S., see both on-farm and cooperative value-added dairy ventures and other dairy agents in a different state.

Many factors affect profitability in the industry, but higher milk production per cow is associated with greater profits per cow. Arkansas dairies need to increase their production per cow to be competitive. 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.

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.

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. Demonstrations of fly ash and practices to increase cow comfort improve the health of the cow were continued. A demonstration with seaweed as a feed additive showed that it can help alleviate part of the stress of hot cows in the summer.

As financial incentives develop for milk producers, 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 sixth 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, the new farm bill and the Milk Income Loss Contract (MILC). The last 1 1/2 years have had record high milk prices. However, 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. 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.

Extension Program Results and Accomplishments

Output Indicators

14,033 Number of producer and contacts attending educational programs (including Extension-related industry meetings), field days, etc., and receiving educational materials.

85 Number of educational events.

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

11 Number of educational newsletters produced.

58 Number of herds involved in DHIA program, 26% of all herds.

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

1,200 Number of fourth grade students participating in the Domino's Pizza Ranch educational activity.

Outcome Indicators

- In 2004, the average milk production per cow for DHIA herds was 17,485 pounds, compared to the state average of 13,250 pounds.
- Greater milk production from DHIA herds amounted to increased income of about $700 per cow, or $80,000 annually, in a 120-cow herd.
- Grant was obtained for trip to California to allow agents to view some of the best dairy facilities and management in the U.S., plus see both on-farm and cooperative value-added dairy ventures.

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 available county and statewide as well as regionally through dairy newsletters and 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, Yell.

Program Response: Forage Production and Management

Contact: Dr. John Jennings, Extension Livestock Specialist - 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 Bermuda grass. 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 2005 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 2005 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 32 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.

Bermuda grass and alfalfa hay are valuable cash crops for many producers. Both forages are recognized for quality and yield. Bermuda grass 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. Demonstrations began in 2002. Production and financial data are being collected. 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 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 that developed feeding programs based on the quality of their hay had more effective 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 a higher average feed cost.

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

2,568 Number of educational meetings, demonstration farm visits and/or field days held to educate clientele on forage production and grazing management.

1,068 Number of educational meetings, demonstration farm visits and/or field days held to educate clientele on beef cattle nutrition.

4 Number of grazing schools conducted during 2005.

150 Number of participants in grazing schools for 2005.

64 Number of Reducing Winter Feed Cost farm demonstrations conducted in 2004-2005.

78 Number of Reducing Winter Feed Cost farm demonstrations underway for 2005-2006.

22 Number of producers using strip-grazing for their stockpiled forages.

9 Number of youth teams that competed in the 2005 State Grassland Evaluation Contest.

35 Number of youth participants in the State Grassland Evaluation Contest.

Outcome Indicators

1,698 Number of participants who changed their forage and grazing management production practices for beef, dairy and horses.

- In the winter of 2004-2005, 26 producers saved an average of $12.52 and $13.93 per head when grazing stockpiled fescue and stockpiled Bermuda grass, respectively, in winter instead of feeding hay and supplement.

- Twenty-two producers used strip grazing for their stockpiled forages thus gaining an additional 31 and 23 animal-unit grazing days on stockpiled fescue and stockpiled Bermuda grass, respectively, than those that allowed cattle unlimited access to the stockpiled pasture. This increase was worth an average of $521 and $564 per farm for the fescue and Bermuda grass projects, respectively.

- In 2004-2005, the average cost per head was $0.99 for producers that dev eloped feeding programs based on the quality of their hay.

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

Programs of Excellence

Forage Budget for Northwest Arkansas Bermuda Grass

Success Story Because of the intense recordkeeping skills that many of the producers in this area have implemented, information on equipment, fertilizer, chemical, yield, bale type and net returns was easily collected and placed in the Mississippi State Budget Generator to determine the average cost of production of high quality Bermuda grass. This information provided a baseline for producers to see where they were in terms of average expenses, yields and returns when compared to other producers in the area.

The overall goal was to obtain the average cost of quality Bermuda grass production in high phosphorus content pastures. The data was collected from producers in three counties. Information was collected using 150 acres of Bermuda grass, 6 producers and two bale types. Results have been published in the Washington County Beef and Forage newsletter. A poster was developed to showcase the results and was presented at the National Association of County Agriculture Agents and at the Madison County Farmer Appreciation Day, and full spreadsheets are available on the University of Arkansas Division of Agriculture web site.

An overall budget for Bermuda grass production in Northwest Arkansas is in place to better assist producers with assessing input costs and baseline returns on Bermuda grass production. This, coupled with long-term data on phosphorus reduction of management intensive production, can give producers a better assessment of the economics of Bermuda production and phosphorus management.

Number and Names of Counties Involved – 3: Carroll, Madison, Washington.

CES Section Contact Person – Johnny Gunsaulis, County Extension Agent – Agriculture, 479-444-1755, jgunsaulis@uaex.edu

Winter Feeding Costs Reduced in Yell County

Success Story – A county producer was able to reduce winter feeding costs for his beef herd as a result of a stockpiled Bermuda grass demonstration. In this herd of 37 cows, feeding cost savings were $27.79 per animal unit or a net increase in income of $1,028 through reduced feeding costs. Forage quality of the stockpiled forage was adequate to maintain the body condition of the cattle during the grazing period. A total of 3,000 pounds of forage dry matter per acre was produced. A forage usage rate of 74% was achieved by using electric fencing and strip grazing techniques. This demonstrated practice was adopted by five other producers, and all reported significantly reduced winter feeding costs.

Number and Names of Counties Involved – 1: Yell

CES Section Contact Person – Kenny Combs, County Extension Agent – Agriculture, 479-229-4441, kcombs@uaex.edu

Fertility and Harvest Interval Effects on Forage Quality

Success Story – Forage producers have become accustomed to harvesting their forage when the forage is at a particular height or stage of growth. While the former is a guess as to the age of the forage at harvest, the latter is a better measure of age and quality. Producers harvest most forages when they can produce a quantity of forage, rather than quality forage. If producers knew when to harvest their forages at their highest nutrient quality, they could save considerable expense during winter feeding by providing their animals with quality forage that may not need additional supplementation.

In 2004, a demonstration was established in Hempstead County with three nitrogen rates, three potash rates and three harvest intervals in a native grass meadow. The objective was to determine the combination of nitrogen and potash fertilization and harvest interval that would produce the greatest quantity and highest quality forage. This particular demonstration was repeated in 2005. The data from 2004 was presented in a poster display at the 2005 NACAA AM/PIC meeting in Buffalo, New York.

The results from this demonstration restate facts already known that harvesting forage while in the vegetative stage will produce forage of higher nutritional value than forage harvested in the reproductive stage. Forage in the reproductive stage will yield higher volumes with higher fiber content. Producers need to be educated to harvest forage when it is of a higher nutritional quality and rely less upon quantity.

Number and Names of Counties Involved – 1 county: Hempstead County

CES Section Contact Person – Gerald Alexander, County Extension Agent – Staff Chair, 870-777-5771, galexander@uaex.edu

Improved Pastures Improves Bottom Line

Success Story – Knowledge of the best management practices that can improve forage production for livestock was addressed in Marion County. Specific needs included establishing and management of warm-season forages, addressing health issues with livestock, best control methods for weed problems in pastures and hay meadows and also options for dealing a severe drought in the county in summer of 2005.

A multi-county educational meeting on best management practices for Bermuda grass was planned and conducted. Sixty-five forage producers learned recommended varieties and how to properly manage Bermuda grass for high yield and also high quality. The Marion County Extension Service advised 175 livestock producers via newsletters, personal farm visits and office visits on ways to deal with a severe drought situation. The most common inquiries included hay sources, pasture establishment on drought ravaged fields, developing balanced feeding rations and marketing options. As a result, farmers have reported improvement of yield and quality on 1,000 acres of Bermuda grass pastures. In addition, 25 livestock producers have reported improving plans for dealing with the severe drought of 2005 such as better marketing plans, 1,500 acres of improved cool-season forages and 800 acres of improved weed control.

Improvements in animal performance and marketing decisions resulted in an increase of a total of $175,000 for those farmers participating in these Extension Service programs.

Number and Names of Counties Involved – 1: Marion County

CES Section Contact Person – Terry Davis, County Extension Agent – Staff Chair, 870-449-6349, tdavis@uaex.edu

Forage Quality Awareness

Success Story – Cattlemen are trying to improve not only forage quantity but also forage quality. Based on input from the Agriculture Advisory Committee, a forage clinic was conducted in the early spring of 2005. Topics included forage selection and nutritive value, reducing winter feed cost and fire ant control in pastures. Of 22 producers who attended the clinic, 9 producers who had previously not soil sampled their farms did so. Five of them indicated an improvement in forage yield as a result. One producer also enrolled in the Reducing Winter Feed Costs project.

Number and Names of Counties Involved – 1: Howard

CES Section Contact Person – Sherry Eudy, County Extension Agent – Agriculture, 870-845-7505, seudy@uaex.edu

Identifying More Efficient Bermuda Fertilizer Practices

Success Story – The Quality Forage Committee identified the need to document the efficiency of recommended fertilizer practices used in the production of quality Bermuda grass hay. The continuing increase in fertilizer prices serves to elevate the importance of demonstrating the value of fertilizer rates and N-K ratios. Fertilizer, as the primary production cost, affects yield, quality and return per acre.

Results of the initial two-year study, "The effect of N-K fertilization on forage yield and fertilizer efficiency," were provided to 95 county producers and to an additional 109 producers from a seven-county area. Producers from Benton, Baxter, Boone, Carroll, Johnson, Marion, Newton, Searcy, Van Buren and Washington counties in Arkansas attended programs where the information was presented. Results from the three-year demonstration study, using three fertilizer treatments, indicate that adequate potassium fertilization increased yields 11% and fertilizer efficiency by 10%. Medium fertility applications produced 18% lower yields but were 33% more efficient per unit of fertilizer applied. Producers have increased efforts to monitor soil potassium levels and efforts to balance production efficiency.

Number and Names of Counties Involved – 10: Benton, Baxter, Boone, Carroll, Johnson, Marion, Newton, Searcy, Van Buren, Washington

CES Section Contact Person – Robert Seay, County Extension Agent – Staff Chair, 479-271-1060, rseay@uaex.edu

Program Response: Horse Management

Contact: Steve Jones, Extension Horse Specialist, 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 and equipment and horsemanship principles.

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 2005. 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 that 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 is an eight-hour in-service that emphasized horse nutrition, hoof care and horse health.

The equine educational committee of horse producers and allied industry representatives continues to assist with programming and funding.

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 2005, the third Horse Grazing School was conducted. The previous two schools were regionalized training. The decision was made to have a statewide school in 2005. The horse specialist in partnership with the forage specialist conducted the school. Subject matter included horse nutrition, grazing behavior, facilities, forage species and growth patterns, plant ID, forage establishment and management, grazing systems and nutritional

disorders. Participants received a notebook with materials and fact sheets, plus a CD with all PowerPoint presentations and a forage and plant database.

The horse specialist developed the teaching curriculum and visual aids for the Arkansas EIA Certification Program. The curriculum includes a notebook that explains the purpose of the program, procedures, legal forms, explanation of Act 540, horse identification and conduct of EIA Verifiers. A PowerPoint presentation was developed for EIA Certification instructors. The horse specialist revised the program in the beginning of 2005 after evaluating the initial year with the EIA Verification Program Committee. In 2005, CES developed a DVD for use by county faculty for individual instruction or small group instruction of clientele. The grant for this program was not renewed by the Arkansas Livestock and Poultry Commission. The Horse Specialist will remain as a member of the EIA Advisory Committee, but the Arkansas Livestock and Poultry Commission will conduct the EIA Verification Program.

Extension Program Results and Accomplishments

Output Indicators

8 PREP training sessions conducted.

1,000 Number of clientele attending PREP courses.

6 Number of Horsemen's Short Courses taught.

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

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

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

2,300 Number of participants receiving EIA Training and Certification.

58 Number of county agents trained as EIA program verification instructors.

25 EIA training sessions conducted.

1,300 Number of producers attending educational programs (including Extension-related industry meetings), field days, etc., and receiving educational material.

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

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

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

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

Outcome Indicators

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

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

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

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

100% 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. 21 Counties: Arkansas, Carroll, Cleburne, Conway, Desha, Drew, Faulkner, Hot Spring, Izard, Jackson, Jefferson, Lincoln, Logan, Madison, Pike, Pulaski, Randolph, Stone, Van Buren, Washington.

Program of Excellence

Horse Short Course

Success Story – During the Agriculture sub-committee meeting, the number of horse owners was discussed and some of the problems that they were faced with. As a result, it was decided to conduct a short course on horse production for county residents.

The program was named the Clark County Horse Production Short Course and was conducted at the Clark County Fairgrounds. The meeting was held two different nights in January. The meeting was advertised in Clark and the surrounding counties. Sixty-six horse owners attended one or both nights. Thirty different horse owners have stated that the nutrition program of their horse has improved because of this short course.

The horse owners are more aware of the different feeds that are available and the difference between them.

Number and Names of Counties Involved – 1: Clark

CES Section Contact Person – Jerry Clemons, County Extension Agent – Staff Chair, 870-246-2281, jclemons@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

7 Field and applied research trials.

5 Popular press or newsletter articles.

25 Presentations at local, regional or state meetings.

3 Training workshops for area poultry producers.

78 Farm visits and one-on-one consultations.

3,409 Poultry producers were instructed on water quality management.

Outcome Indicators

1,138 Water samples submitted for microbial and mineral analysis

749 Poultry producers changed their water quality management practices.

8 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 led 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

6 Intensive workshops conducted.

21 Meeting presentations.

32 Follow-up visits.

258 Breeder managers received training.

4 Breeder roundtable meetings.

Outcome Indicators

21 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 cannot operate 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 led 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

4 Intensive workshops conducted.

11 Meeting presentations.

13 Follow-up visits.

176 Hatchery managers received training.

4 Hatchery roundtable meetings.

Outcome Indicators

6 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

3 Poultry Expo Programs.

13 Management-related newsletter or popular press articles published.

1,456 Producers received the latest production information.

92 Farm visits or one-on-one consultations.

Outcome Indicators

77 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% 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. Thirteen 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

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

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

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

5,560 Number of individuals attending educational meetings, field days, demonstrations or workshops and receiving educational materials.

Outcome Indicators

6 Number of participants who adopted new production technologies.

8 Number of new commercial operations.

5 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% 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 85 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.

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

2,973 Attendance at talks given during the plant discussing plant selection.

Outcome Indicators

11 Number of new commercial operations.

19 Number of new commercial producers.

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 and 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. The majority of our county agents are not technically trained in horticulture and need assistance in their county in handling horticulture issues. In addition, 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.

Stakeholder Input

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

Overview

The Arkansas Master Gardener program began in 1988. Over 6,000 Master Gardeners have been 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 which are shared with county leaders in addition to the Master Gardener clientele.

To help spread the educational message, various mass media outlets are used. The Extension web site has been updated and is very user friendly, with vast amounts of horticultural information. A consumer horticulture CD was developed which contains horticulture information and has been selling successfully. Weekly newspaper articles and features, magazine articles, radio shows and a monthly television show all add to the community outreach.

Extension Program Results and Accomplishments

Output Indicators

In 2005, 766 new Master Gardener volunteers were trained, with 1,791 active Master Gardeners returning, giving us a total of 2,557 Master Gardener volunteers in Arkansas sharing their talents statewide. These Master Gardeners volunteered 102,991 hours in the state, and accrued 61,457 hours in educational hours. In dollar terms using a $17.00 per hour rate, this had an impact of $2,795,616.

Individual	Group	Events	Method
13	1,307	34	Civic programs
0	0	1	Demonstrations
869	2,945	47	Educational meetings
0	0	3	Field days
0	11,413	20	Flower and garden shows
2	10	64	News-article
0	0	4	Newsletter
548	85	39	Office consultations
321	1,546	74	Other
0	1,516	56	Radio
1,761	173	63	Site visits
0	25	13	TV
0	0	1	Web-based education
3,514	19,020	419	Total
100%	100%	100%	% goal
3,514	19,020	419	Total goal

Outcome Indicators

25,297 Number of participants who improved their home garden or landscape.

29,491 Number of participants who participated in leisure gardening activities.

22,551 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 emails. A new horticulture CD was also produced containing a wealth of horticulture materials and sold statewide.

Scope of Program –
State Specific: Master Gardener programs are in the following 52 counties: Arkansas, Baxter, Benton, Boone, Carroll, Chicot, Cleburne, Columbia, Conway, Craighead, Crawford, Crittendon, Cross, Desha, Drew, Faulkner, Fulton, Garland, Grant, Greene, Hot Springs, Independence, Izard, Jefferson, Johnson, Lawrence, Logan, Lonoke,

Madison, Marion, Miller, Montgomery, Newton, Ouachita, Perry, Pike, Polk, Pope, Prairie, Pulaski, Randolph, Saline, Searcy, Sebastian, Sharp, St. Francis, Stone, Union, Van Buren, Washington, White, and Yell.
Multi-state: Arkansas, Oklahoma, Louisiana, Mississippi.
Multi-state Extension: Arkansas, Oklahoma, Louisiana, Mississippi, Florida, Minnesota, Tennessee.

KEY THEME: RISK MANAGEMENT

Program Response: Native American Agricultural Producers

Contact: Janie Simms Hipp, J.D., LL.M., 479-575-6935, Environment and Natural Resources; Jennie H. Popp, Ph.D., 479-575-2286, Department of Agricultural Economics and Agribusiness

Situation

There are currently nearly 562 federally recognized Tribal Nation governments in the United States. Within these Nations are agricultural producers who are women, limited resource farmers and ranchers, and these producers are among the traditionally underserved populations. Even so, recent Agricultural Census data indicate that the numbers of underserved producers is on the rise. Agricultural producers within Tribes historically have had little access to specialized agricultural production and resource management information for a number of reasons. First, the traditional link to Extension and land grant institutions is not nearly as strong as the Tribal members' link to his or her own Tribe. Many Tribal governments do not have existing infrastructure of specialized knowledge or support for agriculturalists, or may only now be taking the initial steps to develop such knowledge base and support. Furthermore, Tribal members in many states are dispersed; in other states they are engaged in agricultural efforts on reservations. Tribal leaders do not always possess reliable data regarding the extent of agricultural production and the natural resource management and agricultural production education needs within their communities. Arkansas was the home of many Tribes whose original homelands were in the southeastern United States and who were removed to Indian Territory (now Oklahoma.) The University of Arkansas has long recognized this link between Arkansas and the Tribal Governments in that it offers in-state tuition status to those persons who are members of seventeen different Tribes who made their home in early Arkansas Territory. Two University of Arkansas research and Extension personnel identified the need to provide targeted information and outreach to Native American producers. One of these professionals is a member of the Chickasaw Tribe of Oklahoma, has a history of working with Tribal governments in Oklahoma, and is a lawyer. The other is an agricultural and natural resources economist. Both are women. Through their initial interest in this area, a growing body of work is developing, focusing on the needs of Native American producers with the focus on encouraging the development and increasing the body of knowledge and education on a wide variety of issues that affect traditionally underserved producers.

Stakeholder Input

Early stakeholder input on these efforts was with the American Indian Center of Arkansas, an organization providing educational and job linkage to the Native American community (and which is the project leader in efforts to have the Trail of Tears recognized as a national park area). We were able to establish early strong linkages with the Cherokee Nation of Oklahoma and the Choctaw Nation of Oklahoma. These two nations' land holdings account for roughly one-third of the entirety of the eastern part of Oklahoma. Year two stakeholder

linkages are being established in Mississippi and further west within the state of Oklahoma to approximately thirteen additional Tribes. During year two of this program effort (years one and two funded under USDA Risk Management Agency grants), we were able to secure funding for a three-year project (2004-2006) that will focus on the risk management needs of Native American Women in Agriculture. Our work in this broader community is just beginning, but this later project will build on early relationships and will establish new relationships with Tribal members and Extension Reservation personnel throughout the United States. Stakeholder input is critical and key to the delivery of any substantive educational tool within the Native American community. Our project approach is to develop relationships through soliciting, receiving and incorporating stakeholder input from a variety of sources within the Tribal community: the agricultural liaison (should one exist); the land resource managers, the environmental mangers, the educational managers, and the Chief/Governor/Chairman's office. This approach has been generally accepted. We also have been happy to incorporate the Intertribal Agricultural Council as a key stakeholder and participant on these efforts with us.

Overview

Our program efforts in this area began in FY 2003 with an initial RMA grant to do educational training and outreach among Tribal groups in Oklahoma. We had initial success in that program and were able to secure funding for FY 2004 of a renewal grant to continue our efforts westward in Oklahoma and in Arkansas and Mississippi. We have conducted numerous farm shows, targeted public educational sessions and have written and published/disseminated a risk management guide (250+ pages) for Native American producers. We were able to secure a three-year grant to continue these sorts of efforts at risk management education targeting the Native American Women in Agriculture throughout the southeast, mid-south and southwestern United States. Our program efforts are just beginning but we anticipate this will prove to be an important project. The project was funded by CSREES. In our programming, we have specifically solicited comments and suggestions regarding areas of need, while also interjecting standard or developing bodies of information. Risk management is the focus of our educational efforts, but this necessarily incorporates a wide array of topics from production management of risk, diversification, to legal issues that might face the producer, to estate and business planning. The substantive information contained in the educational offerings is easily accessible by a wide variety of traditionally underserved or minority or limited resource agricultural producers.

Extension Program Results and Accomplishments

Output Indicators

A 250+ page risk management guide has been developed and disseminated throughout the Tribal nations in Oklahoma. We updated this guide and continue to update on a web site for further dissemination within the southeast, mid-south and southwestern states as well as in conjunction with the Women in Agriculture project. That guide will, at the conclusion of the women in agriculture effort, be available throughout the United States and will have targeted audiences within the 380 Tribal nations. We are in planning stages for bringing on line a dedicated web site for these efforts. We also have attended at least one dozen farm shows in the region and conducted half a dozen targeted educational presentations on these issues. The Intertribal Agriculture Council has published an article outlining these program efforts in their 2004 newsletter offerings and this newsletter is available on line and throughout the Tribal nations.

Outcome Indicators

As our presence on these issues continues, we are noticing an increase in numbers of calls we receive monthly from Tribal Nations. We keep in close contact with the Choctaw and Cherokee Nations, but the impact of the effort is broadening to other Nations as well. As the program proceeds, we will be able to better gauge outcome. Activities in the area have been publicized alongside numerous Inter Tribal events throughout the country, such as the annual Inter Tribal agriculture council meeting, the Southwest Indian Agriculture Association meeting, and the Inter Tribal National Reservation Conservation Association. Future events are in the planning stages.

Source of Funds

Funding for the initial effort and a renewal grant continuing the effort came from the USDA Risk Management Agency. Additional funding into this body of work is from CSREES.

Scope of Impact

Dissemination – Educational materials are available in written form now and will be ultimately available on line through a dedicated web site focusing on these particular producers. Over 100 copies of the initial materials have been made and disseminated. The CSREES portion of the program effort will result in additional publications, additional mailings of existing publications and will involve numerous meetings throughout the southern states.

Scope of Program – While beginning with Oklahoma and Arkansas, the second phase of this effort was broadened to Oklahoma, Arkansas and Mississippi. Additional work was further broadened in efforts throughout the southern states.

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 300,000 are hospitalized and 5,000 people die from food-borne 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 $674 million to the economy. Cattle production is the most widespread segment of livestock enterprises and contributes $139 million. Field crop production is also a vital contributor to the state economy, with Arkansas being the leading rice-producing state. The total impact of agriculture on the gross state product is over $13 billion and accounts for 15 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 food-borne 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 food-borne diseases on health in the United States is considerable. According to the CDC, the percentage of people in industrialized countries suffering from food-borne 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 is 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 have assisted with increasing contacts.

Total FTEs
4.77

Total Budgetary Amount
$342,875.59

KEY THEME: FOOD QUALITY

Program Response: Food Processing Extension

Contact: Steven C. Seideman, Institute of Food Science & Engineering, 479/575-4221, seideman@uark.edu

Situation

Food processing is a large business in Arkansas. About 25% of all manufacturing in Arkansas is food processing, representing an $11 billion per year business. There are 232 food processing establishments in Arkansas directly employing over 55,000 people. Although rice and poultry processing may, in part, be located in Arkansas due to the proximity to raw materials, a number of food processing establishments are in Arkansas due to 1) good, economical labor force, 2) access to the interstate road system, 3) central location in the U.S. and 4) status as a "right to work" state. Since many large, national food processors have processing facilities in Arkansas because of the above mentioned factors, it is reasonable to assume that smaller food processing businesses and entrepreneurs can capitalize on these advantages and establish successful businesses. The state of Arkansas is dedicated to its food processors and is committed to providing assistance to existing food processors as well as helping entrepreneurs get into the food processing business. By attending to the needs of large food processors, we can keep them in the state and possibly attract new businesses to Arkansas. By attending to the needs of entrepreneurs, we can help create new businesses and jobs.

Stakeholder Input

In 2002, 232 surveys were mailed out to all food processors in Arkansas from a list obtained from the Arkansas Economic Development Commission. The surveys asked for what existing food processors in Arkansas wanted in the form of assistance from a Food Processing Extension position. In addition, over 20 person-to-person interviews were conducted with some of the larger food processors in Arkansas. The responses from the mail-out surveys and the interviews were very similar as far as the top three requests. Listed below are the percentages of positive responses for the main three activities requested.

Activity requested	% Response from Mail-out Survey	% Response from Interviews
Website/newsletter	82%	80%
Web-based education courses	69%	60%
Workshops on food safety and quality	65%	60%

The above survey shows the requests of established food processors but does not address the needs of entrepreneurs. Based on telephones calls from entrepreneurs, their requests range from information on starting a food business to finding a co-packer, to various assistance we offer (pH determination, nutritional labeling, etc.).

In July 2005, 23 large food processors in the Jonesboro, Arkansas, area and in Northwest Arkansas were visited at their processing facility and asked about what they expect or would like from the Food Processing Extension position. Almost every single processor would like workshops in food safety and some wanted workshops in new product development. Although more visits are planned to additional food processors for their views, it appears clear that greater emphasis is needed in these areas in the future.

Overview

Prior to the fall of 2002, Food Processing Extension (0.5 FTE) consisted of having one Better Process Control School per year, conducting one workshop per year (usually on the subject of Starting a Food Business) and responding to telephone calls primarily from people wanting to get into the food industry.

In the fall of 2002, mail-out surveys to all food processors in Arkansas and interviews with large food processors in Arkansas as discussed in Stakeholder Input section above, led to the planning and development of a full Food Processing Extension function program for Arkansas. This program's overall objective became "To provide educational programs, applied research, support services and assistance to the existing large commercial food processors, small food processors and entrepreneurs." The main emphasis from 2002 through 2005 was on assisting entrepreneurs to get into the business. In 2005, it was decided that our entrepreneur program was fairly well developed and that emphasis should become more on assisting existing food processing businesses.

Based on surveys, interviews and new information continuously becoming available, the following initiatives were developed and implemented in 2003-2005 or are planned to begin in 2006.

1) Food Processing web site – launched January 2003. This web site (www.uark.edu/ua/foodpro) describes the services we offer and some food processing information.

2) Web-Based Educational Programs – Started in May 2003 and completed in May 2005. This web site (www.uark.edu/ua/foodedu) contains 41 modules of instruction free to anyone. These modules are one-hour PowerPoint slides with narration on topics from starting a food business, how to form a food cooperative and numerous food safety programs.

3) Support Services – Such as pH, nutritional labeling, finding copackers, etc., are in place and are being used by entrepreneurs.

4) Workshops – The IFSE has been offering a Better Process Control School since 1973. We continue this workshop every November. In addition to the regularly scheduled Better Process Control School, a special Better Process Control School was conducted in August 2005 for Gerber Baby Food in Fort Smith as requested by the company. A UA/FDA co-sponsored Labeling workshop was initiated in April 2005 and will be conducted on an annual basis. In 2006, additional workshops on New Product Development and Food Safety will be conducted in response to industry input.

5) A reference guide is currently being developed that will contain all the information needed for food processing entrepreneurs and small businesses. This guide will be used in all workshops. It is scheduled for completion in May 2006.

Extension Program Results and Accomplishments

Output Indicators

166 Number of telephone calls from the food industry and entrepreneurs requesting assistance.

3 Number of independent workshops (total number of participants = 78).

3 Number of workshops assisted with but not as a primary coordinator (mostly producer groups).

168 Number of support services provided (pH, nutritional labels, etc.).

221 Hits on general food processing web site.

98 Hits on food education web site since March 2005.

5 Acted as High Acid Processing Authority.

Outcome Indicators

67 Certificates issued for Better Process Control School held in accordance with FDA provisions in November 2003.

8 Businesses started due to Extension assistance.

Source of Funds

Funds are from a special CSREES grant to the Institute of Food Science and Engineering.

Scope of Impact

Dissemination – This program is available to residents of the state. Free web-based educational programs are available nationwide.

Scope of Program – State specific.

Program Response: Grain Storage and Drying to Preserve Quality with Minimal Losses

Contact: Dennis R. Gardisser, Biological and Agricultural Engineering, 501-671-2241, dgardisser@uaex.edu

Situation

Much of the corn, soybeans, wheat and rice harvested each year is placed in farm bins for drying and storage. Some of this grain is held for short periods or only until dried. Many crops may be held as long as one year. Drying management and insect control have a significant impact on the quality of stored grains.

Stakeholder Input

Producers continually request additional assistance with management strategies and help with economic analysis.

Overview

Several producer programs were conducted to discuss general management procedures for those growers using on-farm grain storage and drying. Growers were instructed regarding how to optimize the use of existing facilities, with the primary emphasis being efficiency and grain quality. Several workshops were conducted with commercial operators to enhance the quality of grain in the end product after storage. These programs were conducted with the cooperative assistance of the peer research group.

Engineers continue working with Arkansas Department of Corrections (ADC) to develop the most efficient operating guidelines for their new grain drying facility. Extension engineers are participating in the third year of a joint research project with food processing engineers and the staff at ADC to investigate ways to control insects in rice storage other than using chemicals. This research effort expanded this year to two other farms in the state.

A major training session was conducted during October to review on-farm practice recommendations. Sessions were held in Missouri, Arkansas and Texas.

Extension Program Results and Accomplishments

Output Indicators

15 Producer meetings to discuss grain drying and storage.

25 On-farm visits to work hands-on with producers on grain bin management strategies.

2 Research demonstration projects in full-size bins.

7 Popular press articles.

500 Producers attended meetings on grain drying.

Outcome Indicators

188 Arkansas producer responses to a mail-out survey on current on-farm handling and drying practices.

Source of Funds

FSL, CSREES grant, and Rice Research Promotion Board grant.

Scope of Impact

Dissemination – This is a statewide and regional program that has been made available to all producers. A web page was developed to distribute the information and software programs that were developed.

Scope of Program – Programs were presented in 20 of the primary grain drying counties in Arkansas and Missouri.

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 food-borne illness from pathogenic bacteria is increasing. Centers for Disease Control estimates food-borne 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 food-borne 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

623 Number of consumers participating in educational short courses or meetings related to sanitation and safety in food handling.

4,107 Number of people reached through food safety awareness programs, demonstrations or displays.

107 Number of media articles produced on food safety issues.

535 Number of participants in educational programs leading to certification for food handlers (i.e., ServSafe programs and Better Process schools).

59 Number of non-certified programs for food handlers.

34 Number of growers, producers, distributors or retailers attending food safety educational programs.

Outcome Indicators

72 Number of consumers who report improved sanitation in food handling.

130 Number of food handlers certified.

40 Number of food service managers who report improved food handling practices within a commercial establishment.

34 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 2005 included Baxter, Benton, Boone, Carroll, Crawford, Faulkner, Greene, Independence, Izard, Jackson, Johnson, Lawrence, Lonoke, Mississippi, Pope, Pulaski, Sebastian, Stone, Union, Washington, and White. Additional food safety programs are likewise conducted statewide.

KEY THEME: FOOD SECURITY

Program Response: Homeland Security

Contact: Dennis R. Gardisser, Biological and Agricultural Engineering, 501-671-2241, dgardisser@uaex.edu

Situation

Terrorist attacks on September 11, 2001, have changed the relaxed paradigm within the agricultural chemical community.

Stakeholder Input

Producers continually request additional assistance with management strategies and help with economic analysis.

Overview

Cooperative efforts have been conducted with the Transportation Safety Administration (TSA), FBI and others to increase awareness among the agricultural community.

Extension Program Results and Accomplishments

Output Indicators

20 General aviation meetings to review safety procedures.

22 Agricultural aviation meetings to increase awareness of concerns about commercial aerial applications.

Outcome Indicators

Aviators are now more aware and are installing and implementing more security measures.

Source of Funds

FSL

Scope of Impact

Dissemination – This is a statewide program. Programs were also presented in Mississippi, Louisiana, Tennessee, Texas, and Missouri.

Scope of Program –

State Specific: This program has been made available to all the Arkansas aviation community and to the

surrounding states.

Multi-state Extension: Mississippi, Louisiana, Texas, Oklahoma, Missouri, Tennessee.

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

6 HACCP or sanitation workshops.

36 Plant HACCP implementation visits.

Outcome Indicators

206 Workshop participants learned HACCP principles.
8 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. It has been estimated that 14 percent of deaths can be attributed to poor eating and lack of physical activity. 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 7.9 percent – one of the highest in the U.S. Approximately 156,000 Arkansans have been diagnosed with diabetes, and an estimated additional 78,000 have the disease but are unaware of their condition.
- Arkansas has one of the highest obesity rates with 61 percent of adults being either overweight or obese.
- Childhood obesity in Arkansas has reached epidemic proportions, where 14 percent of children 0-5 years are at risk for becoming overweight and nearly 12 percent are considered overweight. Among school-age children in grades K-12, 17 percent are at risk for becoming overweight and 21 percent 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.
- Almost 79 percent of adult Arkansans are at risk for health problems related to lack of physical activity.
- The U.S. Department of Agriculture, Economic Research Service report using data averages for 2002-2004 revealed that 14.8% 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 2004, 490,641 persons in 193,113 Arkansas households participated in the Food Stamp Program at a cost of $336,092,234. Among Arkansans receiving food stamps, 48% were children and 5% 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
67.72

Total Budgetary Amount
$2,921,274.99

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% of American adults do not get enough physical activity to provide health benefits. Almost 36% of Arkansans do not engage in any physical activity. Arkansas ranks 6th in the percentage of adults who do not participate in any physical activity (the national average is 28%).

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

847	Number of educational programs offered that relate to physical activity.
7,899	Number of participants attending educational programs related to physical activity.
20,164	Number of people reached through awareness programs, exhibits, and media outlets based on topics related to physical activity.
59	Number of educational resources prepared related to physical activity.
143	Youth participated in Kids Walk Across Arkansas.
3,564	Number of people who participated in the Walk Across Arkansas walking program.
216,147	Number of miles walked by Extension program participants.

Outcome Indicators

80%	Percent of individuals who increased walking activities from less than 3 times per week to 3 or more times per week as a result of completing an Extension program.
98%	Percent of individuals who increased strength training activities from less than 3 times per week to 3 or more times per week as a result of completing Extension program.
94%	Percent of individuals who increased aerobic exercise activities from less than 3 times per week to 3 or more times per week as a result of completing an Extension program.
81%	Percent of individuals who reported they now get 30 minutes of moderate physical activity on most days as a result of completing an Extension program.
89%	Percent of individuals who were asked about personal exercise practices increased 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 have 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 65 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, Madison, Montgomery, Mississippi, Ouachita, Perry, Pike, Poinsett, Polk, Pulaski, Randolph, Scott, Searcy, Sebastian, Sevier, Stone, Van Buren, White, Woodruff and Yell.

Programs of Excellence

Strength Training Builds Muscle, Bone and Leaders

Success Story – Participants made the following comments:

- I have to belong to a group to exercise. I would not do [the] exercises on my own. Therefore, I have continued to go on Tuesday and Thursday when I am in town. I have more energy now and feel great. I would recommend this program to others and have invited others to join Strong Women.
- The Strong Women program was the catalyst to propel me forward. Since attending Strong Women classes at the fall of 2004, I met a buddy to walk with, joined an EHC club, and participated in my 1st ever 5K—walking it in under a 15 minute mile.
- My balance is better; I'm stronger and more flexible and have greater stamina. I accomplish more and enjoy being active. My attitude and outlook are more positive.

General Program Information – The Garland 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.

The Strong Women program, initiated in Garland County in 2004, has continued through 2005 with the support of volunteer instructors. In the summer of 2005, a formal 8-week program reached an enrollment of forty people. These new participants are also supported by continued sessions conducted by volunteers.

The volunteer leaders trained to instruct the program in 2004 have led over 100 sessions and contributed over 300 volunteer hours to the program. They are still leading sessions twice a week.

Number and Names of Counties or Locations Involved – Garland County.

Impact Numbers – Program impact was evaluated using the Senior Fitness Test. Participants were evaluated at the start and end of the program.

- 53% improved lower body strength.
- 69% improved upper body strength.
- 83% improved aerobic endurance.
- 79% improved lower body flexibility.
- 87% improved upper body flexibility.
- 46% improved agility and dynamic balance.
- 27% saw reduction in body fat percentage.

- 47% improved body weight.
- At baseline, 33% of participants scored below average on at least one measure of the Senior Fitness Test, with 27% of participants at risk for losing functional mobility. At the second round of assessments 8 weeks later, only 13% had measures indicating risk for losing functional mobility, and of the 27% of participants who scored below average, all moved scores below average into the normal range for at least one measure

CES Section Contact Person – Lisa Gilmore FCS agent, 501-623-6841, lgilmore@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 14 percent of children 0-5 years are at risk for becoming overweight and nearly 12 percent are considered 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 will expand to four more counties in 2006.

Extension Program Results and Accomplishments

Output Indicators

8 elementary schools in 3 counties participated.

127 teachers were trained to deliver the program.

2,413 students were reached with nutrition education programs.

86% of responding teachers implemented the program 3 or more times a week

Outcome Indicators

Participating students accumulated an additional 12.16 hours of physical activity during the school year compared to non-participating students

89% of kindergarten students achieved full mastery of nutrition and health concepts taught.

82% of first grade students achieved full mastery of nutrition and health concepts taught.

75% of second grade students achieved full mastery of nutrition and health concepts taught.

74% of third grade students achieved full mastery of nutrition and health concepts taught.

73% of fourth grade students achieved full mastery of nutrition and health concepts taught.

71% of fifth grade students achieved full mastery of nutrition and health concepts taught.

93% of teachers said they would continue conducting TAKE 10!/OrganWise Guys.

96% of teachers said they would recommend TAKE 10!/OrganWise Guys to other teachers.

99% of teachers said their students enjoyed the TAKE 10!/OrganWise Guys activities.

74% of teachers said their students requested TAKE 10! on days when they didn't do it.

77% of teachers said their students had a better understanding of health after participating in the Delta HOPE program.

A survey of parents of Delta HOPE participants conducted in May 2005 showed the following:

Number of parents returning survey = 337

71% said their child asked for more or different fruit, vegetables, milk or yogurt since school started in August 2004.

63.5% said their child told them about TAKE10! and the Organwise Guys

71.5% said their child talked about healthy foods and snacks

72.4% said their child talked about being more active

60.1% said they have made changes in their family's eating and activity practices as a result of what their child has learned

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: 3 counties - Ashley, Drew, Woodruff.
Multi-state Extension: Arkansas, Louisiana, Mississippi.

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 the poorest state 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 sixth worst state in the country in the level of food insecurity (16 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. These 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 child care and transportation;

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, 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 13 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 developed its own plan for reaching the target population. The programs focused 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 served as the core curriculum. Every effort, however, was made to address the needs of the client and to deliver meaningful nutrition education.

Extension Program Results and Accomplishments:

Output Indicators

13,796	Total number of EFNEP program families.
4,146	Families participated in nutrition education programs.
3,229	Youth participated in nutrition education programs.
2,259	Participants completed 12 or more lessons of intensive nutrition education.
130	Hours of training was provided to program assistants.

783 Number of programs conducted.

7,808 Number of contacts made.

Outcome Indicators

The 2,259 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

1,330 (94%) Participants showed improvement in at least one or more nutrition practices.

842 (60%) Participants thought about healthy food choices more often when deciding what to feed their family.

701 (50%) Participants prepared foods more often without adding salt.

1,013 (72%) Participants used food labels more often to make healthier food choices.

488 (35%) Participants reported that they and their children ate breakfast more often.

Food Safety Practices

1,042 (73%) Participants showed improvement in one or more of the recommended food safety practices.

342 (24%) Participants more often followed the recommended practices of not allowing meat and dairy foods to sit out for more than two hours.

292 (20%) Participants always follow the above recommended practice.

982 (69%) Participants more often followed the recommended practice of not thawing foods at room temperature.

570 (40%) Participants always follow the above recommended practice.

Food Resource Management

1,305 (92%) Participants showed improvements in one or more of the recommended food resource management practices.

954 (67%) Participants planned meals in advance more often.

787 (55%) Participants compared prices more often.

698 (49%) Participants ran out of food before the end of the month less often.

980 (69%) Participants used a list for grocery shopping more often.

Source of Funds

Smith-Lever Funds

Scope of Impact

Dissemination – The program was available to those who met the program guidelines. The program was offered to thirteen identified counties that had the potential audience. The core curriculum and other resources, including handouts written at an appropriate reading level, were made available to each EFNEP county. Materials were developed monthly and introduced at multi-county trainings. The materials were available on the EFNEP web site.

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

Programs of Excellence

Success Story – A. Martinez, a 32-year-old homemaker with two children ages 3 and 1, gained weight during her pregnancies and found it hard to lose. She tried lots of diets and successfully lost weight, but quickly discovered that within weeks she gained the weight back and most times gained several pounds more. When the program assistant recruited her, she explained all the facets of the EFNEP Program and its benefits. A. Martinez had an urgency to lose weight. She expressed a desire to lose weight and keep it off. The program assistant shared with her the key to weight loss is a lifestyle change that includes eating healthy balanced meals and daily physical activity. During the six months Martinez was enrolled, she began applying the practices she learned to her home life. She began reading Nutrition Facts, cutting back on portion sizes and eating snacks and high calorie foods in moderation. She also consumed more fruits and vegetables. She applied healthier food preparation methods and began using canola oil instead of lard.

A. Martinez states, “I really enjoyed the EFNEP Program on nutrition. I learned that anyone can lose weight without being hungry all the time, just eating a balanced meal. I personally lost 15 pounds in 2 months. I learned how to eat healthy, and I also take part in daily physical exercise.”

General Information – The Expanded Food and Nutrition Education Program’s goal is to provide educational programs to improve the diet and health of low-income families with young children and youth. Many EFNEP homemakers have acquired nutrition knowledge and skills and have adopted practices that have contributed to their personal development and to the improvement of their overall nutritional well-being. Programming for Hispanic families was conducted at WIC, Even Start, Head Start centers and through individual home visits.

Locations – Craighead County has a total of 45 enrolled Hispanic homemakers.

Impact Numbers – The program has impacted the lives of many Hispanics families in the area of diet and health. As a result of the program, families have commented on their increased consumption of calcium and the importance of eating breakfast and preparing breakfast for their families. Other comments have pertained to knowledge gained on food safety temperature danger zone and learning how to store foods properly.

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Program Response: Food Stamp Nutrition Education (FSNE)

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

Situation

The Arkansas Department of Health and Human Services (DHHS) reports that in SFY 2004, 490,641persons in 193,113 Arkansas households participated in the Food Stamp Program at a cost of $336,092,234. Among Arkansans receiving food stamps, 48% were children and 5% were 65 years of age or older. The U.S. Department of Agriculture, Economic Research Service report using data averages for 2002-2004 revealed that 14.8% 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. Research has shown the importance of nutrition to the developing brain and learning capability of children. 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

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 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 seventy-five counties in Arkansas participated in Food Stamp Nutrition Education program during FY 2005: 67 through the University of Arkansas Division of Agriculture Food Stamp Nutrition Education (FSNE) and 8 through the Families First Nutrition Education and Wellness System (FF-NEWS) at the University of Arkansas at Pine Bluff.

The emphasis in FSNE is around the four nutrition education core elements: diet quality, food safety, food security and food resource management/shopping behavior. One of the main focuses in FY05 was to teach healthy food, nutrition and physical activity practices to school-age children. Additional emphasis was to reach the parents of school-age children. Newsletters and handouts were sent home to parents with nutrition messages that reinforce or enhance lessons taught to the children. Some counties also planned to have contact with food stamp recipients by conducting nutrition lessons at parent meetings at schools.

In FY05, impact counties had direct contact with adult food stamp recipients/applicants 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. For adult audiences, the focus was on using food labels as a tool for making food choices, being physically active to stay healthy and keep a healthy weight, and using MyPyramid when making food choices and determining how much to eat daily (portion control). Promotion of participation in the Food Stamp Program to eligible nonparticipating persons was a part of the nutrition education at all waivered sites with adult audiences. Outreach counties had educational displays with a companion handout/newsletter at the local DHHS office. The displays were changed monthly and addressed a variety of topics related to dietary quality, food safety and food resource management.

In FY05, children and adolescents were reached through school enrichment programs taught by county Extension agents, Extension program assistants, public school teachers and teacher's aides. These educational programs were taught in schools where 50 percent or more of the students are eligible for free and reduced-price lunch. School enrichment programs focused on making healthy food choices from each food group on MyPyramid, hand washing and food safety. Emphasis was on eating more fruits and vegetables and foods providing calcium, how to prepare and choose nutritious snacks, choosing foods with less fat/sugar and those higher in fiber, eating a nutritious breakfast daily, increasing physical activity and proper hand washing techniques. Classes were interactive with many hands-on activities.

Extension Program Results and Accomplishments

Output Indicators:

During FY 2005, FSNE had partnerships with 150 public schools where at least 50% or more of the students are eligible for free and reduced-price lunches. Counties also reached eligible adult clientele through 67 local DHHS offices, 7 commodity food distribution sites, 2 community centers, 23 elderly service sites, 3 health cares sites, 9 housing authorities, 3 youth education sites such as Boys and Girls Clubs, 2 community organizations that direct efforts to assisting limited resource families, one pre-school, 24 Head Start programs and 24 county health unit WIC programs. Education classes, educational displays and newsletters were the primary methods used in reaching food stamp recipients and other program eligibles. Program documentation reflects that 10,089 individual lessons were taught statewide with dietary quality and food safety being the primary core elements covered. Key messages focused on healthy eating and physical activity practices, healthy snacks, serving sizes and portion control, label reading, low-fat cooking techniques, how to plan and prepare healthy, low-cost meals, proper hand washing and food safety practices.

Contacts numbered 295,042 with 190,768 being direct contacts and 104,274 as indirect contacts through educational displays, newsletters and public events. The total number of individuals reached was 71,610. Of these contacts, 51,409 were direct unduplicated and 20,201 were indirect unduplicated contacts. Forty-four percent (44%) of those reached were documented food stamp recipients. Reported contacts reached through approved waivers included 2,612 through census tracks, 2,272 via commodity sites, 3,412 via sites with a director's documentation of eligibility, 35,890 via DHHS office, 3,418 via Head Start, 242,402 via schools where 50% or more of students receive free and reduced-price lunch and 5,036 via WIC units. In addition, FCS agents in eight counties delivered nutrition education through The Families First – Nutrition Education and Wellness System (FF-NEWS) administered through the University of Arkansas at Pine Bluff. Contacts with food stamp recipients and other low-income individuals numbered 64,125 during the program year. Of these, 872 were at sites in census tracts where 50% of more of the residents have incomes < 185% of poverty, 1,637 were at sites with a director's documentation of eligibility, 5,256 were with food stamp recipients through DHHS offices, 211 were through Head Start, 54,366 contacts were in schools and 1,783 were with WIC participants. Over fifty percent (50%) of those reached were food stamp recipients.

Outcome Indicators

11,433 Youth learned something new about their diet based on the Food Guide Pyramid.

8,811 Youth might change eating habits based on the Food Guide Pyramid.

13,230 Youth learned something new about eating more fruits.

10,201 Youth might change eating habits by eating more fruits.

9,822 Youth learned something new about eating fewer high fat foods.

6,687 Youth might change eating habits by eating fewer high fat foods.

11,498 Youth learned something new about eating more calcium-rich foods.

8,155 Youth might change eating habits by eating more calcium-rich foods.

10,104 Youth learned something new about trying new foods.

8,089 Youth might change eating habits by trying new foods.

9,959 Youth learned something new about eating breakfast every morning.

16,489 Youth might change eating habits by eating breakfast every morning.

11,076 Youth learned something new about increasing physical activities.

7,947 Youth might change eating habits by increasing physical activities.

11,813 Youth learned something new about practicing good hand-washing techniques.

8,588 Youth might change habits by practicing good hand-washing techniques.

Dietary Quality

80% of adult participants (3,039) increased knowledge of healthy food/nutrition practices.

55% of adult participants (2087) indicated intent to adopt one or more healthy food/nutrition practices.

63% of adult participants (1,152) eat nearer to the recommendations for salt, fat, sugar, and/or calories.

62% of adult participants (1,359) eat nearer to the recommended number of servings from the Fruit and/or Vegetable Group.

77% of adult participants (1,683) increased knowledge about physical activity and/or its benefits.

68% of adult participants (1,322) indicated their intent to begin or increase physical activity.

Food Safety

69% of adult participants (734) increased knowledge related to practicing personal hygiene such as hand washing.

53% of adult participants (567) increased knowledge related to practicing kitchen cleanliness.

52% of adult participants (549) increased knowledge related to cooking foods adequately.

46% of adult participants (491) increased knowledge related to avoiding cross-contamination.

58% of adult participants (616) increased knowledge related to keeping foods at safe temperatures.

41% of adult participants (432) increased knowledge related to avoiding foods from unsafe sources.

77% of adult participants (629) indicated intent to change behaviors related to practicing personal hygiene such as hand washing.

58% of adult participants (468) indicated intent to change behaviors related to practicing kitchen cleanliness.

58% of adult participants (471) indicated intent to change behaviors related to cooking foods adequately.

53% of adult participants (434) indicated intent to change behaviors related to avoiding cross-contamination.

57% of adult participants (459) indicated intent to change behaviors related to keeping foods at safe temperatures.

53% of adult participants (427) indicated intent to change behaviors related to avoiding foods from unsafe sources.

As part of the overall evaluation process, a survey was conducted among Arkansas teachers participating in the Food Stamp Nutrition Education program. The survey was designed to engage teachers in evaluation of the program, as well as to collect county, district and statewide data for planning and program development. Two hundred seventy-five (275) teachers from 34 counties participated in the survey. Eighty-two percent (222 out of 270 respondents) reported that participation in the nutrition education program (as supported by the county Extension office) motivated them to eat healthier and be more physically active. When asked “How important do you think school-based nutrition education is for children?” teachers responded with an average score of 8.97 on a scale from 1 (not at all important) to 10 (extremely important). One teacher commented, “School may be the only time children learn about healthy eating.” Over 14% (39 out of 275 teachers) reported that getting to taste healthy snacks was one of the best parts of the program. Among the 135 teachers who participated in the Body Walk activity, 38 (28%) specified Body Walk as one of the best parts of the FSNE program.

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 – Nutrition Education Program during FY 2005. Sixty-seven participated through FSNE, coordinated through the University of Arkansas Division of Agriculture and eight counties participated through 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

Reaching Children and Youth through FSNE

Success Story – In FY05, FSNE partnered with 150 schools to deliver nutrition and food safety messages to students, their parents and teachers. Fifty-two counties provided nutrition education to students with the majority of contacts in grades K-6. Some counties trained high school students to deliver nutrition lessons to elementary students. Eighteen 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 8,046 hours of third party in-kind match was provided by 1,453 school faculty. These hours were valued at $183,485. Value was determined by using average hourly salary rates provided by principals and/or superintendents. Lessons numbered 10,089, resulting in 180,568 direct contacts with students. A variety of age-appropriate curricula was utilized from an approved list of nutrition education materials. Twenty counties conducted lessons at parent meetings resulting in 1,891 direct contacts with adults. An additional 60,271 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.

General Program Information – Research has shown the importance of nutrition to the developing brain and learning capability of children. Without adequate and nutritious food, brain development and cognitive functioning are severely impaired, which impact a child's ability to learn. Students who eat a nutritious breakfast have improved academic achievement, fewer visits to the school nurse and better behavior in the classroom. 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.

Arkansas Child Nutrition Program data on students receiving free and reduced-priced lunch by schools for the school year 2003-2004 were examined to identify the schools where 50 percent or more of the student enrollment

are eligible for free or reduced-price lunches. Approximately fifty-six percent (633) of the public schools in Arkansas meet the criteria. This knowledge, coupled with the high level of poverty in many counties, documents the urgency of utilizing intervention strategies that target youth populations and their families. School intervention programs are sorely needed to address the nutrition education and food management practices of these families.

Numbers and Names of Counties or Locations Involved – Fifty-two counties: Arkansas, Baxter, Bradley, Carroll, Chicot, Clark, Clay, Cleburne, Cleveland, Columbia, Conway, Craighead, Crawford, Crittenden, Faulkner, Franklin, Fulton, Garland, Greene, Hempstead, Hot Spring, Howard, Izard, Jackson, Johnson, Lafayette, Lawrence, Lee, Little River, Logan, Lonoke, Madison, Marion, Miller, Mississippi, Monroe, Montgomery, Newton, Phillip, Pike, Poinsett, Polk, Pope, Prairie, Pulaski, Scott, Sebastian, Sevier, Union, Washington, White and Yell

Impact Numbers – Of the students who were surveyed:

- 11,433 learned something new about eating foods based on the Food Guide Pyramid, and 8,811 said that they might change their eating habits accordingly.
- 13,230 learned something new about eating more fruits and vegetables, and 10,201 said they might eat more fruits and vegetables.
- 9,822 learned something new about eating fewer high fat foods, and 6,687 said they intended to eat fewer high fat foods.
- 11,456 learned something new about eating more calcium-rich foods, and 8,113 said they would try to drink more milk or eat more calcium-rich foods like yogurt.
- 10, 104 learned something new about trying new foods, and 8,089 said that they intended to try more new foods.
- 9,959 learned something new about eating breakfast every morning, and 16,489 said that they would try to eat breakfast every morning.
- 11,076 learned something new about the importance of physical activity for a healthy body, and 7,947 said that they would try to increase the amount of physical activity they were getting each day.
- 11,813 learned something new about the importance of practicing good hand washing techniques, and 8,588 said they intended to practice good hand washing techniques.

As a result of the program, teachers and parents are reporting that students are eating more low-cost, low-fat and low-sugar snacks that they can prepare themselves. They are including more calcium-rich foods in their diet and trying more new foods. They are eating more colorful fruits and vegetables and more are eating breakfast on a regular basis. Parents are saying that their children come home talking about foods that are good for you and wanting parents to prepare and purchase some of the foods sampled during FSNE lessons.

“The program helps provide students with information they probably would not get otherwise.” – Teacher comment

“It is easy to forget to teach nutrition with all the academic demands placed on teachers. With so many younger students being overweight and eating wrong at home, nutrition is extremely important to teach.” – Teacher comment

CES Section Contact Person – Rosemary Rodibaugh, Professor - Nutrition Specialist, FCS, (501) 671-2111, rrodibaugh@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. It has been estimated that 14 percent of deaths can be attributed to poor eating and lack of physical activity. 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 ten 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 7.9 percent – one of the highest in the U.S. Approximately 156,000 Arkansans have been diagnosed with diabetes and an estimated additional 78,000 have the disease but are unaware of their condition.
- Arkansas has one of the highest obesity rates with 61 percent of adults being either overweight or obese.
- Childhood obesity in Arkansas has reached epidemic proportions, where 14 percent of children 0-5 years are at risk for becoming overweight and nearly 12 percent are considered overweight. Among school-age children in grades K-12, 17 percent are at risk for overweight and 21 percent 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 8 out of 10 Arkansans report they are not consuming the recommended 5 servings of fruits and vegetable a day.
- Almost 79 percent of adult Arkansans are at risk for health problems related to lack of physical activity.

Through research and consumer education on nutrition and the preparation and selection of more nutritious foods, Cooperative Extension faculty and staff enable Arkansans to make health-promoting choices.

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. More than 60 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 FY05, 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 adopet 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 accompmplished through offering the 15-week Reshape Yourself healthy weight program in 40 counties. The program focuses on helping participants make lifelong behavioral changes including healthier food choices, limiting portion sizes and exercising regularly. Reshape Yourself was updated in 2005.

Extension Program Results and Accomplishments

Output Indicators

592	Educational sessions were related to healthy weight.
10,514	Participants attended programs related to healthy weight.
25	Newsletters included information on healthy weight.
5826	People received newsletters with healthy weight information.
108	Print media articles related to healthy weight.
57	Radio spots related to healthy weight.
4	Television spots related to healthy weight.
782	Participants in 15-week healthy weight program.
472	Participants finished the 15-week healthy weight program (60% retention rate).

Outcome Indicators

As a result of participating in Extension Healthy Weight Programs:

66%	of participants reported increasing average daily consumption of fruit and vegetable from less than 5 servings a day to 5 or more servings a day.
84%	of participants reported increasing average daily consumption of whole grain foods from less than 3 servings a day to 3 or more servings a day.
66%	of participants reported increasing average daily consumption of low fat or fat -free dairy foods from

less than 3 servings a day to 5 or more servings a day.

85% of participants were able to correctly identify standard servings of foods from each of the MyPyramid food groups.

74% of participants reported they altered their behavior to follow standard serving sizes of one or more of the MyPyramid food groups.

71% of participants lost weight.

26% of participants maintained weight.

4484 Pounds were lost by participants.

4068 Pounds were lost by program graduates.

8489 Miles were walked by program participants.

6484 Miles were walked by program graduates.

43% Percentage of graduates who improved blood pressure.

47% Percentage of graduates who improved blood cholesterol.

58% Percentage of graduates who improved blood glucose.

Comments from participants include:

- "One of the participants had just been told by her doctor that she needed to lose 10-15 lbs and reduce her cholesterol by 25 points. During the cours,e we did strength training and also visited a fitness center one week. At the beginning of the class, she would become breathless to even complete walking a mile. She said that she couldn't even hand-stir a batch of cookies. She now goes to the fitness center 4 times a week and walks daily. She says that she feels like a "slug" when she can't exercise. She has lost over 15 pounds and her cholesterol has dropped well into a healthy range. Her doctor has bragged on her and Reshape Yourself for changing her lifestyle." County FCS Agent, Logan County

- "I have changed my way of cooking for my family, and we have become much more portion-conscious. I have increased the miles I walk and walk longer. I have much more energy than before and dropped a dress size." Participant, Cleveland County

- "My blood pressure was lowered 10 points. As a result of lower weight and healthier eating, I feel much better." Participant, Cleveland County

- "My doctor was threatening to put me on blood pressure medication, but I got my blood pressure down to 110/75. Needless to say, he was impressed. My pressure had been 150/105. My cholesterol was the same story – I went from 220 to 170." Participant, Garland County

- "This program gave me the tools I needed to be successful in losing weight. My blood pressure has really gotten better. The support from others really helped. I have been on so many weight loss programs, and this is

the best by far. I still have a lot of weight to lose, and I feel I can be successful this time. I just want to thank all who put this program together, especially Susan for her time and encouragement." Participant, Grant County

- "The Reshape Yourself program has been very beneficial. The information shared has been invaluable. I was able to share a lot of information that I've learned in the class with my family and friends. My personal success story has been to just make better choices, and I exercise more. There hasn't been a big weight loss, but I have lost inches and my clothes fit better." Participant, Pulaski County

- "When I started this program I intended to lose 2 pounds a week and totally change my lifestyle overnight. This has been a real eye opener – it is not easy… my goal now is to become healthy, not necessarily thin. My stamina is up because of the increased exercise, which is great. I'm feeling better and I'm eating better. That is what counts to me." Participant, Pulaski County

- "My views on weight loss have changed dramatically. I am no longer looking for the 'perfect' diet. I am now looking for small things that create changes without feeling drastic." Participant, Pulaski County

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 and is undergoing final testing. Materials will be available on the UACES website within a few months. 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.

41 FCS agents in 40 counties reported conducting programs on healthy weight in FY05: Arkansas, Ashley, Baxter, Benton, Carroll, Clark, Clay, Cleburne, Cleveland, Columbia, Craighead, Crawford, Crittenden, Desha, Drew, Franklin, Fulton, Garland, Grant, Hot Spring, Howard, Jackson, Jefferson, Logan, Miller, Monroe, Newton, Ouachita, Perry, Phillips, Poinsett, Polk, Prairie, Pulaski, Searcy, Sebastian, Sevier, Union, Van Buren, White, Yell (Ozark = 13, Delta = 14 and Ouachita = 14).

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. Stinkbugs 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 were utilized to address current pest management problems that included disease monitoring plots and stinkbug management demonstrations.

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 grape berry moths, grape scale and grape root borer. 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 since nutrition of livestock is directly related to the quality of hay and forage. A pecan IPM program has been conducted for three years involving surveillance and trapping of major pecan pests.

Agricultural chemicals, pesticides and plant nutrients, comprise a major portion of the dollars spent by producers of all Arkansas crops. The primary emphasis on aircraft precision agriculture programs makes chemical applications more efficacious and environmentally sound. Over 1,000 aircraft pattern analyses were performed on over 175 Arkansas aircraft for pesticide applications at 14 agricultural aviation workshops conducted by Extension. 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 1,617 commercial and 5,571 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 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 that include 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
44.42

Total Budgetary Amount
$2,719,696.60

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 24,000 are dairy cattle. There are 330,000 head of swine placed at one time. Annual broiler production is 1.2 billion birds. Turkey production is 22.5 million birds annually. Annual Arkansas farm gate income from livestock and poultry is $4.2 billion (63%) of the state's $6.6 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 addition, 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

35 Livestock producers provided with how-tos of on-farm animal mortality composting.

8 Educational meetings held with swine and poultry industry representatives, state and federal agency personnel, and University of Arkansas research faculty to identify and discuss animal waste management issues.

24 Educational meetings, field days and/or demonstrations held to educate clientele on liquid and dry animal waste management.

572 Growers with confined livestock and poultry operations that voluntarily participated in preparing nutrient management plans for their farm (preparation of plans by others).

1,123 Number of producers, industry or agency personnel attending education programs.

142 Soil test databases developed from selected livestock and poultry farms, and all animal manure samples processed through the U of A testing programs.

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.

- An indication of increase in the implementation of the recommended practices is that the number of manure samples analyzed by the University of Arkansas Agricultural Diagnostic Laboratory increased from 1,600 in 2004 to over 3,300 in 2005. Most of these analyses were performed on manure samples submitted by Arkansas livestock and poultry producers. Manure sampling and planning is one of the main targeted outcomes of Extension's educational effort and a critical input for the development and implementation of nutrient management plans.

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 450 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., Extension Specialist - Forestry, Environment and Natural Resources, 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; 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% of the total land base. Of this, 27% is pine, 17% is mixed hardwood and pine, 39% is upland oak-hickory forests and the remaining 16% 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 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% 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 2005. 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% 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.

- Demand for forest products continues to rise. This demand will impact private forestlands. Forest landowners, therefore, need to be educated about the benefits and costs of this increased demand for their forest products.

- 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% have ever heard of forestry BMPs.

Stakeholder Input

Stakeholder input comes from several different sources including 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. In 2002, a research project into the education needs of Arkansas Delta African-American forest landowners was conducted and their input documented.

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, collaborate with 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. The Master Tree Farmer course in 2005 was the Master Wildlife course. Eight counties were involved in planning for the 2005 course.

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 2005. Topics included hardwood stand 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. Eight county Extension offices, which received funding through the Arkansas Forest Resource Center to help expand their forest and wildlife educational efforts, continue their landowner education efforts. One multi-county program is in its third year of forest programming. Another multi-county program provided continuing education programs for area professional foresters in 2005 and has planned another event for 2006.

Extension Program Results and Accomplishments

Output Indicators

20 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.

66 Number of landowner education meetings conducted.

1,220 Number of landowners attending workshops and educational meetings.

15 Number of demonstrations conducted.

438 Number of individuals attending demonstrations.

3 Experiment Station 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

150 Number of landowners indicating an increased knowledge of forest management for wildlife.

60 Number of landowners receiving certificates for completing a 7-week short-course

390 Number of landowner requests for stewardship plans through the Ozark Foothills Forest Landowner Education Program.

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 – Statewide distribution of timber price information to all counties and partner agencies. Timber valuation information available on-line and via fact sheets and handouts. The 7-week Master Wildlifer/Tree Farmer short course broadcast via satellite to eight different sites across the state. Weekly radio program broadcast to five stations through the Arkansas Ag. Network.

1. Counties involved in forest resource education:
   a. Counties in the Ozark Foothills Forest Landowner Education Project
      (i) Cleburne, Fulton, Independence, Izard, Jackson, Lawrence, Randolph, Sharp, Stone, White, and Van Buren.
   b. Other counties with forest resource management education programs:
      (i) Hempstead, Scott, Sevier, Dallas, Drew, Bradley, Montgomery, Nevada, Washington, Polk, Pope, Cleveland, Madison, Newton and Union.

2. The Master Tree Farmer programs covers the following states:
   a. Alabama, Georgia, Mississippi, Tennessee, Texas, Oklahoma, North Carolina, South Carolina, Florida, Kentucky, Arkansas and Missouri.

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, Environmental and Natural 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 and proper pruning techniques. County agents and specialists also respond to numerous calls about urban tree health, planting, disease and other topics. 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.

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.

90 Number of county extension, state agency and federal government personnel attending educational programs.

Outcome Indicators

100 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.

Each county with Master Gardening programming responsibility incorporates some level of urban forestry education. Specialists 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 5 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: Gus Lorenz, Ph.D. Professor/Extension Entomologist/IPM Coordinator, Cooperative Extension Service, Little Rock, AR, 501-671-2191, glorenz@uaex.edu; Jeremy Greene, Ph.D., Assistant Professor/Extension Entomologist, Southeast Research and Extension Center, University of Arkansas CES, Agriculture Building, UAM Campus, P.O. Box 3508, Monticello, AR 71656, 870-460-1091 (SEREC), 870-460-1614 (office), 870-460-1415 (fax), 870-723-5537 (cell), greene@uamont.edu; Glenn Studebaker, Ph.D., Assistant Professor/Extension Entomologist, Northeast Research and Extension Center, University of Arkansas CES, Keiser, AR, 870-526-2199 gstudebaker@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 TPB populations in mid- to late-season cotton and have experienced problems with control and resulting boll damage. Also a factor is the increase in minimum tillage systems and Round-Up tolerant crops that favor plant bugs and other occasional pests. Recent studies have indicated that 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 TPB 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 TPB by as much as 30-50%.

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 plant bugs. 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. However, 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 3-year study conducted by USDA-ARS at Stoneville, Mississippi, showed that TPB populations could be reduced 30-50% 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 cotton growers with an easy, economical solution to the ever-increasing problem with TPB for Arkansas cotton growers. 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.

498 Growers, consultants and other clientele attending meetings where information was presented.

17 Presentations at grower meetings and field days.

3 Presentations at professional meetings.

12 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

Lorenz, G. M., J. K. Greene, G. E. Studebaker, T. Teague, D. D. Hardee, G. L. Snodgrass, and W. P. Scott. 2004. Area-wide management of the tarnished plant bug (TPB) in cotton in Arkansas. USDA-ARS Project.

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.

Program Response: Cotton Integrated Pest Management

Contact: G. M. Lorenz III, Extension Entomologist - IPM Coordinator, 501-671-2191, glorenz@uaex.edu

Situation

Cotton was grown on 920,000 acres in Arkansas this year with an average yield of over 1,100 pounds of lint per acre, setting a record high yield for the state and a new production record on the number of bales. The old record was set in 1948 when over 2 million acres were in production in Arkansas. Arkansas ranks fourth in acreage and production in the United States. Insect losses due to arthropods (insects and mites) are estimated at about 5% each year for a loss of about $41 million. Management costs to prevent or minimize the impact of these pests are estimated at almost $159 per acre for Arkansas producers. The cost of control and loss for cotton production in Arkansas is estimated at over $147 million dollars annually.

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. Increasing concerns for cotton producers include herbicide drift issues, particularly glyphosate and phenoxies; decreasing soil and water quality; insecticide resistance; and how to utilize GMOs. With the advent of transgenic cotton, particularly B.t. cotton, and boll weevil eradication, a shift in emphasis in pest status of certain insects is occurring. 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. Insecticide applications for the “bug complex” averaged over 5 applications across the state this year. 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 on-going 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

In order to manage the many insect pests that threaten cotton in Arkansas, growers rely primarily on research-based information that helps them utilize the following tools: transgenic cotton, cultural practices, early warning programs including aphid fungus surveys, species identification and moth trapping, IPM meetings and insecticides. Delivery of this information and its partial generation to growers, county agents, consultants and industry representatives are responsibilities of this program.

As 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. Increasing concerns for cotton producers include herbicide drift issues, particularly glyphosate and phenoxies; decreasing soil and water quality; insecticide resistance; and how to utilize GMOs.

In weed control, glyphosate-resistant horseweed has been increasingly moving across the northeastern part of the cotton production area, and it is forecasted to soon be in all areas in just a few years. Also, glyphosate-resistant ragweed has also been documented in parts of the state. With over 90% of the cotton acreage planted to glyphosate-resistant cotton varieties, these factors may have serious ramifications for cotton producers.

With the advent of transgenic cotton, particularly B.t. cotton, and boll weevil eradication, a shift in emphasis in pest status of certain insects is occurring. 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. Insecticide applications for the “bug complex” averaged over 5 applications across the state this year. 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.

However, 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, in 2002 growers averaged 3 applications, and in 2003 many growers in the southeast part of the state sprayed as many as six times to control bollworm.

Arthropod pests continue to threaten the competitiveness of cotton production by reducing yields and increasing costs of production. In order to manage the many insect pests that threaten cotton in Arkansas, growers rely primarily on research-based information that helps them utilize the following tools: transgenic cotton, cultural practices, early warning programs including aphid fungus survey, species identification and moth trapping, IPM meetings and insecticides. Delivery of this information and its partial generation to growers, county agents, consultants and industry representatives are responsibilities of this program.

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) establishing new thresholds for cotton aphids utilizing beneficial insects and the aphid fungus. This work represents the first threshold of its kind in cotton where natural enemies are used to determine action thresholds; 4) determining the optimum time for insecticide termination to protect yields and reduce grower costs; 5) evaluation of plant bug thresholds and sampling methods to determine “best fit” strategies for consultants and growers with changing cotton production practices; 6) evaluation of dual gene transgenic cottons to determine viability for Arkansas cotton growers.

Extension Program Results and Accomplishments

Output Indicators

1,421	Growers, consultants others attending presentations.
1,957	Phone calls addressing insect questions from clientele.
1,654	Field calls to individual growers.
83	Presentations at grower meetings and field days.
98	Field demonstrations.
17	Counties participating in Cotton IPM Program.
16	Field days.
59	Insecticide evaluation reports.
37	Consultant training sessions.
9	Major Extension Publications.
32	Presentations at professional meetings.
3	In-service trainings for county agents (in the field).
84	Number attending cotton insect scout schools.

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.
$16.00 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 6 counties, field calls and visits, printed publications and the Extension web site at www.uaex.edu.

Program Adoption – Cotton IPM presentations were made in every major cotton-producing county (17). Cotton IPM field demonstrations were installed in all 17 counties during 2003. Cotton IPM county participation has held steady at 17 counties with $54,300 distributed in county IPM grants.

Program Response: Diversified Integrated Pest Management

Contact: Kelly M. Loftin, Extension Entomologist, Livestock and Imported Fire Ants, 479 575-3462, kloftin@uaex.edu

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 is relatively new in Arkansas but has expanded considerably. In 2005, $14,874.00 funded competitive diversified IPM programs. Twenty-seven D-IPM projects were funded, a 25% increase over 2004. Four proposals involved horticulture pests (tomato, peach and pecan), 8 programs involved livestock pests, 5 proposals involved invasive species (2 community fire ant abatement demonstrations and 3 Japanese beetle monitoring), 4 involved forages, 5 were weed control demonstrations in forage, 1 proposal involved new monitoring and application methods for Texarkana's black fly abatement program, and 1 proposal was a corn IPM project.

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. This fly spends most of its time on the animal feeding over 30 times per day on blood. It lays eggs in fresh cattle manure, which hatch into larva and complete development in the dung. Major damage is through blood loss and annoyance. Losses include reduction in yield of milk and meat. The importance of annoyance should not be underestimated. Repeated biting of hundreds to thousands of flies producing substantial irritation to cattle causes energy to be expended in attempts to dislodge the flies. Wounds caused by horn flies serve as sites to bacterial infections. Horn flies also serve as vectors of stephanofiliaris, a nematode infestation that results in lesions forming along the belly.

Horn flies can produce a new generation every two weeks, making this pest difficult to control and quick to develop resistance. Several methods have been used to control horn flies, including insecticide impregnated ear tags, insecticide sprays, backrubbers, dust bags and pour-on wormers, with varying degrees of success. The advent of ear tags has led to horn fly resistance to both pyrethroid and organophosphate insecticides. Insecticide rotation has been employed to counter insecticide resistance. An alternative method using a walk through mechanical trap (no insecticide) is in its fourth year of evaluation and comparison to conventional methods. Results have shown both grower acceptance and efficacy. Results from the last two years have shown horn fly numbers from herds using the trap are maintained at or below economic thresholds for the majority of the horn fly season. Horn fly numbers on herds using the trap were similar to those using insecticide impregnated ear tags. Another alternative method of horn fly control being evaluated is an automatic sprayer. Animals are treated with a liquid insecticide as they pass through an opening to gain access to minerals or water. This spray system will only be activated when deemed necessary by the rancher. Treatment is based on the economic threshold of 150-200 horn flies per animal. A more automated commercial model of this spray system was evaluated. Results from this model were favorable with a high degree of producer acceptance. Demonstrations using spinosad or Elector in dairy cattle were also evaluated in 2004 and 2005. Additional demonstrations are needed before a high level of grower acceptance is achieved. Many dairy producers are more accustomed to pyrethroid insecticides, which offer a quicker knockdown and some degree of repellency, which were not strong attributes of spinosad. However, some of these producers are not currently achieving an acceptable level of control with pyrethroids. Horn fly demonstrations using alternative methods provide productive educational opportunities for county staff. Participating county agents use monthly county cattlemen's association meetings as venue for presenting these IPM techniques.

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 occur 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 was awarded. 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. Preliminary work began in 2004 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. Results from 2005 have provided the baseline information necessary to determine timing and release rates for 2006 and 2007 research and demonstrations projects. Preliminary data have been shared with producers and focus groups. Cooperating producers are very excited about the "release" portion of the project that will commence in May 2006.

Buffalo gnats, *Cnephia pecuarum* (Riley) are bloodsucking flies in the family Simuliidae that breed in fast-flowing streams and rivers. During severe buffalo gnat outbreaks, livestock losses can be great. Because of severe economic losses to the cattle industry and the International Paper Mill (gnats in paper reduce quality), Miller County, Arkansas, Bowie County, Texas, the Arkansas Livestock and Poultry Commission and International Paper are involved in a long-term control program. The most effective method of control is to treat the Sulfur River with a bacterial insecticide (Bti) prior to emergence of adults. Extension's role in the program is to provide expertise and technical support during treatment of the river and to determine the optimal treatment time by monitoring immature buffalo gnats developing in the river. Through support from the D-IPM program, larval sampling for buffalo gnats has been improved by standardizing collection methods through use of artificial substrates. Both immature sampling and actual treatments now use GPS to determine optimal sampling and treatment sites along the river. In 2003 and 2004 adult trapping systems using carbon dioxide and octanol were used to determine the buffalo gnat dispersal from breeding sites. Data were used in 2005 to time treatments applied to the river in 2005. A new application system that meters Bti from boat-mounted tanks into the river without a mechanical pump was another successful outcome. This system and use of GPS has increased the precision of Bti applications into the Sulfur River. Both technologies adapted by Arkansas and Texas cooperators in 2004 were effective and continued in 2005.

Japanese beetles are a recent addition into Arkansas's list of pests. Impact on Arkansas's horticulture and other agronomic industries and urban landscape has only recently become an issue. Beginning in 2003 and 2004, season-long monitoring in Washington, Crawford, Benton and White counties was initiated. This program has successfully involved Master Gardeners and has led to numerous educational programs (Master Gardener seminars, production workshops and display presentations). Japanese beetle populations have expanded to the point that the Northwest Regional Airport is quarantined by USDA APHIS (monitoring for JB beetles presence in certain flights to California). In 2005 the program was expanded into surrounding counties, one of which produces many grapes.

A pecan IPM program was initiated in 2003 in Lafayette County, involving surveillance and trapping of major pecan pests. Trapping and surveillance data gave producers a "heads up" about timing of major outbreaks and alerted them to increase their own surveillance. This program expanded into Miller County in 2004 and continued in 2005. The Miller County program added training of Master Gardeners in Pecan IPM to help assist the program. The success of the Miller County program led to an additional pecan IPM program directed toward small home orchards in Cleveland County in 2005.

Crawford County's D-IPM grant to manage filth flies associated with alternative livestock (goats and sheep) was concluded in 2004. This program included fly surveillance and identification at 8 farms. Additional focus included comparing the release of commercial parasitoid wasps versus conventional insecticide treatment and fly baiting. The success of this project led to a similar project in Grant County in 2005. The program was as successful in both counties. Cooperators are using parasitic wasps in their filth fly IPM program. Local 4-H youth

participated in all aspects of this project.

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.

Extension Program Results and Accomplishments

Output Indicators

27 Counties participated in the D-IPM program

42 Diversified-IPM training meetings.

24 Field days/farm tours (includes 8 urban).

1,102 Producers attended D-IPM training meetings or made direct contact with CES faculty on pest issues (includes 203 urban).

21 Newspaper articles.

21 Newsletters addressing diversified-pest issues.

61 D-IPM demonstrations (includes 23 urban).

43 Miles of Sulfur River monitored for immature black flies on 7 sampling dates.

11 Youth directly involved in D-IPM projects (science fair projects and 4-H record books).

1 Poster presentations (regional, local and national professional meetings).

1 Multi-state Southern Region SARE-sponsored filth fly IPM project.

118 Livestock and dairy producers monitor pest populations prior to initiating control and employ manure management practices to lessen impact of fly pests.

27 Counties conducted fire ant management demonstrations.

5 Counties participated in imported fire ant biological control (phorid fly) releases and evaluations.

89 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.

17 Educational programs in public schools.

Outcome Indicators

- In 2005, 8 additional dairies have adopted fly surveillance and manure management into their filth fly management program, reducing reliance on insecticides to control flies around dairy facilities.

- Japanese beetle monitoring programs have confirmed populations in two additional counties, resulting in increased pest awareness and educational programs on Japanese beetle biology and control in both counties.

- True and fall armyworm populations in forages were monitored weekly in four northeast Arkansas counties.

- A new producer group (alternative livestock producers) was educated about filth fly IPM and non-chemical 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.

5 Mechanical horn flies traps (non-chemical alternative) are deployed in horn fly management demonstrations in multiple counties.

- Because demonstrations have shown the Amelia tomato variety has comparable yield and quality to the standard variety, additional tomato producers in southern Arkansas planted Amelia (resistant to TSWV) instead of non-resistant Mountain spring (standard).

1 Buffalo gnat management program (two-state area wide management program) – protects livestock in Miller and Bowie counties (Texas) and paper quality at paper mill.

5 Pasture weed management projects.

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 – Twenty-seven counties implemented substantial Diversified IPM programs during 2005 and

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.

Programs of Excellence

Japanese Beetle Monitoring

General Program Information – Japanese beetles are a relatively new pest in western Arkansas. As a result, residents and farmers are unaware of the economic impact, management options of this pest. Many would not be able to recognize either the adult or larval stages of Japanese beetles.

4-H'ers and Master Gardener volunteers monitored the spread of this insect pest that threatens the grape and ornamental industries. It is suspected that the initial Japanese beetle infestations were introduced in landscape plantings and have become a major pest in northwest Arkansas. Crawford, Sebastian and Franklin County Cooperative Extension Service offices cooperated in this endeavor. Twenty-six traps were monitored weekly.

Potentially, everyone in the River Valley was served, as we can now better inform our clientele about the spatial and temporal distribution of Japanese beetles.

By monitoring, we know that our JB population is nowhere near the severity of northwest Arkansas, and as it stands, little control is needed.

4-H'ers learned valuable life skills by responsibly checking each trap each week. It served as a great science fair project.

CES Section Contact Person – Dustin Blakey , 479-484-7737, dblakey@uaex.edu

Japanese Beetle Trapping Program

General Program Information – Japanese beetles are becoming a problem in some areas of the state. In Franklin County we are concerned about the beetle attacking the grape crops and devastating the economy in the eastern part of the county. A monitoring program was set up to try to avoid a serious problem with the beetle.

Eight traps were scattered across the county to determine if the beetles were coming into the county and determine the level of infestation. A few Japanese beetles (no more than 10 per week) were collected from traps located in the western side of the county. Traps located in the grape-producing areas of the eastern portion of the county caught no Japanese beetles.

This project was very useful in providing advanced warning of a possible heavy infestation. Grape producers are hopeful that the program can continue next year.

CES Section Contact Person – Robert Rhodes, 479-667-3720, brhodes@uaex.edu

Old Technology Still Works

General Program Information – Horn flies rob cows of valuable blood and in return reduce the production of cows in both weight gain and body condition. By utilizing fly control measures, cattle producers can increase herd profitability.

A demonstration was conducted comparing three types of horn fly control: a cattle walk-through fly trap, an IGR lick tub and a IGR lick tub in combination with a backrubber. The goal was to demonstrate that adequate control of horn flies could be obtained without using pesticides. The trap used was built from funds received from an IPM grant and should have a useful life of at least 20 years. The first recorded plans of the flytrap are in the 1942 Yearbook of Agriculture.

The three locations for the demonstration were in Fordyce area of Dallas County.

Each type of fly control maintained fly population below the threshold level of 200 flies per animal, and the fly trap saved the producer approximately $3.00/head over conventional control methods. Since this is the second year to use the fly trap, last year's data was shared with a poster and an oral presentation at the national county agents' meeting in Buffalo, New York, in July 2005.

Other local producers are considering building the flytrap. After the presentation in New York, several requests for the plans were received from county agents in other states.

CES Section Contact Person – James Robert Hall, 870-352-3505, bhall@uaex.edu

Program Response: Fire Ant Management

Contact: Kelly Loftin, Extension Entomologist - Livestock and Imported Fire Ants, 479-575-3462, kloftin@uaex.edu; John Hopkins, Extension Entomologist - Urban, 501-671-2217, jhopkins@uaex.edu

Situation

Fire ants cost Arkansans millions annually: money lost in damages and money spent to minimize the ant's impact on their lives. Money is lost by agriculture in reduced yields and in repair to electrical equipment around structures. Occasionally, medical costs associated with the sting of the fire ant are incurred. Nursery, hay and sod industries are adversely impacted by fire ants through restrictions of their products as a result of the imported fire ant quarantine. The incorrect use of pesticides and home remedies for fire ant management can contaminate surface and ground water and cause environmental concerns.

Our program focuses on education of homeowners, agriculturists and youth in proper methods of fire ant management. Specifically, we educate Arkansans about fire ant identification, biology, pesticide types, proper use of pesticides, fire ant abatement programs and the future potential of biological control as they relate to fire ant management. Program goals are achieved through county and state educational programs such as demonstrations, applied research, education booths, organized abatement demonstrations, presentations, publications, newsletters, web pages, in-service training of county faculty and news releases.

Stakeholder Input

We involve several groups as stakeholders including the Governor-appointed Fire Ant Advisory Board. The In-House Advisory Committee composed of six county agents and one administrator serves as another stakeholder group. They represent the 75+ agriculture agents who are impacted by our programming. Various county councils have identified fire ants as a concern, and we qualify those groups as stakeholder groups.

Overview

The fire ant program focuses on education of homeowners, agriculturists and youth in proper methods of fire ant management. Our goal is to educate Arkansans about fire ant identification, biology, pesticide types, proper use of pesticides, fire ant abatement programs and the future potential of biological control as they relate to fire ant management. Program goals are achieved through county and state educational programs such as demonstrations, applied research, education booths, organized abatement demonstrations, presentations, publications, newsletters, web pages, in-service training of county faculty and news releases.

To date, the red imported fire ant can be found in well over 40 Arkansas counties. Thirty-five Arkansas counties are in the Federal Fire Ant Quarantine area. In late 2005, three new counties were added to the quarantine area. The placement of these counties within the quarantine area has implications to businesses due to the restrictions the quarantine places on the movement of specified material out of the area and required insecticide treatment to move regulated materials such as potted plants and grass sod. Perry County illustrated this point. It is a major sod producer and as a result many are at wits end because of the lack of available insecticides required to treat sod for shipment. Extension is providing the education and training needed to help producers through these rough times. In addition, Extension is in the process of coordinating with USDA APHIS, the Arkansas State Plant Board and the insecticide industry to help provide viable alternatives to fipronil. Hopefully, relief can be provided through a section 18 or 24 C exemption.

Fire ant control demonstrations were conducted in many infested counties within and outside the imported fire ant quarantine area. Demonstrations of fire ant management products and techniques continue to be vitally important to the success of the fire ant education effort. The efforts of our county Extension agents to educate their clientele on this issue are very important to the success of our fire ant education efforts. Demonstrations at highly visible sites such as parks, fairgrounds, pastures, cropland, gardens and residential lawns continue to be the backbone of the demonstration program. Fairground demonstrations have been targeted in hopes of demonstrating to fair boards that fire ants can be managed in these potential sources for countywide infestations in non-quarantined counties. Several counties had extremely good responses to news articles and control demonstrations on the impact of correct pesticide treatments

Cooperative research projects with the pesticide manufacturing industry in developing new fire ant management products is enabling Arkansas to become familiar with several products prior to their potential labeling as fire ant management products. These projects have helped the program in staying a step ahead of many of the new product releases and the potential problems associated. In response, two applied research projects evaluating potentially new chemistry against RIFA were conducted in 2005.

The release of biological control organisms in 2002 has expanded into additional counties in 2003, 2004 and 2005. Cooperatively with USDA-ARS and USDA-PPQ, the phorid flies, *Pseudacteon tricuspis* and *Pseudacteon curvatus,* as well as the microsporidium, *Thelohania,* have been released in Arkansas. In recent years phorids were released in Pike, Bradley, Miller, Sevier and Clark Counties. *Pseudacteon tricuspis* has established and expanded in all but one release site; it is too early to know for *Pseudacteon curvatus*. Agents from several counties, Master Gardener groups and 4-H youth have been involved in the release and evaluation process. Plans for 2006 include two additional releases.

An emphasis area of our educational effort is organized community or neighborhood fire ant abatement. The Texarkana program in Miller County has over 500 homes and the program is in its 13th year of existence. There are several other more neighborhood-oriented programs throughout the state (Faulkner, Calhoun, Desha, Grant and Nevada counties). In 2005, organized fire ant abatement demonstrations were added in Drew and Desha

counties and reinstituted in White County. Participants in these counties plan to continue "on their own" in 2006.

Extension Program Results and Accomplishments

Output Indicators

12 Number of educational publications (multi-state) and materials produced including videos, CD-ROMs and slide sets necessary to conduct the statewide fire ant educational program.

95 Number of 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.

11 Number of fire ant educational programs in public schools.

18 Number of fire ant abatement demonstrations in residential, agricultural and public industrial areas.

2 New neighborhood fire ant abatement programs established, 1 reinitiated.

3,200 Number of contacts (people attending educational meetings, programs and seminars or seeking assistance from CES faculty).

Outcome Indicators

Arkansans are listening and are aware of fire ant management options. Discussions during and after various meetings have shown people are aware of many of the options in a fire ant management program. Questions to agents on newly released products have increased. Sales of many of the bait products are up according to many agents' informal surveys of local merchants.

The continuation of abatement programs in Arkansas City, Texarkana, Hope, Prescott and other locations suggest that once people apply many of the management options introduced to them by county agents and other Extension-educated people the programs continue due to their benefits. A majority of phone calls to county offices during the spring through fall are fire ant related. Since the agents are comfortable with the information they have received from the specialist, they answer calls with confidence.

Source of Funds

Smith-Lever 3d IPM funds, gifts (various companies), FSL-CES.

Scope of Impact

Dissemination – This program is available to all the counties in the state. 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. However, emphasis is given those counties within the Federal Fire Ant Quarantine area. Other materials (demonstration supplies, etc.) are distributed on a request basis and through in-service training.

Program Adoption – A majority of Arkansas' 75 counties have delivered this program; however, approximately 45 use it regularly.

Programs of Excellence

Biological Control of Imported Fire Ants

General Program Information – Imported fire ants are now found throughout the southern half of Arkansas and are expanding rapidly. Conservative estimates show that imported fire ants cost Arkansans over $50 million dollars annually. These losses include damage to electrical equipment, livestock and poultry, medical costs associated with stings and the cost of control. Fire ants are as detrimental to agriculture as they are to the homeowner.

One reason this invasive pest is such a problem in the southern U.S. is that it was accidentally introduced into the U.S. and is without natural enemies. The lack of natural enemies allows imported fire ants to out-compete native ant species and develop very high population densities. Beginning in 2002, the decapitating phorid fly, *Pseudacteon tricuspis,* was released Pike County, Arkansas, through a cooperative project with USDA APHIS, USDA ARS and the University of Arkansas CES. Since the initial release, other *Pseudacteon tricuspis* releases have been conducted in Bradley County in 2002 and 2003, Miller County in 2004 and Sevier County in 2005. Also during 2005 another similar species, *Pseudacteon curvatus,* was released in Clark County, Arkansas. All *Pseudacteon tricuspis* releases except for those in Bradley County appear successful. In fact the *Pseudacteon tricuspis* population in Pike County has expanded about 15 miles from the initial release site, in Miller county the expansion is about 5 miles and in 4 months the population has expanded 1/2 mile in Sevier County. It is too early to determine if the *Pseudacteon curvatus* release in Clark County was successful.

The best measure of positive impact from phorid flies is the abundance of native ant species several years following initial release. The cattleman who owns the property at the Pike County release has noted a reduction in mound density. Although this is encouraging, long-term data must be collected to verify impact. Long-term significant reductions in colony density would markedly improve cattle production because producers feel the fire ant impact but are hesitant to spend $10 to $20 per acre to manage imported fire ants.

Aside from the potential impact of phorid flies on fire ant abundance, these releases provide excellent outreach opportunities such as IPM training projects, collaborations, science fair/4-H projects and Master Gardener projects. Master Gardeners, NRCS personnel, cattlemen, youth and home demonstrations clubs have been involved in various aspects of these phorid fly projects.

CES Section Contact Person – Kelly Loftin, 501-671-2361, kloftin@uaex.edu.

Continued Fire Ant Management Education

General Program Information – The problem with fire ants is fully realized by all Cleveland County residents. Each year residents contact the Extension office in order to learn the best ways to control fire ant infestations. Two fire ant demonstrations were conducted at the county level this year to increase awareness of Extension-recommended control measures and to educate county residents. The first demonstration was conducted at the county fairgrounds in order to reach more people with the results of the recommended control measures given by Extension. The other demonstration was at the request of the Woodlawn school superintendent and the high school football coach. This demonstration was conducted on the athletic fields of the Woodlawn School. Residents from all over the county have and will be educated on the results of both demonstrations through publication in the local newspaper.

The goals of the program were to increase the awareness of Extension-recommended control strategies for the

imported red fire ant and to give more exposure for the county Extension office.

Attendees to the county fair as well as attendees to Woodlawn school football games were involved in the program and were served through the implementation of these two demonstrations.

Through these demonstrations, more residents of Cleveland County have been witness to an effective control program for imported fire ants. The Extension office has received numerous calls from county residents inquiring about the products used during the demonstration and the best ways to apply the suggested control products. On average, county residents spend about $100 per year on fire ant control measures. Through participation and inquiry, the Cleveland County Extension office has been able to save county residents about $75 a year on fire ant control. Multiplying this number by the 60 residents that received information on controlling fire ants, it would equate to a savings of $4500 for those clientele assisted.

Each year more residents are being educated on the best ways to control fire ants through demonstrations utilizing new and improved products and management practices. The county Extension office has become a valuable resource for cutting edge information on controlling fire ants, which is evidenced by the call volume each program year.

CES Section Contact Person – Leslie Walz, 870-325-6321, lwalz@uaex.edu.

Fire Ant Control Demonstration in Pike County

General Program Information – A few weeks prior to the Pike County fair, a fire ant management demonstration was conducted at the county fairgrounds. Pre-treatment counts of ants at nine bait stations ranged from 0 at one station to 200+ at the other eight stations. One week post-treatment counts were 0 at seven stations and less than 50 at the other two bait stations.

The Pike County fairgrounds were severely infested with fire ants. The new product used in this demonstration was a bait that combined a toxicant and an insect growth regulator. Good control was evident within in a week after treatment. Pike County citizens were the target audience. Fair attendance was over 3,500 people. Fair attendees were made aware that baits can be an effective means of fire ant control when properly used. Many comments and questions arose as a result of this demonstration.

More homeowners are using broadcast bait treatments on their lawns and are planning on using the two-step method of fire ant control next year.

CES Section Contact Person – Mike McCarter, 870-285-2161, mmccarter@uaex.edu.

Fire Ant Education – Desha and Drew Counties

General Program Information

Youth Fire Ant Education Workshop Successful

Fire ants are a major pest to homeowners, farmers and business people in the area. Young children are particularly vulnerable to fire ants and are often unaware of the threat the pest posses.

Children at Phoenix Youth Opportunity in Arkansas City and Cornerstone Christian Academy in Tillar were

targeted with an educational program to inform participants of the biology, life cycle, distribution and potential threat to humans and pets.

Participants learned how to identify fire ants and their preferred habitat. They also learned safe and effective control measures. A total of 31 youth and 6 adults participated in the two workshops.

U-Pick Peach Orchards Targeted With Fire Ant Control Demonstrations

U-Pick peach orchards provide area families with fresh, quality, safe and affordable peaches. However, fire ants pose a threat to producers and workers who maintain the orchards. Additionally, families, and especially children, often come in contact with the pest while picking the fruit. Three area producers were targeted with fire ant control demonstrations in May of 2005. The timing of the demonstrations was chosen to ensure effective control prior to harvest when human contact with the pest would most likely occur.

Survey results showed an average of 14 fire ant colonies per acre prior to treatment. Six weeks after treatment, survey results showed an average of less than one colony per acre. As a result of the demonstrations, no incidences of fire ant stings to humans were noted. All growers have indicated an increased understanding of control measures, and each has indicated that they plan to apply needed insecticide bait in a timely manner for the 2006 growing season.

Neighborhood Fire Ant Abatement Program Successful in Desha County

Eight families on the east side of McGehee expressed an interest in controlling fire ants in their neighborhood. Past contact by children with the pest was of particular concern.

A demonstration to determine effective control measures was conducted in June with assistance from the families. Extinguish Plus was applied to the yards with the use of a small Herd Seeder at the rate of 1 1/2 pounds per acre.

Surveys prior to application revealed an average of eight colonies per acre. Six weeks after treatment, active colonies had been reduced by 98 percent.

All families now understand the benefits of safe and effective control measures when applied correctly and in a timely manner. Each has indicated that they will purchase and apply insecticide to their yards in 2006.

CES Section Contact Person – Steve Kelley, 870-460-6270, skelley@uaex.edu.

Program Response: Improved Efficiency in Crop Management Through Nematode Control

Contact: Terry Kirkpatrick, Nematology - Cotton and Soybean Specialist, 870-777-9702, Pest Management

Situation

Arkansas ranks ninth in the U.S. and first in the South in the production of soybeans. A major constraint to

optimal production in our state is the wide distribution and annual occurrence of soybean diseases and nematodes. Disease development in soybean fields may lower yield by 10 to 50 percent (more in certain situations) if left unmanaged. The development of effective resistant soybean cultivars has been a tremendous advantage for growers, but the number of new cultivars that come on the market each year can lead to confusion in selecting an appropriate cultivar for a particular farm. Each year growers have to choose among well over 200 soybean cultivars, many of which have limited or no information available on their disease resistance level to common soybean pathogens. Since only one cultivar can be grown in each individual field, selection of the most appropriate cultivar is usually quite difficult, and selection of the wrong cultivar can lead to significant yield loss.

Stakeholder Input

A limited program to evaluate new soybean cultivars for resistance to a few key diseases has been conducted since 1990. Conversations and grower input in the last few years have indicated that the resulting information was extremely valuable in cultivar selection each year, but that the scope of the program to include the majority of our important diseases was needed. A more complete program to screen new cultivars that become available commercially each year for resistance to an expanded number of fungal and nematode pathogens was designed. A proposal for financial assistance in maintaining and conducting the program annually was developed and submitted to the Arkansas Soybean Promotion Board in January 2003. This proposal was funded by the ASPB and provided the necessary funds for personnel to conduct the program under the guidance of Rick Cartwright (CES) and Terry Kirkpatrick (SWREC).

Overview

Mark Trent (M.S., Oklahoma State University) and Kimberly Hurst (B.S., Arkansas State University) joined our project last spring in time to establish and conduct our various disease screens. We evaluated approximately 250 soybean cultivars or advanced breeding lines, including all entries in Don Dombek's 2004 Soybean Cultivar Performance Tests.

Screens Conducted in 2004

Root-Knot Nematode. Greenhouse screen conducted by K. Hurst and T. Kirkpatrick at SWREC. Field evaluation of last year's R and MR cultivars (from the 2003 screen) conducted by Cliff Coker at Dermott, Arkansas.

Soybean Cyst Nematode. Greenhouse screen for races 5 and 6 conducted by K. Hurst and T. Kirkpatrick at SWREC. Early MG IV entries were also screened against SCN race 9.

Reniform Nematode. Greenhouse screen conducted by R.T. Robbins at UA-Fayetteville.

Stem Canker. Field screening using supplemental inoculation and overhead irrigation conducted in the SWREC stem canker nursery by K. Hurst and J. Barham. All cultivars in the soybean performance program were evaluated for disease severity and yield.

Frogeye Leaf Spot. Field screen conducted at two locations on Pine Tree Experiment Station by M. Trent and R. Cartwright.

Aerial Blight. Field screen conducted in commercial field in Clay County by M. Trent and R. Cartwright.

General Foliar Diseases. Don Dombek's variety tests at NEREC, Marianna, RREC and Rohwer were rated for the presence and severity of foliar diseases collectively by M. Trent, R. Cartwright and C. Coker.

Sudden Death Syndrome. A partial set of cultivars was evaluated for SDS severity at the Cotton Branch Station near Marianna by M. Trent and J. Rupe.

Results from all the screening efforts were tabulated, summarized and transferred to Chris Tingle and Don Dombek by December 2. These results have been incorporated into the 2005 Soybean Update available in all Extension offices January 13 and at www.uaex.edu. Results were also used to revise the SOYVA variety selection program. A total summary of all our screening results for all cultivars evaluated is available at www.arkansasvarietytesting.org.

Extension Program Results and Accomplishments

Output Indicators

- 250 cultivars and advanced lines were screened for resistance to three soybean nematode pests, two root diseases and various foliar pathogens.

- All information was made available to Arkansas soybean producers via Internet, soybean cultivar computer selection program and hardcopy publication before January 1, 2005.

Outcome Indicators

- Soybean producers statewide utilized Extension information in cultivar selection for the 2005 season. Soybean industry personnel also used this information to update or supplement the information they supplied to the public relative to specific soybean cultivars they marketed.

- This program is the most complete and extensive attempt to provide growers with useful information relative to the disease risk of new cultivars. Our data is being utilized extensively throughout the mid-South.

Source of Funds

This work has been supported through the Arkansas Soybean Promotion Board and the University of Arkansas Division of Agriculture.

Scope of Impact

Widely used throughout the mid-South.

Dissemination – – This information has been shared with Arkansas producers, public and private soybean breeders and plant pathologists, seed dealers and unit leaders from various laboratories across the mid-south.

Program Response: Plant Disease Detection and Diagnosis

Contact: S. R. Vann, Ph.D., Assistant Professor, Extension Plant Pathologist, Pest Management Section, 501-676-3124 (office) or 501-944-0857 (cell), Plant Disease Clinic, 2201 Highway 70 East, Lonoke, AR 72086, <svann@uaex.edu>

Overview

The Plant Disease Clinic was established at the Lonoke Agricultural Extension and Research Center in 1992 for the purpose of providing disease diagnosis on a wide variety of agricultural crops grown in Arkansas. The clinic also serves to connect people to agriculture through education and service. The clinic is very active in providing plant pathology training and educational programs to growers and other clientele through the Master Gardener program that impacts all Arkansas counties. The clinic is an essential component of the growing urban/commercial horticulture segment of the population, addressing problems and providing solutions to growing valuable crops that contribute to a thriving economy.

Because of its geographic location, climate and tourist activity, Arkansas is especially susceptible to the introduction of new and emerging plant pathogens. Some of these pathogens, particularly on ornamentals and field crops, have the capability to cause excessive crop losses and disrupt the food supply for the United States population. With its 1.555 million acres of rice, 620,000 acres of wheat, 900,000 acres of cotton and 3.15 million acres of soybeans harvested in 2004, Arkansas produces a significant portion of field-grown food and fiber in the United States. After September 11, a new awareness of bio-terrorism activity is being realized. The introduction of potentially harmful plant pathogens into food-producing areas becomes a real issue. The mission of the Plant Disease Clinic is to establish a solid link to county Extension agents and other “first detectors” such as Master Gardeners in the recognition and identification of plant diseases that may potentially be harmful to our agricultural ecosystem. Disease identification will become increasingly important as commercial and urban agricultural operations increase. More attention is being paid to the home gardener as evidenced in the Master Gardener program expansion.

Golf course personnel, sod producers, landscape organizations and backyard gardeners rely on research-based programs delivered to the county offices and university departments.

Extension Program Results and Accomplishments

Output Indicators

- Over 50 multi-county Master Gardener disease-related training presentations with statewide coverage.
- 1,363 total plant samples (to date) examined in the Plant Disease Clinic. (Number of samples have remained four-fold for the past 5 years.)
- More than 600 Master Gardener participants trained from all three districts of the state (Ozark, Delta and Ouachita).
- Extension Miscellaneous Publication (MP) 154 updated with the latest disease control recommendations.

- Agent training related to disease identification and first detector training.
- 9 timely disease-related news articles in print media.
- 520 phone contacts in reference to disease problems and diagnoses.

Program Impact

- Sample numbers from turf and ornamental growing areas have increased over last year. Overall plant samples have declined. This may be due to agents increased participation and knowledge of ornamental and other non-row crop disease identification training in addition to an increase in digital image submissions from county Extension offices and commercial growers. Digital images of plant problems are becoming an integral component in the overall operation and function of the plant disease clinic during 2004-2005.
- The clinic has been selected to become a portion of the Southern Plant Detection Network for plant pathogens that may pose a potential bio-terrorism threat. The clinic will be the hub of reporting and identifying pathogenic agents to the Southern Regional Plant Disease Clinic in Florida.

Source of Funds

Federal Smith-Lever – CES, gifts supporting the Extension plant pathology program.

Scope of Impact

Dissemination – A Plant Disease Clinic web page in available on the University of Arkansas Extension web site. Relevant publications in 2004 included 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*; and FSA-7529, *Control Root Knot Nematodes in Your Garden*. More emphasis on ornamentals and other horticulture crops is planned for 2005. Handouts were prepared relating to sample collection and plant disease references for all major commodity crops in Arkansas. Over 200 digital images of plant disorders have been received into the clinic for 2004. This number represents a two-fold increase over 2002 numbers.

Scope of Program – The activities of the Plant Disease Clinic are specific to Arkansas and its agricultural component. Plant disease education programs are presented to all interested counties that have an agricultural sector. The plant disease clinic continues to help connect the citizens of Arkansas and agriculture through service and education.

Program Response: Precision Chemical Applications

Contact: Dennis R. Gardisser, Biological and Agricultural Engineering, 501-671-2241, dgardisser@uaex.edu

Situation

Agricultural chemicals, pesticides and plant nutrients, comprise a major portion of the dollars spent by producers

of all agronomic crops. The primary emphasis of this program continues to be making chemical applications more efficacious and environmentally sound.

Stakeholder Input

Commercial aerial applicators promote these activities, help publicize and provide certification credits through their national affiliation.

Over 1,000 aircraft pattern analyses were performed on more than 176 Arkansas aircraft for both spray and granular type applications at 14 agricultural aviation workshops conducted by Extension. Ground application workshops have also been conducted, featuring specifically targeted instruction to enhance chemical applications for the following general group categories: ground-operated custom applicators, cattlemen, lawn and turf, row crop producers, forestry, research and technology, agricultural chemical development and marketing groups. In addition, Extension has again led the way with a section 24C label for aerial application of Command7 herbicide to rice.

Drift reduction demonstrations were held in several workshops, and a workshop was held to demonstrate the key parameters to several key EPA personnel. These parameters included application speed and height, use of drift control agents, nozzle setup and design and operating pressure. A major effort was made at this year's fly-ins to help aerial applicators correctly calibrate their equipment to help avoid major drift concerns. Data from these field demonstrations is being continually utilized by the Arkansas State Plant Board to develop regulations.

Extension has also provided many additional government agencies with guidance and assistance concerning chemical application problems. Examples include Arkansas Highway Department, Arkansas Department of Corrections (ADC), Little Rock Veterans Hospital, several municipalities and the Arkansas State Plant Board. The Plant Board has repeatedly requested both advice and assistance from Extension with many of their ongoing chemical application enforcement actions and policy-making hearings. ADC has again requested assistance from Extension in writing their application guide and bid procedures for all their pesticide, fertilizer and seeding operations. ADC required aerial applicators to participate in Extension calibration programs in order to be eligible for their bid process. Many aircraft were certified through the standard fly-ins during the spring.

The national program, called PAASS (Professional Aerial Applicator Support System), is being developed, with many components being modeled after ongoing Extension programs in Arkansas. Engineers serve on the content committee for the PAASS program and co-authored the application technology section with engineers from Illinois and Kansas. Much of the application technology session being presented in this program this year came from Arkansas Extension materials. This program was presented to 427 operators in Arkansas in January of this year.

Insurance companies have begun requiring that aerial operators participate in PAASS and/or Extension Self Regulating Application and Flight Efficiency S.A.F.E. workshops. In some cases participation may affect the rate and in others it may be the deciding factor of whether or not a quote will be provided.

Nitrogen fertilizer prices have again hit an all-time high along with natural gas prices earlier this year. Several on-farm workshops were conducted to help growers adjust trucks and buggies to obtain optimum efficiency. This effort was done in both row crops and in many of the state's pasture-growing areas.

Several commercial and private applicators have been advised on how to best use their mixing and loading facilities to meet EPA guidelines and enhance environmental stewardship. Several new aerial applicator loading

and handling facilities were designed and have either already been constructed or are under construction. Several new facilities are in the planning phases. These facilities were designed to meet all current and foreseeable EPA and state guidelines and will serve as an example for other commercial aerial applicators wishing to construct similar facilities.

Extension Program Results and Accomplishments

Output Indicators

12 Fly-ins – Aircraft calibrations for both spray and dry materials. Droplet size and potential drift evaluations.

8 Educational meetings on pesticide rinse and containment facilities.

3 Pesticide rinse and containment demonstration facilities constructed.

35 Educational meetings with applicators and producers on chemical application technology.

Outcome Indicators

>1,000 Aircraft calibrations.

35 Producer and operator facilities under construction using methods and techniques illustrated in demonstration projects.

Source of Funds

FSL, user fees $175/aircraft/year, and EPA 319h grant.

Scope of Impact

Dissemination and Scope of Program – This is a statewide program. Programs were also presented in Mississippi, Oklahoma, Tennessee, Louisiana, Texas and Missouri.

Scope of Program – These are statewide activities. Several participants come from surrounding states – Mississippi, Louisiana, Texas, Missouri, Tennessee and Oklahoma. Also distributed to Canada and Australia.

Program Response: Rice Integrated Pest Management Program (IPM) for Arkansas

Contact: R.D. Cartwright, Ph.D., Extension Plant Pathologist, Pest Management Section, 501-671-2228, rcartwright@uaex.edu

Situation

Arkansas is the largest rice-producing state, averaging 1.5 million acres per year. Commercial rice production also

receives a large share of the fertilizer and pesticide applications made in Arkansas annually. New varieties and production technology have encouraged heavier applications of nitrogen fertilizer and pesticides to achieve the highest yield. However, research has shown that the most profitable rice production results from pesticide decision thresholds and more efficient fertilizer methods. Research has also shown that good cultural practices minimize rice pests and the need for frequent pesticide applications. The Rice IPM Education Program encourages integrated pest management in Arkansas rice production. The program provides funding and other support to county Extension agents through a grant system, and all major rice counties have consistently participated the past several years.

Stakeholder Input

Input comes from county agents, County Extension Councils, consultants and growers each year to guide the local county Rice IPM Program. From this input, county agents write a grant proposal and submit it to the Rice IPM Program Committee within the University of Arkansas Cooperative Extension Service. Stakeholders routinely request more specific information or specific demonstrations to address integrated pest management questions about rice in their respective counties.

Stakeholders in the counties are also asked to actively participate in IPM program demonstrations and other education efforts. This has resulted in many rice producers experiencing “hands-on” Rice IPM on their farms.

Overview

The Rice IPM Program provides grant funds to counties that develop and implement county Rice IPM Education Programs. The Rice IPM Program Committee solicits grant proposals each year from counties with rice acreage, awards funding according to level of effort and quality of the proposal and reviews the annual report from each Rice IPM county for the previous year. Grant funds support Rice IPM related travel, Rice IPM specific equipment items, Rice IPM newsletter printing, distribution costs and other expenses.

Extension Program Results and Accomplishments

Output Indicators

22	Number of Rice IPM county programs.
36	Grower meetings in Arkansas featuring Rice IPM.
780,000	Rice production acres represented by stakeholders at education meetings.
2,340	Stakeholders attending meetings/field days with IPM featured.
247	Field demonstrations funded by the Rice IPM program.
14	Field meetings, field days and workshops featuring Rice IPM.
107	Crop newsletters featuring Rice IPM.
6,683	Stakeholders receiving newsletters featuring Rice IPM.

913,256 Rice production acres represented by stakeholders receiving newsletters.

193 Popular press articles, radio spots and interviews featuring Rice IPM.

592,345 Rice acres soil-sampled in Rice IPM counties.

741,200 Rice DD50 acres in Rice IPM counties.

1140 Rice acres enrolled in 4-H Rice for Ducks program in Rice IPM counties.

1,154,000 Rice acres harvested in Rice IPM counties.

1,555,000 Total rice acres harvested in Arkansas during 2004.

6,910 Bu/A Record yield harvested in Arkansas during 2004.

40 Percent of rice acres treated in 2004 with fungicides.

19 Percent of rice acres treated in 2003 with insecticides.

100 Percent of rice acres treated in 2003 with herbicides.

- Number of counties participating in the Rice IPM program average 20-25 each year.
- Education efforts increased slightly in 2004-2005.

Outcome Indicators

6,910 Bu/A Record yield harvested in Arkansas during 2004.

- Rice DD50 and soil sampling acreage increased.
- Total acres treated with fungicides decreased slightly in 2004-2005 with rate per acre unchanged.
- Total acres treated with insecticides decreased in 2004-2005.
- Use of flood depth to control rice blast was again a major blast control measure in the state.

Source of Funds

IPM (federal) administered by University of Arkansas Cooperative Extension Service, Dr. Gus Lorenz, coordinator.

Scope of Impact

Dissemination – The Rice IPM program is available to any county with rice production in Arkansas on a grant basis. County staff applies for grant funds and implements the local Rice IPM education program for the benefit of all persons in their respective counties.

Relevant publications for the program at the state level include the MP44, *Recommended Chemicals for Weed and*

Brush Control for Arkansas; MP144, *Insecticide Recommendations for Arkansas*; MP154, *Arkansas Plant Disease Control Products Guide*; MP192, *Rice Production Handbook*; and *Arkansas Rice, a seasonal electronic newsletter* (University of Arkansas Cooperative Extension Service, Plant Pathology Department, Fayetteville, Arkansas).

Scope of Program – The following counties were awarded Rice IPM grants for local education programs: Arkansas, Ashley, Chicot, Clay, Craighead, Crittenden, Cross, Desha, Faulkner, Jackson, Lafayette, Lawrence, Lincoln, Lonoke, Mississippi, Monroe, Poinsett, Prairie, St. Francis, White, Woodruff and Yell. These 22 counties include the largest rice production counties in the state and represent more than 75 percent of the total rice acreage in Arkansas.

Program Response: Soybean Integrated Pest Management

Contact: Gus Lorenz, Extension Entomologist/ IPM Coordinator, Pest Management, 501-671-2191, or Cliff Coker, Extension Plant Pathologist, Pest Management, 870-460-1091

Situation

Soybean production in Arkansas was 102,000,000 bushels on 3.02 million acres, one of our largest crop in recent history. The average yield of 34 bushels per acre is down from last years record yield of 39 bushels per acre set in 2004. Soybeans are produced in 42 of the 75 counties in Arkansas.

Since soybean is an intensively managed crop – requiring timely irrigation, fertilizer and pesticides applications. 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 eastern Arkansas crop production including decreasing soil and water quality, herbicide drift and resistance issues, increased insect pressure, increased production of pesticide-sensitive fish farms in the area, new pests, increased severity of established pests, and others have also increased the need for IPM in soybean.

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.

Stakeholder Input

For several years, the Arkansas Farm Bureau has identified soybean pest control as a high priority. The Soybean Promotion Board has identified disease, insect and weed research as high priorities 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 low commodity prices and the advent of transgenic soybean production, growers are faced with many difficult decisions on economic management practices.

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. While the soybean IPM program has made significant educational progress in its brief existence, much remains to be done in Arkansas. Pest management on Arkansas soybean farms still relies too heavily on preventative applications of herbicides. From 1.5 to 3 pounds a.i. of various herbicides are applied to every acre of soybean production in the state each year, and this number has decreased 5.0 pounds a.i. applied per acre since the peak of modern soybean herbicides in the 1980s. On the other hand, management of insects and diseases in the state relies more heavily on scouting and decision thresholds for the judicious use of insecticides and fungicides. Most acreage receives none of the latter pesticides, because many farmers have come to rely on resistant varieties or "Best Farming Practices" to minimize disease and insect threats. Nevertheless, overall usage of these pesticides – especially herbicides – could be even more judicious, resulting in further declines in applied materials. The increased use of Round-Up tolerant soybeans has reduced rates of many herbicides to control weeds in Arkansas, and has contributed significantly to a decrease in the widespread usage of metribuzin, alachlor and trifluralin herbicides on soybean in the state the past five years.

Extension Program Results and Accomplishments

Output Indicators

- Participation included 22 top soybean counties, representing 69% of Arkansas soybean acreage with 85% of this acreage implementing IPM practices.
- Soybean meetings featuring IPM totaled 83 during 2005.
- Meeting attendance was 2,249 soybean producers, about 45% of Arkansas soybean farmers of which 85% implement IPM practices.
- Participating county agents conducted 166 field demonstrations related to integrated pest management of soybean, including:
    - Balanced soybean fertility and effect on yield and pest severity (10).
    - Effect of proper irrigation on soybean productivity and disease management (11).
    - Multiple management approaches to weed control in soybean (21).
    - Use of lower rates of seed treatments to evaluate seedling disease management (7).
    - Appropriate use of fungicides to minimize foliar disease (11).
    - Use of disease resistance in soybean production in Arkansas (34).
    - Nematode sampling to identify and improve nematode management in problem fields (14).
    - Reduced use of pesticides through scouting and decision thresholds (20).

- Monitoring soybean leaf beetles and stink bugs in soybean (18).

- Soybean Rust Sentinel Plots (30).

- Participating counties held 69workshops or field tours featuring IPM, with 1,933 attendees.

- County participants wrote or distributed 94 newsletters on soybean and soybean IPM, with 4,079 growers receiving each of them.

- Soybean IPM topics were featured in 138 popular press items among the participating counties, including radio and TV programs and newspaper articles.

- Participating counties reported at least 2,795 private and 1,052 commercial pesticide applicators received IPM training.

Program Impact

- Participating counties reported that only 10% of the soybean producers use private consultants on 10 % of the acreage.

- Participating counties reported pesticides use on their acreage as 61% received a seed treatment, 21 % received a foliar fungicide, 48 % received an insecticide and 100 % of their acreage received 1.38 applications of a herbicide.

- Because IPM relies heavily on highly specific information and soil fertility influences the severity of several soybean diseases and other pests, the Soybean IPM program encourages the use of scientific soil testing programs. Participating counties reported 4,305 soybean soil samples collected and analyzed by the University of Arkansas, representing 179,332 acres. This is critical information since soybean soil fertility values have gradually decreased in the state – increasing a plant's susceptibility to diseases and other yield-limiting soil related problems.

- Participating counties also reported using the pest management tools.

  - Nematode sampling: 124 fields covering 7,256 acres.

  - Soybean variety selection computer program – SOYVA: 1,292 fields for 149,014 acres. This program provides better variety choices based on nematode and disease problems as well as herbicide tolerance.

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 – Soybean IPM presentations were made in every major soybean producing county. Soybean IPM field demonstrations were installed in 19 counties during 2004. Soybean IPM county participation has held steady at 18 counties with $18,000 distributed in county IPM grants.

Program Response: Urban Pest Management Program

Contact: John D. Hopkins, Extension Entomologist, Urban, 501-671-2226, Pest Management

Situation

The scope of Urban Integrated Pest Management in Arkansas is very extensive, involving 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 the general quality of life of all Arkansans.

The Urban Integrated Pest Management program focuses on education in the area of urban pest management of homeowners; agriculturists; youth; the professional pest control, landscape, turf and nursery industries; and personnel in the Arkansas State Plant Board, Arkansas Department of Health and the Arkansas Department of Education. Program goals are achieved through county and state educational programs such as demonstrations, applied research, education booths, organized abatement demonstrations, presentations, publications, newsletters, web pages, in-service training of county faculty and news releases.

The need for a complete update of educational and training materials 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" was identified and cooperative work with the Arkansas State Plant Board to address this issue was completed.

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, reduce losses from pest damage, reduce environmental pollution and reduce human exposure to pesticides. If Arkansans are to benefit from the positive aspects of IPM in the public school environment, an assessment of current pest control practices and awareness of integrated pest management in the state public schools is needed. A survey to accomplish this goal was initiated and results are being evaluated.

The greatest financial investment for most Arkansans is that of purchasing a home, and damage resulting from termite infestation is a concern for all who own structural property. In addition to the native species that threaten the property of Arkansans, a new invasive species of termite, *Coptotermes formosanus* (Formosan subterranean termite/FST), has the potential to cause damage in Arkansas. In addition to infesting wooden structures, FSTs have been found attacking 47 species of living plants, including trees. Several of these tree species dominate in Arkansas's forests. The potential for damage and financial loss to Arkansans should FSTs become established in the state has prompted the submission of a Cooperative Agreement Project (CAPS) Proposal entitled "Formosan Subterranean Termite (FST) Survey in Southern Tier Arkansas Counties." Project initiation awaits funding approval.

Africanized honey bees (AHB) 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 Arkansas State Plant Board resulted in development of educational materials to inform the citizens of Arkansas of the risks from this insect and provide them with proper safety precautions when AHBs are encountered.

The red imported fire ant (*Solenopsis invicta*) is a pest of both rural and urban Arkansas. To date, the red imported fire 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 placement of these counties within the quarantine area has implications to commerce due to imposed restrictions on the movement of regulated material from the quarantined area to or through non-quarantined areas. Educational efforts stressing fire ant management/suppression 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. (1) They have identified the need to update 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.” (2) 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 honey bees.

The Arkansas Department of Education has expressed support of 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 2005, cooperative work involving the creation of educational materials relating to professional commercial pest control was conducted by Extension Urban Entomology and the Arkansas State Plant Board (ASPB). This work was supported through a Professional Applicator Training Materials Grant sponsored by EPA and administered by the ASPB. 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 requiring licensing by the ASPB 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 management industry was provided through in-service training, various county meetings and interactions with commercial pest management professionals.

In 2005, a survey was conducted to determine pest management practices in Arkansas public schools. This effort was supported through a competitive 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 ($24,168.00). The survey was sent to the superintendent in each of Arkansas's 267 school districts. There were 119 respondants to the survey for a response rate of 44.57%. Results are currently being summarized for final reporting.

A Cooperative Agreement Project (CAPS) Proposal entitled "Formosan Subterranean Termite (FST) Survey in Southern Tier Arkansas Counties" ($15,304.00) has been submitted to USDA APHIS PPQ and is awaiting approval. This invasive species is established in areas of Louisiana (especially the areas impacted by Hurricane Katrina), Texas and other southern states and, if allowed to become established in Arkansas, has the potential to cause extensive economic damage to structures as well as damage to the state's forest resources. Of even greater concern than the natural movement of this termite is the potential for artificial spread by the acceptance of FST-infested debris from Katrina-damaged areas into Arkansas landfills licensed to accept this class of waste material. The objective of the survey is to identify any points of initial colonization by the Formosan subterranean termite in southern Arkansas through the capture of swarmers using combination light/sticky traps. The ASPB is cooperating in this project and would initiate appropriate action if FSTs were identified in the state.

The Urban Entomology Program in conjunction with the ASPB also concentrated on awarness education regarding Africanized honey bees. This invasive species was first detected in Miller County, Arkansas, in June 2005. Subsequently, 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 County with Loftin, Doug Petty, county Extension agent – staff chair, and John Turner, county Extension agent – agriculture, and in Faulkner County with Bill Dodgen, county Extension agent – staff chair, and Jennifer Hawkins, county Extension agent – agriculture. Work on fire ant biological control demonstrations in cooperation with USDA-APHIS, Loftin, John Gavin, Bradley County Extension agent – staff chair, Mike McCarter, Pike County Extension agent – staff chair, Rex Herring, Sevier County Extension agent – staff chair, Jerry Clemons, Clark County Extension agent – staff chair, and Amy Simpson, Clark County Extension agent – 4-H - Agriculture either continued or was initiated. Indications are that the fire ant phorid parasite, *Pseudacteon tricuspis*, released in Pike County in 2002, has 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

3,499 Individual contacts relating to Urban IPM.

730 Individuals attending presentations.

497 Contacts from individuals seeking pest information.

31 Presentations at educational meetings.

23 Press articles or media interviews.

11 Major Extension publications.

5 Presentations at professional meetings.

7 Demonstrations conducted for clientele.

9 Youth outreach educational activities.

- Members of the Arkansas Pest Management Association and others in the Arkansas pest control industry, members of the Arkansas Green Industry and members of the Arkansas Turfgrass Association have been alerted through Urban Pest Management Program educational opportunities to invasive pest species that currently pose a threat or may pose a threat in the future.

- 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.

Program Impact

- Preliminary assessments of pest control methods and IPM awareness in Arkansas public schools indicates 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.

Source of Funds

Federal Smith-Lever – CES.

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 – A majority of Arkansas counties have delivered the urban pest management program via ongoing county educational trainings and meetings.

The Arkansas State Plant Board is currently utilizing the updated training materials produced by the urban pest management program with all individuals seeking to be licensed in the various commercial and non-commercial

pest control categories.

Most of Arkansas's 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.

This program is state specific to Arkansas. 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.*

The urban pest management program continues to help connect the citizens of Arkansas and agriculture through service and education.

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 900 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

344 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

600 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.

Program Response:

Natural Resources Public Policy Education

Contact: Janie Simms Hipp, J.D., LL.M., 479-575-6935, Environment and Natural Resources

Situation

Rapid change in federal, state and local public policies affecting agriculture and natural resources is occurring. Many Arkansans whose lives are directly affected by agriculture and natural resources policies generally are under-informed concerning the intricacies of those policies and, therefore, are less equipped with the knowledge necessary to ensure proper compliance. Knowledge of state, regional and national regulatory policy and the developing judicial interpretations of those policies is key to the healthy and prosperous survival of those whose lives and livelihoods are connected with Arkansas land, water and other natural resources. Through a knowledgeable, educated and informed general public and regulatory community, public conflicts between those affected by natural resource policy changes will be lessened. By focusing on education and prevention instead of litigation and conflict, we will bring about faster compliance within policy frameworks, more efficient and effective means for achieving desired regulatory results, and at the same time encourage a more knowledgeable public and consumer base. Increased responsibility will flow from increased education, and positive solutions to public policy challenges will be realized.

Stakeholder Input

Project partners in the activities involved in this program response area involve the Arkansas Natural Resources Commission (formerly the Arkansas Soil and Water Conservation Commission), the Arkansas Department of Environmental Quality and the Arkansas State Plant Board. The agencies and their representatives work with CES partners headed by the contact personnel in achieving short- and long-range goals for the program area. In 2004 the project partners, coordinated through a steering committee made up of project agency partners in addition to representatives from the legal community (UALR Law School faculty) and the farming community (Arkansas Farm Bureau), planned and executed the first annual Water Conference focusing on water quality and water quantity issues of concern for the state of Arkansas. Plans are underway for the second in this series of conference events which will occur in late fall 2006. Additional non-funding partners include the Arkansas Forestry Commission, the Livestock and Poultry Commission and the Office of the Governor. Program design has been accomplished through the main agency partners in addition to the AFB and UALR Law program committee. Stakeholder input was achieved through pre-conference surveys. These surveys will become more targeted over time.

Overview

The University of Arkansas Division of Agricutlure has partnered with key state agencies in providing funding for a Natural Resources Public Policy Education program. This program is housed within CES with support from the Dale Bumpers College of Agricultural, Food and Life Sciences and the Department of Agricultural Economics and Agribusiness. In 2005 the natural resources public policy education program coordinated with other funding state partners, the Arkansas Natural Resources Commission (formerly the Arkansas Soil and Water Conservation Commission), the Arkansas State Plant Board and the Arkansas Department of Environmental Quality, to conduct a statewide water conference. The statewide water conference was conducted in November 2005, culminating a broad interagency effort which included participation of one of the state's law schools in a co-coordinating role. The water conference will occur every two years and will offer educational updates concerning developing water rights and water quality, legal and scientific issues and will provide an educational venue to identify alternatives and consequences associated with water challenges facing the state. In addition to the biannual water conference, additional project tasks will include training, preparation of educational materials and conducting public meetings

on substantive natural resources issues. The program is broad, encompassing legal and regulatory issues

pertaining to water quality and quantity, environmental and natural resouce regulation, private landowner liability, the advantage of public/private relationships in enhancing our natural resource base, the role of private entities in protecting and enhancing natural resources, the necessities of planning for and assessing actual risks to natural resources and the impact of regulatory change. Ongoing instruction of the agricultural law undergraduate class and the recent addition of an undergraduate agriculture and environmental law class at the University of Arkansas - Fayetteville amplifies the program effort. These and other types of program activities will continue as the program develops. Most recent program developments involve partnering with CES personnel statewide in the design and delivery of eight training modules on water use and available supply and water quality public policy frameworks. These materials are being field tested and will be made available in mid-2006 for statewide dissemination.

Extension Program Results and Accomplishments

Output Indicators

- Fact sheets concerning landowner liability for entrants onto land and description of and effect of new animal waste statutes passed by the Arkansas General Assembly; posters accompanying those fact sheets.

- Articles in the publication *Forest Landowner* and discussions of these issues at the University of Arkansas at Pine Bluff annual Rural Life Conference events, the annual Galaxy educational conference for extension personnel and the presentation of legal and regulatory overviews at numerous workshops in the region offered to the general public and farmers' and ranchers' communities.

- The water conference of November 2005 reached approximately 80 individuals and professionals in its first year. A new series of water law training sessions are concluding in early 2006 and the publications associated with those training sessions will be put into fact sheet format and made available statewide.

- Eight fact sheets and PowerPoint presentations were being finalized in late 2005 and early 2006 for statewide dissemination in 2006 focusing on the full array of water-related laws and regulations affecting residents of the state.

Outcome Indicators

Efforts are to increase the knowledge base for those persons affected by changing uses of land for recreational access and income production. Additional calls and inquiries have resulted from the production of written fact sheets and public presentations that specifically discuss the landowners' liability exposure and the recommendations concerning actions to prevent problems in regulatory compliance or with liability exposure when entrants come onto private land. With regard to animal waste issues, a large number of produers and affected citizens attend and are provided an opportunity for input into the regulatory process as new statutes governing waste activities are put into place, the regulatory process further develops and litigation continues in the region.

Source of Funds

Funding for the Natural Resource Regulatory Policy specialist is provided from a partnership agreement with the Arkansas Soil and Water Conservation Commission, the Arkansas State Plant Board and the Arkansas Department of Environmental Quality, in conjunction with CES and the University of Arkansas Division of

Agriculture.

Scope of Impact

Dissemination – Water quality regulatory publications available via county Extension offices and the UA CES web site. Programs are available statewide, and program efforts are available statewide. New water use and availablity publications currently being released will be available statewide.

Scope of Program – Producers living in the western two-thirds of the state are the primary recipients of early program educational materials concerning animal waste regulation. Landowner liability materials are serving producers from all counties. Water conference materials were available on a statewide basis, and new water use and availability materials, while focused in the eastern one-half of the state, are available statewide.

KEY THEME: PESTICIDE APPLICATION

Program Response: Pesticide Applicator Training

Contact: Ples Spradley, Pesticide Assessment Specialist, Pest Management Section, 501-671-2234

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 a 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/non-commercial 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/non-commercial applicators. Private applicators must be retrained every five years while

commercial/non-commercial 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 recordkeeping and nitrogen management.

There are approximately 22,000 private applicators and 3,400 commercial/non-commercial applicators in Arkansas that are certified/recertified via the Extension Service's Pesticide Applicator Training Program.

Extension Program Results and Accomplishments

Output Indicators

3 Educational publications, 19 slide sets, 9 study guides and other materials produced as needed to conduct the program.

112 Number of educational meetings held to certify or recertify commercial and private applicators.

7,188 Number of individuals attending pesticide educational programs.

Outcome Indicators

1,617 Number of commercial applicators certified and recertified.

5,571 Number of private applicators certified and recertified.

Source of Funds

Smith-Lever 3b and 3c.

Scope of Impact

Dissemination – All private and commercial/non-commercial pesticide applicators in Arkansas. Certification and recertification pesticide applicator training sessions are also open to the public.

Program Adoption – All counties in the state.

KEY THEME: RECYCLING

Program Response: Solid Waste Management (Including Recycling and Yard Waste/Composting)

Contact: Suzanne Smith Hirrel, Extension Specialist - Waste 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, 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

15 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).

13 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).

8 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).

3 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.

1,800 Number of clientele attending educational programs and receiving educational publications and other materials written and/or distributed on solid waste management.

Outcome Indicators

18 Number of clientele who reported changing their solid waste management practices.

19 million pounds Number of pounds of pesticide containers and 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.
- Non-profit 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 non-profit 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 individuals 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.

As these watershed projects have been completed, we are now taking a more issue-targeted approach involving two new programs that are being developed in FY04 to be delivered statewide. To help our clientele better address water quality and environmental issues, we will be launching the Arkansas Master Farmer Program. This program will provide training to agricultural producers on environmental policy, new conservation technology, best management practices, and natural resource concerns.

Secondly, to assist livestock producers to deal with new state and federal regulations, we will launch a new EPA 319h project ($819,000 federal dollars) to provide nutrient management certification training and nutrient applicator certification training.

Extension Program Results and Accomplishments

Output Indicators

246 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.

1,662 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.

8,301 Number of clientele participating in educational events.

Outcome Indicators

126,150 Number of acres affected by educational efforts

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 respected watershed. Each project funds dedicated Extension personnel that are housed locally within the watershed. In

some cases, educational products developed for the watershed projects are delivered statewide. Several oral presentations were made around the state. Several oral and poster presentations were made at three national meetings and two regional meetings. Two refereed journal articles were published along with 15 abstracts and proceedings articles.

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% sales tax for natural resource conservation. Support for non-game wildlife is also present. A 2005 statewide survey (www.wildlifearkansas.com/materials/cwcsfinalreport.pdf) indicated 60% 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. Underserved audiences needing assistance with travel or overcoming other barriers are offered scholarships and options. 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. A "Landowner Assistance Finder" is available on the intranet to provide information about technical and financial support through government and non-government agencies, including descriptions, eligibility requirements and procedures for enrolling in conservation incentive programs. 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 a program package about the 2002 Farm Bill conservation titles, additional fact sheets about wildlife habitat enhancement and wildlife damage control, assessing native seed production as an alternative enterprise, and finding ways to provide financial assistance for counties to conduct forestry and wildlife programming.

Youth education is an opportunity to educate 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

36 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.

55 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.)

2,075 Number of individual contacts through office, site, phone or e-mail.

3,076 Number receiving wildlife education through newsletters, direct mailings, etc.

428 Number of clientele participating in educational meetings, workshops and seminars.

370 Number of clientele receiving individualized training about wildlife management.

Outcome Indicators

TBD 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, RREA, and USDA EQIP – Education.

Smith-Lever 3b and 3c

Scope of Impact

Dissemination – Information is available on the web and printed publications are available upon request. Following are examples of publications from 2004-05.

- *Rice Production, Water Rights, and Waterfowl Management: Agendas in Conflict?* by Tom Riley and Rebecca McPeake.
- *Establishing Wildlife Food Plots* by Rebecca McPeake, Rex Roberg, David Long and Charles Self.
- Continuous CRP Poster.
- Pesticide applicators' handbook by John Hopkins and Rebecca McPeake.
- *Suggested Plantings for Wildlife Food Plots - Spring/Summer and Fall/Winter* by Becky McPeake.

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-seven counties that are served through specific FY2005 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, 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.

Economic challenges are significant for many Arkansas communities and families. The future of rural Arkansas depends, to a large extent, on the types of jobs and sources of income in the area. Earnings per job is an important indicator of how well working families are doing.

- In 2000, Arkansas ranked 46th in the U.S. in earnings per wage and salary jobs.
- In 2002, rural workers averaged $323 in weekly earnings compared to $389 for urban workers. From 1990 to 2002, the overall increase in average earnings was $29 per week for rural workers and $46 for urban workers.
- Between 1996 and 2000, the average earnings per job across the U.S. increased 10.9 percent compared to 7.5 percent in Arkansas.
- Arkansas' unemployment rate (February 2006) was 4.7 percent compared to a national rate of 4.8 percent.
- Fourteen percent of the state's population is 65 years of age and older.
- Fourteen percent of those 65 and over live in poverty.
- Increased number of women farm operators. Currently there are 20,000 in Arkansas.
- 2000 census figures report that Arkansas ranks 49th among the states in median household income.
- The Delta continues to have the lowest median household income among the rural regions in the state.

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). Despite the fact that 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.

Cooperative Extension faculty and staff work collaboratively with local stakeholders to empower individuals, families and communities, through research-based information and education, to address economic and social challenges facing our youth, families and communities. Specific programs include leadership development including 4-H youth, community and business leaders; assisting Arkansas women in agriculture and targeting native American women; family resource management; workforce preparation programs for youth; youth technology programs; programs which address planning for the long term; and programs which assist parents in improving their parenting skills.

Total FTEs
177.97

Total Budgetary Amount
$9,152,099.66

KEY THEME: ASSISTING ARKANSAS WOMEN IN AGRICULTURE THROUGH A STATEWIDE CONFERENCE

Program Response: Arkansas Women in Agriculture

Contact: Janie Simms Hipp, J.D., LL.M., co-coordinator; 479-575-6935, CES ENR; jhipp@uark.edu; with Jennie Popp, jpopp@uark.edu

Situation

Agriculture has a long history of importance to the state of Arkansas. In the midst of all of the state's agricultural success, farmers are seeing a change in the farmers themselves. Nationwide, since 1992, the number of men involved as full-time farm operators has decreased. However, women have increased from 165,000 in 1992 to 236,269 in 2002. There are nearly 20,000 women operators in Arkansas alone. In all arenas, women are in need of education tailored to the roles they play in the business, in the family and in their communities.

Stakeholder Input

The conference and program planning was accomplished through a multi-disciplinary CES team of individuals as well as outside stakeholders from the Arkansas Farm Bureau Women's Committee, the Farm Credit and Farm Services Agency, the Arkansas Livestock associations and other agriculture-related and interested panelists and participants**.**

Overview

More than 300 people participated in the first statewide conference for women in agriculture held in Hot Springs on March 3-4, 2005. Over the course of this conference, 24 sessions were offered, including skill building sessions (understanding taxes, estate planning, financial record keeping, legal concerns, marketing and cooperatives), agricultural issues information (nutrient management regulations, financial assistance for sustainable agriculture, volunteer premises ID and the National Animal ID system) and women's health and well-being sessions. Keynote speakers included Mrs. Janet Huckabee, Mrs. Jolene Brown, professional speaker and farmer and Mrs. Ginger Graham, current president and CEO of Amylin Pharmaceuticals and raised on a farm in Northwest Arkansas.

Extension Program Results and Accomplishments

Output Indicators

More than 300 people participated in the first statewide conference for women in agriculture held in Hot Springs on March 3-4, 2005. Over the course of this conferenc,e 24 sessions were offered, including skill building sessions (understanding taxes, estate planning, financial record keeping, legal concerns, marketing and cooperatives), agricultural issues information (nutrient management regulations, financial assistance for sustainable agriculture, volunteer premises ID and the National Animal ID system) and women's health and well-being sessions. Keynote Speakers included Mrs. Janet Huckabee, Mrs. Jolene Brown, professional speaker and farmer and Mrs. Ginger Graham, current president and CEO of Amylin Pharmaceuticals and raised on a farm in Northwest Arkansas.

Source of Funds

Initial sources of funding were University of Arkansas Women's Giving Circle, University of Arkansas Division of Agriculture, Arkansas Farm Bureau, Ag-Heritage Farm Credit Services, Farm Credit Services of Western Arkansas, Farm Credit Services Midsouth, Tyson, Winrock and many others.

Scope of Impact

Dissemination – Web site for the conference is maintained year round with PowerPoint from individual presentations available. Materials from a wide variety of programming functions are disseminated during the conference.

Scope of Program – All Arkansas counties.

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's 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.

Quality child care should be available to all families regardless of income or family structure. Unfortunately, in

Arkansas, quality care is inaccessible to many of the working poor. More than 1 in 4 (28 percent) Arkansas families are headed by a single parent who needs affordable child care in order to work. The need for child care is not limited to single parents. Nearly 2 out of every 3 (65 percent) Arkansas mothers with children under the age of five are in the workforce. Almost 3 in 4 children (72 percent) under the age of 6 live in families with both parents working. Over 70 percent of children 3 to 6 years of age spend substantial amounts of time in non-parental care. Approximately 52 percent of children under three are in non-parental care. The demand for child care has increased in recent years, but the number of quality-approved programs has not kept pace.

In 2005, only 553 of Arkansas' 2,851 licensed child care facilities have achieved quality approval status. This means many 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. However, 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

Best Care delivered 10 hours of child care provider training statewide. Best Care Connected delivered five hours of training through the convenience of the Internet.

Program	Providers Reached	Hours of Training	Number of Classes Taught
The Best Care	2,512	300	94
Best Care Connected (Spring)	542	5	1
Best Care Connected (Fall)	271	5	1

Outcome Indicators

The Best Care

98% of participants Agree or Strongly Agree that the trainer was knowledgeable on this topic.

98% of participants Agree or Strongly Agree that the purpose of the unit was clear.

98% of participants Agree or Strongly Agree that the information and activities met the purpose of the unit.

96% of participants Agree or Strongly Agree that the unit was interesting.

98% of participants Agree or Strongly Agree that the trainer was open, friendly, and encouraging.

Best Care Connected

44% 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 was knowledgeable on the topics.

99% of participants Agree or Strongly Agree that the purpose of the lessons was clear.

99% 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 – Best Care and Best Care Connected are available to early childhood professionals, foster parents, teachers and parents. An announcement of training dates, times, places and how to register is done through statewide mailings, county mailings and contacts, state conferences, public service announcements, Division of Child Care and Early Childhood Education newsletter, the Arkansas Early Childhood Professional Development System web site, University of Arkansas Cooperative Extension service web site and The Best Care newsletter.

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 via the internet as an on-line course.

Programs of Excellence

Best Care Provides Registered Training Hours

Success Story – Montgomery County is a small, very rural county in Southwest Arkansas. Child care providers and foster parents need training hours to keep their certification and their jobs.

The Best Care provides ten registered training hours for child care providers and the Best Care is also being accepted for foster parents. The training was held in Mt. Ida on two Saturday mornings in February.

Individuals from all geographic areas of the county attended. Twenty-six individuals received verified training. Nutrition was a topic that was taught. One child care provider conducted a nutrition week at their center as a result of what she learned. She borrowed nutrition information from the Extension agent and sent newsletters home to parents. Each day of nutrition week the children at that family child care home made healthy snacks and then ate them. Nutrition Week was a big success. Child care providers and foster parents look forward to the program each year. The Best Care provides excellent training for them in their county. It saves time and money, something they all like.

CES Section Contact Person – Kaye Shrout, Family and Consumer Sciences Agent - Staff Chair, Montgomery County, 870-867-2311, kshrout@uaex.edu

KEY THEME: COMMUNITY AND ECONOMIC DEVELOPMENT

Program Response: Arkansas Procurement Assistance Center (APAC)

Contact: Elinor Sue Coates, Program Director, 501/337-5355, scoates@uaex.edu

Situation

In Federal Fiscal Year 2005, the federal government spent at least $228,618,782 on contracts in Arkansas. In all, public agencies purchase every conceivable commodity and service. It is estimated that about 20% went to small businesses. Over 90% 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. 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. These include Chambers of Commerce, supplier development councils, professional development associations, minority business development councils, small business development centers, Arkansas Department of Economic Development, and the Ouachita Partnership for Economic Development with which we have an MOU, and offices of elected officials 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.

Overview

APAC's recently-updated and published 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."

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, and another bid listing service maintained by

APAC staff on a special website designed by the IT group at CES. During the past year, a comprehensive course was designed and accredited for continuing education units, which 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

1,421	Total counselling/consultant sessions held with clients.
636	Total number of client companies served
377	Client companies receiving personal counselling sessions.
45	Total number of conferences sponsored or participated in.
2,179	Total number of attendees at conferences.
31,800	Distribution of fifty weekly newsletters distributed to 636 client companies.
4,000	Approximate number of local bid opportunity listings collected and posted.
859,152	Number of electronic bid-match opportunities furnished to clients

Outcome Indicators

1,018	Total number of contracts awarded to clients as reported.
$51,312,062	Total dollar value of contracts awarded to clients.
2,832	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.

Scope of Impact

Dissemination – The program is available to any company headquartered 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 the 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 occasional 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.

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 and through orientation workshops.

APAC clients that are typically underserved population groups receive a significant share of contracts and awards. For example, Small Disadvantaged Businesses receive about 42% of the total dollars reported, and 261 active clients state they meet the criteria for "disadvantaged." Women-owned businesses receive about 42% of the total dollars reported, and 200 active clients are women-owned. Clients located in HUBzones receive about 2% of the total and 52 clients are located in HUBzones. Of APACs active clients, 134 are located in "distressed" counties. About 16% of the contract dollars reported are to companies in "distressed" counties, resulting in about 786 jobs created or retained.

Program Response: Community and Economic Development

Contact: Tony E. Windham, State Leader – Community and Economic Development, 501-671-2074, twindham@uaex.edu

Situation

Improving the economic well-being and quality of life for Arkansans and Arkansas communities is increasingly challenging in today's world. Issues such as globalization, changes in information technologies, government regulatory and fiscal policy, demographic shifts, threats of terrorism and social needs all impact our society. Education programs are needed to help citizens, businesses and communities deal with these issues and take advantage of opportunities that accompany these changes.

The needs are numerous. Counseling, education and technical assistance for home-based and other small businesses are needed for rural economic development. 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 that 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.

VisionWorks Breakthrough Solutions Program: With an overall purpose of equipping communities and regions to prosper in the 21st century economy, VisionWorks' Breakthrough Solutions Program taps the expertise of the Cooperative Extension Service and partner organizations in a comprehensive three-year program. The Breakthrough Solutions Program is based on the premise that incremental improvement is insufficient in a time of rapid change and that communities need to create breakthrough solutions. Although strategic plans become out-of-date when the environment changes, the need for community and regional leaders who can think and act strategically never changes. This program teaches that skill and practical tools that enable them to harness the forces of change in this new era.

Economic Development Program Summary

A wide range of local economic development issues were addressed by county and state faculty during the year. The Cooperative Extension Service provided educational programs, information and analysis on issues ranging from local government finance and county zoning to successful rural development strategies and the establishment of new rural industries.

The focus of the program is to help rural communities and the state identify and invest in economic development strategies that build on the strengths and competitive advantages of rural Arkansas. Information and assistance was provided to state and local leaders on a wide range of issues. We will highlight just a few of our activities. Assistance was provided to state and local leaders in helping evaluate the potential benefits of diverting river water for irrigation of agricultural commodities and of building biodiesel plants in the Delta. These analyses were used to develop state policy and legislation affecting rural Arkansas.

A project to identify the importance and contribution of a recreation/retirement community to a two-county rural area was completed. The project included an analysis of the economic and fiscal impact on the local economy,

local governments and school districts. The analysis also included the volunteer contribution and charitable giving of the community residents. The results of the study were presented to local government officials and community leaders and used in discussions with state and local officials when identifying effective diversified economic development strategies for rural Arkansas communities.

Output Indicators

4,351 Number of total direct contacts reported related to economic and community sustainability and growth.

126 Number of events reported related to improving economic opportunities to improve quality of life for Arkansans.

395 Number of educational publications, newsletters, and other materials produced and distributed.

Outcome Indicators

526 Number of income tax workshop participants that increase knowledge on tax preparation.

103 Number of home-based business owners that increased business management skills

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

Assisting Local Governments through Financial Crisis

Success Story – Monroe County lost 8.9% of its total population from 2000-2004, more than any other county in Arkansas, and 5.6% of its jobs from 2000-2003. When the quorum court faced a budget shortfall, the University of Arkansas Cooperative Extension Service helped to analyze the situation in order to provide a firm foundation for the county to find lasting solutions.

Extension faculty met with the county judge and quorum court in August 2005 to share an analysis of Monroe County's financial situation. Before proceeding with the presentation, Interim Staff Chair John Payne explained, we are not here to tell you what to do to fix Monroe County's budget shortfall. Extension is in the business of education and education only. Our goal is to help elected officials better understand how the pieces of local government finance fit together over time so you can develop an effective strategy for your unique circumstances.

Data from the Arkansas Division of Legislative Audit, Combined Statement of Receipts, Disbursements and Changes in Fund Balances, were used to determine how expenditures and revenues had changed over time.

Legislative Audit staff were pleased to see the data being used for planning and assisted in interpreting the data. In addition, Miller used population projections from the UALR Institute for Economic Advancement, projections of economic activity from Regional One Source and an economic model to forecast what the local economy and tax base will be in 2010 if current conditions continue.

The county's financial situation showed that revenues exceeded expenditures until 2000, but the gap had narrowed over time. The county was able to cut expenditures to cope with declining revenue until 2003. Monroe County leaders discovered that while they had done a good job of holding down expenditures, nearly all revenue sources except for state government had declined since 2000. Property tax collections were down 13%, jail fees were down 52% and fines were down 20%.

General expenditures had exceeded general revenue for the previous five years. General expenditures pay for law enforcement and the basic infrastructure of county government, things like the county clerk, tax assessor and collector, the county judge's office and quorum court, and is generated largely from local property taxes, sales taxes, fees and fines. In contrast, special revenues, primarily for streets and roads, had been higher than special expenditures in all but two years.These special revenues come primarily from state turnback funds.

The county judge and quorum court also wanted to know how Monroe County revenues and expenditures compared to neighboring counties. This analysis showed that the county spending of general revenue was consistent with neighboring counties but that Monroe County relied more heavily on property taxes, fines and fees than neighboring counties. Monroe County also was the only county without a sales tax.

County officials learned that population and local sales are not likely to improve. Unless the underlying conditions change, population and local sales are likely to continue to decline. Extension provided a lengthy list of short- and long-term strategies for addressing the county's financial situation, ranging from cutting services to ways to increase revenue to economic development to expand the tax base.

After reviewing more than 70 charts and graphs, Monroe County elected officials left with a more detailed picture of their financial situation. As a result, they decided to ask the citizens of Monroe County to vote on a half cent sales tax in December 2005. While the sales tax failed by a small margin, the judge and quorum court are not daunted.

General Program Information – The Community and Economic Development Program of the Cooperative Extension Service in partnership with the Policy and Issues Education Center are working with local governments to help them analyze their fiscal situation and evaluate options. By providing sound information, county judges and quorum courts are better equipped to make effective decisions.

For its part, the University of Arkansas Cooperative Extension Service is working with mayors, county officials, chambers of commerce and other community leaders to launch a county-wide leadership program in March 2006. Through this county-wide effort, leaders hope to develop a cadre of citizens with a shared vision for the future equipped with the information and skills to address the challenges ahead.

Monroe County is not unique in the challenges it faces. Many of the rural counties losing population and jobs face are hurting to one degree or another. To help local governments, CES plans to make available expenditure and revenue data as well as projected changes in the local tax base to 2010 for all Arkansas counties at http://www.uaex.edu/communities.htm in May 2006 and train county faculty on how to use the data to educate local elected officials and the general public.

With this new source of information, county faculty will be able to help local leaders focus resources where they will have the greatest impact and the general public better understand what it costs to provide local services and

how those services are financed.

Locations Involved – Monroe County.

Impact Numbers – CES still has a program in Monroe County. The program not only exists, but it has been expanded to include Community and Economic Development programs. The program also has the support of the county officials and local leaders.

CES Section Contact Person – Dr. Wayne Miller, Professor – Community and Economic Development, 501-671-2085, wmiller@uaex.edu.

Breakthrough Solutions – Helping Communities Create Their Futures

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:

- Interaction with key leaders and the Benton County Extension Homemakers Council.
- Workshop with the Arkansas Chapter of the American Society of Agricultural and Biological Engineers.
- Presentation to Arkansas Science and Technology Authority staff.
- Community development in-service training sessions for county agents held in each region of the state.
- Extension's state-wide leadership program – LeadAR class.
- Two workshops at the 2005 Community Development Institute at the University of Central Arkansas.
- An all-day Economic Development Seminar in Forrest City.
- A Breakthrough Solutions seminar taught to 9 Ukrainian economic development officials.
- Breakthrough Solutions marketing consultation with a candle marketing firm and a wood manufacturing firm in Arkansas.
- Breakthrough Solutions workshop taught at Low Income Leadership Summit in Little Rock.
- Breakthrough Leadership Skills Workshop to the 15 Little Rock Neighborhood Alert Center Facilitators.
- Breakthrough Solutions Consultation with Munof Junaju, Director of Programs, Food and Agriculture Organization, United Nations, Rome, Italy.
- VisionWorks newsletter – an electronic newsletter for community leaders, local officials, and community economic development professionals that reports news from communities, new resources available, a series on strategic leadership and innovation, and new developments with the Breakthrough Solutions Program.
- Intermittent surveying of VISION2010 communities to record their community development progress. (See impact numbers for Mansfield, AR – #5 below)..

General Program Information – The Breakthrough Solutions Program is based on the latest research from community development, economic development, leadership development, marketing, systems thinking and information technology, as well as widespread experience with successful communities. In January, 2005, a series of focus groups of community leaders were held across the state. They identified these critical issues:

1) How can we create wealth and job opportunities for our children and grandchildren?
2) What are the tools we need to improve our quality of life in the face of the challenges to our community?
3) How can we take full advantage of the Internet and high speed telecommunications?
4) What are the keys to developing successful regions?

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 nineteen 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 in 2004, 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 pogram 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.

Number and Names of Counties or Locations Involved – Breakthrough Solutions Programs have been given in Benton County, St. Frances County, Dallas County, Pulaski County and Faulkner County. Several of these were to leaders from across the state, to other states and to two different countries.

Impact Numbers –

1. A presentation on Breakthrough Solutions to the Arkansas Telecommunications Association resulted in a $2,500 contribution to support the program.
2. Development of the module on information technology spurred investment in the program from CenturyTel, a program partner. CenturyTel paid for the production of a video on Breakthrough Solutions and its partners, with a value of $7,500.
3. Presentation of Breakthrough Solutions at the Community Development Institute at the University of Central Arkansas for Year 1 and Year 4 students earned $1,500 to support program costs.
4. A success story of one VISION 2010 community, population 1,100 – Mansfield, Arkansas:
    - Plans are underway for a **180 lot residential development and its commercial development counterpart**.
    - The Dollar General is adding 1,000 square feet to its retail facility.
    - A **one-acre downtown park** with gazebo and public restrooms. The community plans to produce musicals at the gazebo. The site had three unusable buildings that were purchased and demolished, with a total investment of $125,000.
    - A **recreational facility** under construction on the site of the old city lake (the former source of city water, drained after being found unsafe in 1992). The city is funding the rebuilding of the dam to refill the 25-30 acre lake, owned by the city. The Kelly Estate (Fort Smith) is donating 10 acres of the land surrounding the lake for development of boat docks, picnic area and possible camping facilities. The city is investing $50,000 in this project.

- **A $4.5 million wastewater treatment facility** being built to replace an aging facility is a collaborative project with Hartford, a neighboring community of 700. Hartford has not had a wastewater treatment facility, so they are investing $2.9 million in this project, 90% funded by a Rural Development grant and the rest by a bond issue. Mansfield is providing $1.1 million from a Rural Development grant and $.5 million from tiling fees.

CES Section Contact Person – Mark Peterson, Professor – Community Development, 501-671-2253, mpeterson@uaex.edu

Program Response: Public Issues Education

Contact: Tom Riley, 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 Cooperative Extension Service Public Issues Education Center (PIEC) 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's PIEC is 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

PIEC 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

Almost every year, Arkansans are called upon to vote on a wide range of state and local issues in the form of ballot initiatives. These issues are referred by the state legislature or citizen groups who garner a sufficient number of signatures from registered voters to place issues on the ballot. Voters are constantly looking for unbiased information about issues to be voted on in general or special elections. PIEC has focused on ballot issues education as one of its top priorities since its inception in July 2004

In FY 2005, Extension professionals were actively involved in developing and presenting education programs for a statewide election held in November 2004. In addition, a county agent, with support from state faculty, designed an education program concerning a local sales tax ballot measure to generate revenue for the county hospital. Ballot issues education programs involve thorough research of the initiatives, the development of fact sheets and other materials that present a non-biased view of issues, an internal and external review process to ensure neutrality of resource materials, comprehensive training of county agents and the use of a variety of methods for program delivery.

Speak Up, Arkansas! on Taxes

Speak Up! Arkansas, on Taxes, a collaborative program developed by the Cooperative Extension Service and Arkansas Study Circles Project, was designed to educate voters about the state's tax system and solicit input about how the state can best meet Arkansas' needs for public education and other services provided by the state. Extension's PIEC developed A Citizens Guide to Arkansas State Taxes and other materials to be used in the program. Citizens from twenty counties voluntarily participated in the program, consisting of study circles of around ten people each. County Extension agents and other volunteers served as group coordinators, facilitators and reporters. The program kicked off with a statewide Arkansas Educational Television Network broadcast, featuring a panel discussion and call-in segment where viewer questions were answered. The broadcast was followed by study circle meetings held over the next two weeks. Ideas gathered from the study circles meetings around the state were compiled and presented to members of the Arkansas General Assembly during its 2005 regular session.

Local Government Finance Program

Many counties throughout Arkansas are in the midst or on the verge of fiscal crisis. Revenue declines are closely tied to decreasing population and a corresponding decline in tax base. During FY 2005, PIEC and community and economic development faculty began development of a comprehensive program to assist local government officials in analyzing their fiscal situation, building community awareness about local government finance and developing solutions to fiscal problems. The program was piloted in Monroe County. The program included an analysis of trends in population, revenues, expenditures and tax base and projections for population, economic base and tax revenue. Several meetings with county officials were held, including a presentation to the quorum court.

Research Partnerships

PIEC initiated partnerships with eight groups to conduct research and develop education 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

266 Number of events where educational materials were displayed.

31,148 Number of fact sheets or other printed educational materials distributed.

38 Number of educational meetings, focus groups and small group discussions.

114 Number of newsletters.

224 Number of media efforts (print, radio, television).

41 Number of other educational events.
42,599 Total contacts made with clientele.

Outcome Indicators

1,126 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

11 Number of educational events related to Financial Security in Later Life.

129 Number of participants attending educational meetings related to Financial Security in Later Life.

3,154 Number of persons receiving education information via mail-e-mail-mass mail, newsletters, on-site or by telephone.

11 Number of volunteers who spent 11 hours teaching others.

12 Number of media efforts related to Financial Security in Later Life.

Outcome Indicators

18 Number of participants who initiated or increased contributions to a savings plan.

23 Number of participants who reduced or eliminated consumer credit debt.

21 Number of households who can identify and use appropriate financial services.

50 Number of participants who correctly identify benefits and costs of consumer credit.

22 Number of participants who follow a spending plan.

87 Number of participants who prevent the loss of resources by recognizing and avoiding fraud and exploitation.

1,900 Total consumer credit debt reduction reported by participants.

4,700 Total dollars reported saved by participants.

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: Bradley, Clay, Crittenden, Green, Hempstead, Howard, Independence, Jackson, Johnson, Little River, Lonoke, Newton, Pulaski, Saline, Van Buren, Woodruff.

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

58 Number of educational meetings held related to Planning for the Long Term.

1,663 Number of participants attending education meetings related to Planning for the Long Term.

8,446 Number of persons receiving education information via mail/e-mail/mass mail, newsletters, on-site or by telephone.

1,997 Number of hours spent planning, conducting, marketing, and evaluating educational programs related to Planning for the Long Term.

150 Number of volunteers who spent 257 hours teaching others.

40 Number of collaborations related to Planning for the Long Term.

Outcome Indicators

703 Number of participants increasing knowledge of later life changes that affect relationships among family members.

295 Number of participants reporting a more positive attitude about dealing with relationship changes that may occur in later life.

18 Number of participants who have developed a plan for managing long-term health care needs.

365 Number of participants who have discussed later life legal issues with family members or other caregivers.

468 Number of participants who have increased their knowledge of health and medical issues that face individuals in later life.

876 Number of participants who have increased their knowledge of legal issues that face individuals in later life.

255 Number of participants who have increased their knowledge of risks, costs and financing options for health (including long-term care).

249 Number of participants who have organized important records and documents so family members can find them when needed.

270 Number of participants who have reviewed, updated or created a will or estate plan.

95 Number of participants who have reviewed, updated or created advanced directives related to health care (e.g. living will, durable power of attorney).

626 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.

703 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.

64 Number of participants who report that they plan to develop a plan for managing long-term health care needs.

213 Number of participants who report using recommended communication methods when discussing changing needs in later life with family members or others.

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, Faulkner, Fulton, Green, Hempstead, Jackson, Johnson, Lafayette, Lee, Little River, Lonoke, Marion, Mississippi, Perry, Poinsett, Pulaski, Scott, Sharp, Van Buren, Washington, White, Woodruff.

KEY THEME: NATIVE WOMEN IN AGRICULTURE

Program Response: Native Women in Agriculture

Contact: Janie Simms Hipp, J.D., LL.M., co-coordinator; 479-575-6935, CES ENR; jhipp@uark.edu

Situation

Native Women were America's first farmers. This program is designed to begin the process of creating a network among Native Women who are agricultural producers or are somehow involved in agriculture or rural-based small businesses. The network is in its beginning phases and incorporates Native women involved in livestock production, horticulture production, organic and traditional food production, herbs and medicinals production and

a full range of rural based small businesses. The program is designed to create a platform that will enable the sharing of risk-related and small business entrepreneurship skills information and encourage the long-range success of Native Women throughout Indian Country.

Stakeholder Input

The network is being created following guidance of a steering committee made up of stakeholders. The initial phase of the steering committee encompassed 8 to 10 Native Women; the second phase steering committee has been broadened so that at least 30 women systemically and continuously communicate in efforts to create a broad Indian Country based and stakeholder influenced network of support.

Overview

More than 10 Native Women participated in the first steering committee meeting of the organization. A comprehensive Native Youth in Agriculture writing competition was quickly instituted, and five Indian Country native youth finalists were featured at the 2004 Intertribal Agriculture Council meeting in Florida. Thereafter the Steering Committee was broadened to include addition 20 women from a wide variety of tribes throughout Indian Country. The second writing competition for Native Youth was launched and three finalists were featured at the joint Intertribal Agriculture Council and Indian Nations Conservation Alliance meeting in Nevada in late 2005. The third writing competition topic has been selected, and the organization will now not only continue its partnership with EIRP and IAC/INCA but will also broaden its partnership with the Indian Land Tenure Foundation, the SWIAA organization, the USET organization and other key intertribal organizations. Over 300 tribal agricultural producers learned of the Network in 2004 and an additional 450 agricultural producers in 2005.

Extension Program Results and Accomplishments

Output Indicators

An initial 300 tribal agricultural producers were involved in learning more about the Native Women in Agriculture work in 2004; an additional 450 tribal agricultural producers were involved in learning more in 2005. The reach of the organization continues to multiply every month as more tribes become aware of the organization and its efforts. Native youth writing competitions are being co-publicized through the USET, the SWIAA, the IAC, the INCA and the EIRP organizations.

Outcome Indicators

The Native Women in Agriculture was launched before a tribal agricultural producer audience in 2004 and has generated high interest since that initial debut. The Native Women in Agriculture initial efforts to include Native Youth in the equation were met with high regard, and those efforts continue. Funding for the overall network initial creation efforts were through a CSREES grant that will expire in mid-2006. All efforts are being made to encourage the continued activity of the organization post-grant funding.

Source of Funds

Initial sources of funding were CSREES.

Scope of Impact

Dissemination – Web site for the network is being launched, and materials from a wide variety of programming

functions related to tribal agricultural production are being included on the web site.

Scope of Program – All United States.

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% 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) web site 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 approximately 9,000 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.

From October 1, 2004, to September 31, 2005, 2,357 hours of training were successfully completed by 452 participants.

Extension Program Results and Accomplishments

Output Indicators

Twelve one-hour shows designed, taped and edited. In 2004, each show 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) adopted Guiding Children Successfully, thereby making the series available to audiences nationwide. According to NETA records, over the course of the program life, Guiding Children Successfully has aired on 60 stations across the nation reaching 31.22% 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. In 2005, the series was aired in many markets nationwide.

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.

From October 1, 2004, to September 31, 2005, 2,357 hours of training were successfully completed by 452 participants.

Outcome Indicators

Among child care providers who have viewed shows, 89% have successfully completed the learning checks suggesting that the shows effectively teach the material for most viewers.

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).

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 DVDs of all shows are available to all parents and professionals through all 75 county Extension offices in the state of Arkansas.

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).

   Between January and the end of September 2004, 452 individuals completed 2,357 hours of training using Guiding Children Successfully. This has exceeded all expectations manifold. The shows have been a popular and convenient way for many child care providers to get verified training hours. With the system of learning checks, we can verify that the participants not only viewed but mastered the essential content of the shows.

2) Multistate Extension: The National Educational Telecommunications Association (NETA) has adopted Guiding Children Successfully, thereby making the series available to audiences nationwide. Over the course of the program life, Guiding Children Successfully has aired on over 60 stations across the nation reaching 31.22% 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. Stations continue to air Guiding Children Successfully in many markets nationwide.

KEY THEME: RISK MANAGEMENT EDUCATION

Program Response: Extending Risk Management Education for Native American Farmers and Ranchers Across the State

Contact: Janie Simms Hipp, J.D., LL.M., co-coordinator; 479-575-6935, CES ENR; jhipp@uark.edu

Situation

There are over 50 federally-recognized and 21 state-recognized Indian tribal governments in the Southeastern states of Oklahoma, Louisiana, Mississippi, Alabama, North Carolina, South Carolina, Georgia and Florida. Arkansas, Missouri, Kentucky and Tennessee are also home to members of those tribal nations. Agricultural

producers within these tribal nations historically have had little access to specialized agricultural production and management information for two reasons. First, the traditional link to university extension or other educational organizations by tribal members is not nearly as strong as the tribal members' link to his or her own tribe. Many tribal governments do not have an existing infrastructure of specialized knowledge or support for agriculturalists that are tribal members. Furthermore, tribal members in these states are disbursed throughout the region.

Stakeholder Input

Stakeholder input from the Native American producer community in the region is sought at all sponsored training sessions and through web site requests for contacts.

Overview

There are over 50 federally-recognized and 21 state-recognized Indian tribal governments in the Southeastern states of Oklahoma, Louisiana, Mississippi, Alabama, North Carolina, South Carolina, Georgia and Florida. Arkansas, Missouri, Kentucky and Tennessee are also home to members of those tribal nations. Agricultural producers within these tribal nations historically have had little access to specialized agricultural production and management information for two reasons. First, the traditional link to university extension or other educational organizations by tribal members is not nearly as strong as the tribal members' link to his or her own tribe. Many tribal governments do not have an existing infrastructure of specialized knowledge or support for agriculturalists that are tribal members. Furthermore, tribal members in these states are disbursed throughout the region.

Extension Program Results and Accomplishments

Output Indicators

University personnel worked closely with members of tribal nations and the Intertribal Agricultural Council to provide risk management information for farmers and ranchers. By combining forces with the nations and other tribal organizations, project personnel were able to reach hundreds of Native American producers and agricultural educators across the South. The risk management guidebook developed in 2003 was expanded from 40 to 61 presentations.This and other important risk management information was placed on the web at the project's site, www.manageyourrisk.net.

Outcome Indicators

In recent years some tribal governments have made great strides in providing members access to some production and financial risk management information. However, information related to pending environmental regulations, their legal and economic ramifications and best management practices to address them is lacking. Therefore, research efforts are directed at understanding the legal and economic implications of these regulations and educational efforts are being developed to disburse the information to help ensure the sustainability of agricultural activities for Native farmers and ranchers in the area.

Source of Funds

USDA Risk Management Agency

Scope of Impact

Dissemination – In recent years some tribal governments have made great strides in providing members access to some production and financial risk management information. However, information related to pending environmental regulations, their legal and economic ramifications and best management practices to address them is lacking. Therefore, research efforts are directed at understanding the legal and economic implications of these regulations and educational efforts are being developed to disburse the information to help ensure the sustainability of agricultural activities for Native farmers and ranchers in the area.

Scope of Program – Southern region states

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 8 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

59 Youth, ages 9-12, who participated in the state camp.

1,000 Hours of educational instruction during the Mini-Society Camp.

16 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

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

45 Arkansas 4-H members who attended the four-day Kansas City Global Conference in Kansas City, Missouri.

207 Arkansas 4-H members who have experienced Cultural Education, including heritage, diversity and exchanges, as reported on ES-237.

850 Arkansas 4-H members who have experienced Career Exploration opportunities as reported on ES-237.

Outcome Indicators

8 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, Clay, Conway, Craighead, Crawford, Faulkner, Fulton, Garland, Hot Spring, Jefferson, Lawrence, Lonoke, Polk, Pope, Scott, Washington, White, Yell.

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

11 Number of programs held at the agricultural awareness center.

87 Number of outreach programs held through the state.

50 Number of participants in agricultural awareness workshops at Forestry and Wildlife Camp.

1,200 Number of participants in Pizza Ranch

Outcome Indicators

Vastly increased the number of outreach programs 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 programs has included over 30% of the counties in Arkansas.

Programs of Excellence

GPS and NatureMapping Program

Success Story – There has been a tremendous amount of interest and excitement about this program. The science teachers at Goza Middle School were so excited that they attended the 4-H Technology Club training in May. They have also convinced the school to purchase 10 GPS receivers for their classrooms. Three of the teachers are becoming volunteer leaders and will be starting in-school 4-H clubs, as well as a traditional 4-H club in Arkadelphia. They have requested that the GPS and NatureMapping program be presented to their classes again this Fall.

The sixth grade class at Goza Middle School has 151 students. At the end of the third day of programming, the students were given a post-assessment. Results of the post-assessment include:

- 87% used GPS for the first time during this program.
- 73% felt they learned enough about GPS during this program to use it on their own.
- 81% plan to use GPS again in the future.
- 76% exhibited an increased knowledge of careers that use GPS.
- 59% would consider a career using GPS technology.

General Program Information – Clark County youth needed more exposure to up-and-coming technology, as well as opportunities to explore their natural surroundings. In response to this, an Internal Innovative Grant was applied for to purchase a GPS kit containing 10 GPS receivers, compasses and curricula. Numerous species identification books as well as backpacks were also purchased. As a result, several school enrichment programs and day camps have been held to teach the youth of the county, including those from low-income households and minorities, how to use this new technology. Discussions were also held about different careers that use GPS technology. Another part of the school enrichment programs and day camps was to teach the youth to become more aware of their environment by participating in NatureMapping.

The goals of the program included:

1. "Participants will learn to collect data outdoors using scientific methods."
2. "Participants will perform progressive navigational tasks first using map and compass and then GPS receivers."
3. "Participants will increase their knowledge about local habitat conditions."

Arkadelphia 6th grade science teachers were contacted to set up school enrichment dates. All 6th grade science students at Arkadelphia learned about Global Positioning Systems and how to use them. They had hands-on experience with the GPS receivers. They were also taught the basics of NatureMapping and how it can be used to monitor and take inventory of wildlife in a particular area. This same program was also given to 4-7 grade students at the Community Family Enrichment Center in Arkadelphia and at a Camp Wilderness Day Camp, both held during the summer.

To date, the Arkadelphia 6th grade science students, Community Family Enrichment Center summer participants, and Camp Wilderness participants have been reached. Camp Wilderness was open to the public and advertised in local papers as such. A total of 173 youth have been reached so far.

Number and Names of Counties or Locations Involved – Clark County

Impact Numbers – 173 participants

CES Section Contact Person – Amy Simpson, CEA - 4-H Agriculture, 870-246-2281, asimpson@uaex.edu

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

3	Number of state Tech Team workshops.
20	Number of county Tech Teams.
3	Number of camp or special event workshops.
3	Number of filmmaking workshops.

75 Number of participants at the Arkansas 4-H Technology Conference.

67 Number of participants in the Technology In-Service Training.

Outcome Indicators

The Arkansas 4-H Tech Team has doubled the number of county 4-H Tech Teams.

Source of Funds

Private donations and registration fees, $5,000 grant from Arkansas Women's Foundation, $100,000 software grant from ESRI.

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.

Programs of Excellence

Craighead County 4-H Teen Leaders

Success Story – Over the last seven years, our county staff has tried to organize a Teen Leader Club. Each time the effort has failed. Two years ago a new club was organized with a focus on fine arts. Soon school activities took over, and there were never enough people at a meeting to get an activity completed.

In the summer of 2004, two of our 4-H members attended a workshop during the State 4-H O-Rama on using Microsoft Movie Maker. They came back wanting to do something in the county. The Teen Leaders decided to refocus their club to technology. Since this time our attendance has been consistent. Community volunteers have been involved in teaching Computer Aided Drafting, videography, radio technology and GPS. Three members attended a workshop on starting a Technology Club and received four GPS units. Two members attended the State Technology Conference and learned Robotics and GPS mapping.

All of the knowledge they had learned resulted in a day camp they organized and conducted this past summer. They received a $750 grant from the Sue Marshall Foundation to purchase equipment. During FY06 the group will broaden their work and conduct technology-related community service projects.

During the past year, this group has organized and conducted a summer day camp for younger 4-H members. There were 28 persons in attendance at the camp. The camp workshops were No Stone Unturned – GPS Treasure Hunt; Rock Around the Clock – Foods to Energize You; Healthy Snacks; Between a Rock and a Hard Place…But Knot Too Hard – Tying Fishing Knots, Lines and Tackle; GPS – Treasure Hunt; Stepping Stones – Taking Steps to Remain Drug Free; Soil Adventures.

While the Teen Leader Club is small, the members feel empowered to do even more during FY06. They have already arranged for a video workshop to learn proper videoing techniques and plan to use this knowledge to video war veterans.

General Program Information – The Craighead County 4-H Teen Leaders Club is open to all youth in the county. Currently there are nine 4-H members who are involved in the Teen Leader program.

Technology Team

Goal 1 – To develop a Teen Leader program using technology
Goal 2 – To complete a community service project using technology.

Number and Names of Counties or Locations Involved – Craighead County.

Impact Numbers – 9 members in the County 4-H Teen Leaders Club

CES Section Contact Person – Martha May, CEA - Staff Chair, 870-886-3741, mmay@uaex.edu.

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 334 trainings were held across the state, covering each of the three districts, with 7,588 adult/youth volunteers being trained.

Outcome Indicators

There was an increase by participants in the 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.

120 4-H events were held to enroll 4-H members.

6,979 Individuals participated in 4-H enrollment fairs/events/activities.

868 Organized 4-H clubs and groups.

65 School-age child care units reported.

559 Youth participated in after-school programs.

5,450 Youth volunteers trained.

2,671 Adult volunteers trained

736 Other adults trained.

- County Extension agents serviced an average of 5.8 organized clubs and groups per agent in the state.

Outcome Indicators

538 Volunteers became Certified Volunteers after completing three training courses.

- 4-H volunteers contributed an average of 192 hours per year for a total of 1,146,400 hours of service by adult volunteers.
- 4-H youth volunteers contributed an average of 48 hours per year, for a total of 128,208 hours of service.
- Arkansas 4-H was honored by the Arkansas Department of Volunteerism for the high number of volunteer hours contributed.

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 3 CDs) were 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.

2,261 Arkansas youth received citizenship education according to the ES-237 report.

Outcome Indicators

25 Delegates improved their citizenship competency scores as measured by pre- and post-testing.

45 Youth delegates turned in a plan of action of what they planned to do in their local community as a result of the CWF experience..

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, State Leader - 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, 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

7,940	Number of clubs/units in which youth participated.
868	Number of organized clubs/units in which youth participated.
145,572	Number of youth who participated in clubs/units.
13,444	Number of youth who participated in organized clubs/units.
51,729	Number of non-duplicated youth participating in educational programs based on the experiential learning model at the county level
17,964	Number of youth who participated in educational programs designed to teach basic life skills.
533	Number of non-duplicated youth participating in adventure based learning programs.

Outcome Indicators

145,572	Number of youth who reported working in one or more educational project areas.
1,566	Number of non-duplicated youth developing community service projects
88	Number of non-duplicated youth who reported increased ability to work as a team after participation in adventure based learning experience.
489	Number of non-duplicated youth who reported increased ability to set goals after participation in adventure based learning experience.
344	Number of non-duplicated youth who reported conducting educational programs.
4,340	Number of non-duplicated youth serving in leadership roles at the club or county level.
89	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 available through 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, 4-H Youth Development, (501) 821-6884, jpitman@uaex.edu; Burnie Kessner, 4-H Youth Development, (501) 821-6884, bkessner@uaex.edu

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 typically 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

"For the past five years we have used the ExCEL program, at the Ferndale 4-H Center, to develop teamwork in our young leaders. The course has always exceeded our expectations."
Bill Noland

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, teach trust and cooperation and 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

3,245 participants participated in the program in 2004-05

# of Activities/Participants	Description of Activity, Program, Product
123 activities with 3,570 participants	4- or 8-hour Challenge course programs

Outcome Indicators

- 1997-98 1,550
- 1998-99 2,800
- 1999-00 2900
- 2000-01 3,500
- 2001-02 3,540
- 2002-03 3,254
- 2003-04 3,570

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 Nature Mapping, Arkansas Game and Fish Commission and 4-H Urban and Rural funds.

Scope of Impact

Dissemination – The ExCEL program is available to all eligible persons above the age of 12 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. Due to facilities, all programs are located at the Arkansas 4-H Center.

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 H. Gall, 4-H Youth Development, 501-821-6884, lgall@uaex.edu, and Burnie Kessner, 4-H Youth Development, 501-821-6884, bkessner@uaex.edu

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 provides 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, Bats and Caves, Entomology, Adventure Games, Orienteering, and several other topics.

Summer Day Camp

The ever-increasing demand for quality summer-time activities for children was a niche in 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

8,569 Number of participants in the 4-H RES-Q school and youth groups environmental education field trip program at the Arkansas 4-H Center FY05.

120 Number of participants in the three weeks of the Summer Day Camp program, June, July, and August 2004.

200 Number of participants in the 12-week SEEK program, winter of 2005.

12 Number of participants in the NatureMapping program, winter of 2005.

Outcome Indicators

The SEEK program was recognized as a 4-H Program of Distinction by the National 4-H Headquarters this reporting year.

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 fourteen to twelve weeks, adding a 1st 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. Test score data for the past six years are currently being analyzed. The most complete data are for all six years of the 3rd-4th-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 3rd-4th-grade class. The 5th-6th-grade classes have five years of data comprised of 164 tests. The average 5th-6th-grade pre-test score is 66.38 and post-test is 89.55 with an average change of 23.00 points. The 7th-8th-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, Faulkner, Franklin, Garland, Grant, Hot Spring, Independence, Lawrence, Lonoke, Mississippi, Montgomery, Pulaski, Pope, Saline, 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 U of A 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

163 Number of Extension agents that attended the SE, SW, NE and NW Regional O-Ramas.

43 Number of Extension paraprofessionals that attended the SE, SW, NE and NW Regional O-Ramas.

189 Number of specialists conducting activities and others attending the SE, SW, NE and NE Regional O-Ramas.

228 Number of 4-H leaders that attended the SE, SW, NE and NW Regional O-Ramas.

Arkansas 4-H O-Rama

94 Number of Extension agents that attended State O-Rama.

14 Number of Extension paraprofessionals that attended State O-Rama.

45 Number of specialists that conducted activities and attended State O-Rama.

81 Number of 4-H leaders that attended State O-Rama.

529 Number of 4-H'ers from the Southeast, Southwest, Northwest and Northeast districts that attended State O-Rama.

- Numerous newspaper articles from around the state promoting State O-Rama.

Outcome Indicators

680 Number of junior 4-H'ers successfully completing projects and competing in activities at the SE, SW, NE and NW Regional O-Ramas.

497 Number of senior 4-H'ers successfully completing projects and competing in activities at the SE, SW, NE and NW Regional O-Ramas.

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

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 16), 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 "Life in the Frontier" which introduced

campers to a wide variety of 4-H educational subject matter through exploration of the frontier life.

Extension Program Results and Accomplishments

Output Indicators

50 4-H Teen Counselors.

25 Regional Camps.

63 Bring a Big Person Camp.

9 State Equine Camp.

259 State Camp One.

230 State Camp Two.

70 State Camp Three.

706 Total number of campers.

36 Counties whose youth participated in State Camp.

12,720 Hours of camper educational instruction time.

5,570 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 706 campers).
- Facilities received an average 3.96 rating.
- Educational workshops received an average 4.23 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 Counselors positions.

Scope of Program – 36 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 everyday. For this time they can be carefree in a positive and stable environment.

Stakeholder Input

Personnel from the United States 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, family program specialists at district sites were 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 2006 for the third 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 (8 counselors, 4 Extension, 2 Air Force). Camp 1 had a total of 92 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 2005, 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 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 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 utensils, 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.

The "Bear" Necessities
This activity gave participants the basics in outdoor low impact camping. Participants pitched tents, prepared a camp site, cooked outdoors, learned to dispose of waste (both human and other), and had the ultimate experience of sleeping outdoors. The participants were given an opportunity to prepare their campsite and cook outdoors during the 4-Hour workshop during the day. Each camper was then given a sleeping bag and sleeping pad and then hiked to the campsite after the evening meal.

Finding Your Way
Participants spent 4-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 different 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 8 hours with 4-Hours spent in the low elements and 4-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 activity experience was 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 allow 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 will be held in March for participants and parents along with weekend training for all participants in April. The climax is a nine-day trip to the Pecos Wilderness area in New Mexico August 8 - 16, 2005. Plans are 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.

Extension Program Results and Accomplishments

Output Indicators

200 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.

Evaluation Avg. (1-5)	Week 1	Week 2	+ / -
Previous Experience	3.19	3.52	+ .33
Objectives Clear	3.81	3.85	+ .04
Overall Experience	4.34	4.39	+ .04
Teaching Staff Knowledge	4.11	4.33	+ .22
Cross Flow of Info	3.84	4.06	+ .22
Q&A During Workshops	3.66	3.93	+ .27
Staff/Counselors Reassuring	3.71	4.16	+ .45
Counselors In My Group	3.91	4.19	+ .28
Teaching Staff	4.18	4.3	+ .12
Lodging	3.79	4.06	+ .27
Food	3.62	2.82	- .80
Room Assignments	3.72	3.67	- .05
Curfew	2.87	3.21	+ .34
Free Time	3.15	3.39	+ .24
Organized Time	3.62	3.61	- .01
Kayaking	3.86	4.07	+ .21
Canoeing	4.06	4.65	+ .59
Float Your Boat	3.94	4.03	+ .09
Bear Necessities	2.96	3.06	+ .10
Finding Your Way	3.42	3.3	- .12
Climbing Wall	4.25	4.54	+ .29
Ropes Course	4.42	4.58	+ .16

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, 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

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

220 Number of community projects implemented by youth.

1,566 Number of youth who participated in community service projects.

Outcome Indicators

448 Number of youth who reported spending one or more hours a week in providing service to their community or others.

1,840 Number of volunteer hours contributed by youth to community service programs.

$27,600 Value of volunteer hours contributed by youth to community service programs.

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 – eleven 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 (8) at the annual Teen Leader Conference. A total of 2057 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 the ages of 14 to 19 years old. 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 FY05, seventy 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

113 Educational programs presented focusing on youth Leadership and Volunteer Development

48 Educational programs designed to develop youth leadership

142 Training conducted for officer leadership roles in club, county, and community.

Outcome Indicators

344 Number of youth volunteers conducting educational programs.

1,840 Number of volunteer hours contributed by youth to educational programs.

2,017 Number of youth in new volunteer leadership positions.

123 Number of youth in new elected leadership positions.

184 Number of youth volunteers trained through 4-H and participating in leadership programs.

5,229 Youth enrolled in Leadership Development

117 Number of youth serving on Advisory Boards/Councils.

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 available through 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, and White, 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

28,877 Laying pullets placed with youth participants.

6,152 Broilers placed with youth participants.

5 Barbecue contests involving youth participant.

7 Judging contests involving youth participants.

Outcome Indicators

1,155 Youth participants learned the principles and responsibility necessary to care for laying birds.

206 Youth participants learned broiler care principles.

104 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.

Total FTEs
2.04

Total Budgetary Amount
$91,636.00

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

A web development team makes recommendations regarding the content and organization of material placed on the Web. Input is received from Extension specialists, agents, administrators, support staff and clientele.

Overview

The University of Arkansas Cooperative Extension Service web site, http://www.uaex.edu, continues to deliver research-based education to Arkansas and beyond. Teams of Extension specialists, counties and support staff manage 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

Two web developers mark up the content to conform to existing standard and both state and federal accessibility regulations.

Extension Program Results and Accomplishments

Output Indicators

Web pages are designed in Microsoft FrontPage. All pages contain requisite menus, toolbars and branding to present a consistent look and feel. Federal and state regulations are followed to meet accessibility guidelines.

Outcome Indicators

- More than 9.5 million visits (hits) accessed information concerning publications, jobs, hot topics, newsletters, county office and other miscellaneous areas. This is a 19% increase.
- More than 1.8 million visits (hits) accessed information concerning agriculture. Agricultural news and commercial horticulture received the most attention. This is a 50% increase.
- More than 1.3 million visits (hits) accessed information on homes and gardens. The popular Plant of the Week and Landscape sections were visited most. This is a 50% increase.
- Over 601,800 visitors (hits) accessed information on families. Family life and money sections were popular. This is a 52% increase.
- More than 385,700 visits (hits) accessed information on communities and businesses. Information provided Arkansans on volunteerism and county taxes garnered most interest. This is a 37% increase.
- Almost 387,000 visits (hits) accessed information on youth with the 4-H GoForIt section garnering 42.5 per cent of the visits. This is a 15% increase.
- Approximately 169,800 visits (hits) accessed information on the environment. EQUIP, recycling and wildlife were popular topics. This is a 40% 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.

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 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
- 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

190 Radio news releases written and distributed to statewide radio outlets, dealing with timely topics in agriculture, family and consumer sciences, 4-H and youth development, community development and public policy issues.

74 Appearances by content specialists on statewide commercial television.

68 Radio scripts written by content specialists, edited by the director of communications and marketing and posted on the intranet for county faculty statewide to download and use on local radio stations and cable networks and as weekly newspaper columns.

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.

12 Today's Garden, a series of 30-minute programs about horticulture and gardening aimed at people who are involved in gardening, was produced and delivered to the Arkansas Educational Telecommunications Network where it was broadcast statewide three times each month.

6 Appearances by county faculty as guests demonstrating practices in nutrition on "Fighting Fat," a program produced and broadcast each month by the Arkansas Educational Telecommunications Network.

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. 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

48	News packages written, edited and distributed statewide to all weekly and daily newspapers in Arkansas and to various magazines. Each feature package contains approximately five to six 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.
183	Number of spot news stories that were distributed statewide for use by weekly and daily newspapers.
500	Number of direct media contacts during 2003 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.
188	Number of news stories successfully pitched to large daily newspapers with wide readership.
1,020,452	Number of households in Arkansas subscribing to daily newspapers in Arkansas; the articles distributed to the daily newspapers are accessible by these households.
301,079	Number of households in Arkansas subscribing to weekly newspapers in Arkansas; the articles distributed to weekly newspapers are accessible to these households.

Outcome Indicators

$770,891	Total market value of editorial coverage about the University of Arkansas Cooperative Extension Service in central Arkansas media.
16,525	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.

33 Number of new fact sheets written, designed, made available for print-on-demand and placed on the Web for public access.

47 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:

- Lawn Care Calendar Series: Bermuda grass
- Evaluating the Management Potential of Upland Hardwood Stands
- Ten Easy Ways to Kill a Tree (and How to Avoid Them)
- Meat Goat Production Calendar
- Livestock Health Series: Reproductive Prolapses of Cattle
- Supplementing Grazing Cattle Series: Growing Cattle on Improved Summer Forages
- The Use of Poultry Litter in Row Crops
- Asian Soybean Rust
- Asian Soybean Rust Fungicides and Aquatic Organisms
- Asian Ambrosia Beetle
- Insect Pest Alert: Soybean Aphid
- Emerald Ash Borer: A Potential Pest of Ash Trees in Arkansas

- Marketing Your Products Directly
- Nutrients and Water Quality Concerns

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

80 New and revised fact sheets designed and made available for print-on-demand and for Web access.

10 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.

74 Issues of Extension newsletters directed at targeted clientele. Titles include Extension News (Web only), Extension Cord, Dairy Digest, Arkansas ReLeaf, Beef Cattle Research Update, Beef Champs, Vision 2010, Best Care, Farm Management, 21st Century Families.

14 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 Arkansas Green Industry, Best Care, Legacy, Arkansas Grown, Estate Planning and RESQ.

29 Program guides 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).

2,097 Signs and displays that are used by county agents and specialists during events and workshops.

2 Notebooks such as Best Care and County Extension Council Guide (also a CD).

5 Larger reports and publications such as Strategic Plan, Horticulture Flash Cards, Arkansas Land & Life magazine, Arkansas Rice and Soybeans Today tabloids.

43 Other projects including covers, tabs, t-shirts, logos, posters, pocket folders, recognition plaques, advertisements, Web graphics and PowerPoint presentations.

295,855 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.
- Cotton Pheromone Trap Reporting compiles reports from insect traps in Arkansas and other states to analyze/graph the degree of infestation.
- Farm Management organizes soil, water and manure testing, fertilizer and pesticide applications and budget data for producers.
- 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.

These and other programs can be found at http://aragriculture.org/computer/default.asp.

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.

462 Standalone decision tools delivered.

18 States requesting copies of tools.

21 Foreign entities requesting decision tools.

1,353 Rice producers enrolled in the web-based DD50 Rice Web decision tool.

653,718 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.

34 Extension programs from which faculty may choose for plans of work. The offerings include:

- 4-H Youth Development
- Agriculture and Natural Resource Awareness
- Agricultural Marketing, Management and Farm Policy
- Building 4-H Clubs
- Agronomic Crops Production and Management
- Diversification Through Wildlife Enterprises
- Alternative Agricultural Enterprises
- Healthy Weight for Arkansans
- Animal Manure and Mortality Management
- Managing Water Resources Associated With Agricultural Crop Production in Arkansas
- Community Development and Public Issues Education
- Planning for the Long Term
- EFNEP
- Reduce Winter Feed Cost
- Family and Community Connections
- Tillage Systems for Sustainable Crop Production
- Farm and Home Biosecurity
- Youth Leadership
- FF-NEWS
- Food Stamp Nutrition Education
- Forest Management
- Horticulture Production and Management
- Improving Health
- Leadership and Volunteer Development
- Livestock and Forage Production and Management
- Natural Resource Conservation and Environmental Protection
- Pest Management
- Poultry Production and Management
- Raising Arkansas Youth
- Resource Management
- Safe Food - From Farm to Table
- Solid Waste Management
- Strengthening Individuals and Families
- The Best Care

Outcome Indicator

The primary impact of this program is increased data integrity in reporting. As a result of the program, Arkansas Extension faculty have only one place to go to plan and report program information.

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 make-up 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 theses sessions. Using the nominal group process, participants at each session were asked to identify: 1) trends and issues that 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 that is 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 2004-2005 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 2004-2005 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

Southern Region Extension Forester/Master Tree Farmer

Arkansas continues to participate with the other southern region states to support the regional forester. Arkansas has also participated in planning and facilitating the Master Tree Farmer Satellite short course series since 2000. Last year four counties hosted the seven-week short course. The forestry specialist is the state coordinator for the program.
Funding: $39,763.37
FTEs: 0.9038 FTEs

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: $27,133.89
FTEs: 0.6307

Southern Region ANR Committee

The ANR state leader continues to be an active participant in planning southern region Extension ANR committee activities.
Funding: $1,475.76
FTEs: 0.0307

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: $77,771.06
FTEs: 1.8653

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, 2004, to plan future shows dates, add activities, revise activities and submit budgets through 2005. An additional meeting was conducted in August, 2005, prior to start of 2005 Southern Regional 4-H Horse Championships. The 2005 Southern Regional Horse Show was conducted July 29-August 3 in Montgomery, Alabama. 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.
Funding: $2,088.87
FTEs: 0.046

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: $2,946.16
FTEs: 0.0691

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.
Funding: $828.77
FTEs: 0.0191

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: $737.88
FTEs: 0.0153

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: $982.05
FTEs: 0.0229

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: $1,260.10
FTEs: 0.0268

National 4-H Dairy Conference

Arkansas continues to support specialists and a team of 4-H youth to participate.
Funding: $2,483.65
FTEs: 0.0614

SERA-IEG for Dairy

This continues to provide for the exchange of information among dairy Extension and related specialists usually working in conjunction with the planning of the Southern Dairy Conference.
Funding: $368.94
FTEs: 0.0076

Dairy Tour to California

This tour educated Extension personnel on the management of larger dairy farms and the progressive aspects of the California dairy industry, which included three value-added ventures.
Funding: $9,207.41
FTEs: 0.2153

Meat Goat Industry Tour

The purpose of this tour was to educate Extension agents on the management of larger goat producers with emphasis on forage production and parasite control and management of elite replacement operations.
Funding: $3,990.59
FTEs: 0.0922

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: $184.47
FTEs: 0.0038

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 and rotates between Arkansas, Mississippi and Louisiana and involves Extension soybean specialists, county Extension agents, soybean producers and ag-industry representatives.
Funding: $5,832.61
FTEs: 0.1345

Southern Region Plant Nutrient Management Conference

Soil scientists, agronomists, environmental specialists, crop consultants, 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 heard invited speakers and Extension specialists from 13 southern states sharing their experiences on water quality and nutrient management.
Funding: $922.35
FTEs: 0.0192

National 4H 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: $3,377.48
FTEs: 0.0768

National 4H Conference

Five Arkansas youth delegates and one Extension faculty member participated in National Congress held at the National 4H Center. 4-H youth have the opportunity to visit their Congressmen and discuss issues facing youth in their home communities.
Funding: $2,735.85
FTEs: 0.0576

Southern Region 4H Volunteer Leader Forum

Ten volunteer leaders and two Extension faculty participate in this three-day training for 4H volunteer leaders in Rock Eagle, Georgia.
Funding: $2761.69
FTEs: 0.0653

Mid South Fair 4H 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: $5,214.14
FTEs: 0.1268

Kansas City 4H 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: $3,224.20
FTEs: 0.073

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: $19,553.78
FTEs: 0.4076

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: $2,767.04
FTEs: 0.0576

National and Southern Region 4H 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: $1,291.29
FTEs: 0.0269

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 FY05 Arkansas had one faculty member serving on the National Curriculum Committee Board of Directors.
Funding: $4,058.33
FTEs: 0.0846

4-H Technology Conference

The Arkansas 4-H Technology Team provided the leadership for a four-state youth Technology Conference in March. Seventy-five youth participated in technology workshops designed to feature community service. One group of youth participated in the Veteran's Memorial project; another utilized GPS to mark way points for a community park revitalization project in Little Rock.
Funding: $3,133.31
FTEs: 0.0691

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: $2,767.04
FTEs: 0.0576

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 individuals 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: $8,301.13
FTEs: 0.173

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 who 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: $77,031.44
FTEs: 1.8076

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: $49,271.98
FTEs: 1.1346

National Grassland Contest

The Grassland Evaluation Contest teaches students concepts of grassland and resource management. In 2004/05, 35 youth competed in the Arkansas Grassland Contest and 17 of those qualified to compete in the Mid-America Grassland 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: $13,709.52
FTEs: 0.3345

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.
Funding: $1,106.82
FTEs: 0.023

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 second year intervention in three Arkansas counties (Woodruff, Drew, and Ashley) reached 2,413 youth in 127 K-5 classrooms in 8 schools. Eighty-six percent of teachers incorporated nutrition and physical activity education into core curriculum subjects an average of three times per week. Participating students accumulated an additional 12.16 hours of physical activity during the school year compared to non-participating students. Seventy-seven percent of teachers said their students had a better understanding of health after participating in the Delta HOPE program. Seventy-one percent of parents returning surveys said their children asked for more or different fruits, vegetables, milk or yogurt after participating in the program and 60 percent of parents said they made changes in their family's eating and activity practices as a result of what their child learned through the Delta HOPE program. The program, funded through a four-year grant from the Kellogg Foundation, will be expanded to six additional schools in FY06.
Funding: $30,050.60
FTEs: 0.7422

Master Farmer Program

Farm groups in Arkansas and others such as the Arkansas Association Conservation Districts (AACD) have asked assistance from the University of Arkansas Cooperative Extension Service in addressing environmental issues facing Agriculture. The same request was made in Louisiana, and in response, the LSU Extension system has developed a comprehensive training program known as Master Farmer to help producers address water quality concerns. The Master Farmer program has the potential to help educate and motivate agricultural producers to positive actions towards lessening the impact of NPS pollution. Master Farmer efforts are jointly supported by the Southern Region Community Development Center and the states of Louisiana, Mississippi and Arkansas. These Extension-based organizations have cooperated in the development of plans and processes for the initiation of Master Farmer Programs in the three states. Louisiana has led in the development of a basic curriculum while Arkansas and Mississippi have been building infrastructure support for the initiation of new program efforts.
Funding: $40,529.76
FTEs: 0.923

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: $2,582.57
FTEs: 0.0538

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 nonprofit 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: $2,701.98
FTEs: 0.0614

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: $11,979.81
FTEs: 0.2653

4-H Wildlife Habitat Evaluation Program Invitational

Arkansas hosted the 4-H Wildlife Habitat Evaluation Program Invitational in August 2005 in which 109 participants attended from 19 states. Additionally, Invitational committee members from throughout the country met twice in Arkansas in preparation for the Invitational.
Funding: $15,981.12
FTEs: 0.3422

Southern Region Program Leaders Network

The State Leader for Community and Economic Development participates in the Southern Region

Program Leaders Conference for community development program leaders. Quarterly phone conferences are held to maintain communication and coordinate joint activities.
Funding: $1,475.76
FTEs: 0.0307

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: $2,767.04
FTEs: 0.0507

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.
Funding: $24,996.03
FTEs: 0.5653

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 at 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 2005 and placed third in the contest.
Funding: $2,455.13
FTEs: 0.0576

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. An Arkansas Extension forester was an invited panelist at the 2005 Annual Convention.
Funding: $2,582.57
FTEs: 0.0538

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: $553.41
FTEs: 0.0115

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: $737.88
FTEs: 0.0153

March 22, 2006

FY 2005 Annual Report of Accomplishments and Results

Arkansas Division of Agriculture
University of Arkansas System

April 2006

Introduction

The Arkansas Agricultural Experiment Station is the research arm of the Division of Agriculture, University of Arkansas system. The FY 2005 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. While row crop farmers fared significantly better this year than in previous years, high input costs and Asian soybean rust threaten these 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 weed science has been recently employed at our Northeast Research and Extension Center (Keiser) and will focus on systems agronomy issues.

Animal Systems

Beef and poultry production remain closely linked in Arkansas. Most 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 pasture lands 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 2005 Expenditures on Goal 1: $40,029,998; Scientist FTE: 81.5

KEY THEME: PLANT PRODUCTION EFFICIENCY

Situation

Arkansas farmers produce 45 percent of the rice grown in the United States under dynamic production conditions that differ from those in other rice-growing areas. Because of 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

Fifty-three percent of the rice grown in Arkansas in 2005 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 6,700 lbs/acre for 2005. Assigning a conservative value of 60 percent of this 2,590 lbs/acre yield increase to new varieties, the average monetary gain in 2005, at a rough rice price of $7.90/cwt, would be $123/acre or $201 million for the 1.64 million acres grown in Arkansas, of which some $106.6 million is due to the new Arkansas varieties.

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

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 2004 and 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, 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 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 productions 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 2005 Arkansas Soybean Verification Trials in farmer's 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.

Impact

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.

'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: PLANT HEALTH

Situation

Asian soybean rust, *Phakopsora pachyrhizi*, is a new disease of soybean in the US with devastating potential. Control of soybean rust depends on the application of foliar fungicides, but timing is crucial. To be effective, fungicides must be applied just as the epidemic begins, often at a level that is difficult to find in the field. There are several methods being studied for early detection, one of which is the use of spore traps. In parts of South America, soybean rust-like spores were detected 10 days before being found in sentinel plots (early planted plots that develop rust before the commercial fields). Since soybean rust is a new disease in the US and will probably be much more sporadic from year to year than it is in South America, knowing when or if to apply fungicides will be crucial for US growers. This project was undertaken to determine if spore trapping could be an effective tool in scheduling fungicide applications.

Impact

Of the over 1,200 traps examined, 200 had soybean rust-like spores. Soybean rust-like spores were found in each of the 13 states that had spore traps, although soybean rust was only found in six of those states. Of those six states, soybean rust was only found in late fall, although spores were found much earlier. In the two states where rust did develop during the growing season (Georgia and Alabama), soybean rust-like spores were found in three locations where rust was not found and in all locations (12) where rust was found. In all except one location, soybean rust-like spores were found 5-77 days before rust was found in the field, on average 31 days before. In one location, soybean rust-like spores were found 31 days after rust was found in the field. These results show that the spore traps may be a useful tool in the early detection of soybean rust, but more work is needed before it is a reliable tool for timing fungicide sprays.

Source of Funds

Hatch, state matching

Scope of Impact

Multi-state research

KEY THEME: ANIMAL PRODUCTION EFFICIENCY

Situation

One of the top issues in broiler nutrition is precision formulation, which deals with formulating diets that closely represent the needs of the broiler and attempts to minimize the excretion of excess nutrients such as nitrogen and phosphorus.

A team of scientists, including a nutritionist and a processing expert, conducted continuing research in 2005 in which broilers were fed commercial-type diets that were adequate or low in phosphorus, with or without dietary phytase.

Impact

University of Arkansas research illustrates that phytase may be used in combination with low-phosphorus diets throughout the entire grow-out period of broilers, potentially reducing dietary costs and phosphorus excretion (an environmental benefit) without sacrificing performance or increasing the incidence of broken bones, which is an economic and welfare issue. These data illustrate to poultry nutritionists that environmental and cost benefits are available without consequent processing or welfare problems. It is expected that once this phytase product is widely available for distribution, most if not all commercial broiler diets will include phytase, with a subsequent decrease in the amount of phosphorus that reaches the environment and a reduction in dietary cost.

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 2005 Expenditures for Goal 2: $4,069,787; Scientist FTE: 9.0

KEY THEME: FOOD SAFETY

Situation

Campylobacter is the one of the most commonly reported bacterial causes of human food-borne 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% 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 food- borne illness in humans.

Source of Funds

Hatch, State matching, USDA Special Grant

Scope of Impact

Multi-state research

KEY THEME: FOOD-BORNE 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 food-borne 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 food-borne 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: FOOD-BORNE 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

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 2005 Expenditures for Goal 3: $1,239,080; Scientist FTE: 3.2

KEY THEME: NUTRACEUTICALS

Situation

Conjugated linoleic acid (CLA) inhibits carcinogenesis, atherosclerosis and promotes weight loss. CLA is found in dairy and meat food products and is formed as a result of fermentation in the cattle rumen and deposited in muscle and milk. It would be possibly inadvisable to obtain higher levels of CLA by increasing dietary meat and dairy foods since increase of dietary dairy and meat products would also be associated with increased saturated fat intake. Therefore, alternative CLA sources, such as unsaturated oils or low-fat foods, would be desirable.

Impact

University of Arkansas scientists produced a CLA rich soy oil by simply exposing naturally occurring linoleic acid in soy oil to ultraviolet light in the presence of a catalyst. Using this process, soy oil with 23% CLA was produced without loss of oil quality. The CLA soy oil, an unsaturated oil, is perceived as a “healthier” plant lipid source than animal products. This will broaden the range of foods in which CLA can be obtained and allow the incorporation into a variety of baked and fried processed products.

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

KEY THEME: NUTRACEUTICALS

Situation

Lipid oxidation is a free radical-mediated process that can result in food spoilage or loss of product quality. Synthetic antioxidants are currently used to retard lipid oxidation in food systems; however, natural extracts are preferred over synthetic antioxidants by the consumer. In general, plant-derived natural extracts are much less effective than synthetic antioxidants.

A research team at the University of Arkansas has used a statistical technique known as response surface methodology to optimize the extraction of potent antioxidants from cowpea, a nutrient-rich seed grown widely across

the southern United States. After optimization, the hydroethanolic extracts from cowpea were evaluated for antioxidant capacity, and individual phenolic compounds were quantified by high performance liquid chromatography (HPLC). Optimized cowpea extracts demonstrated high antioxidant activity; moreover, these extracts were stronger inhibitors of lipid oxidation in a lard system than equivalent concentrations of TBHQ, a powerful synthetic antioxidant.

Impact

Hydroethanolic extract from cowpeas was a very effective inhibitor of oxidative rancidity in lipid systems. Moreover, cowpeas are widely available, relatively inexpensive, and easy to store; therefore, this seed has potential for use as a natural preservative in lipid-based food systems.

Source of Funds

Hatch, State matching, USDA – NRI

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 2005 Expenditures for Goal 4: $9,414,742; Scientist FTE: 22.9

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 four-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 initiated a 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% 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 2005. 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.

Impact

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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 are 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 2005 Expenditures for Goal 5: $1,829,843; Scientist FTE: 9.5

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 that 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

Methamphetamine abuse is on the rise and considered to be one of the leading drug problems in the U.S. today. In general, illicit drugs tend to be used in greater numbers by men compared to women; however, methamphetamine is used in roughly equal proportions by both males and females, and is particularly on the rise by women of child-bearing age (Hohman et al., 2004). Regionally, Missouri, Arkansas, Tennessee, and Oklahoma have some of the highest number of methamphetamine lab seizures in the U.S. (Drug Enforcement Administration, 2004). Some of the social problems associated with methamphetamine abuse include increased crime, law enforcement and prison expenditures, mental health problems, domestic violence, child abuse and neglect, drug-exposed children, and environmental hazards.

Based on a review of the literature, Bronfenbrenner's ecological theory was to examine how women's substance abuse is determined by multiple risk factors related to personal history (e.g., heredity, mental health), relationship factors (e.g., family, partner's substance abuse, family violence), community factors (e.g., poverty, stress, availability of treatment), and the larger social culture (e.g., values and beliefs).

Impact

While it is not possible to identify and discuss all the relevant factors related to a woman's substance abuse, some interesting themes emerged in this research. Regarding a woman's personal history, approximately 30-50% of substance-abusing women in treatment studies also tend to have co-morbid psychiatric conditions such as depression and anxiety. However, women's mental health problems are just as likely to precede as to follow substance abuse treatment, suggesting a complex interaction between genetic markers for substance abuse and environmental factors.

Cultural values and beliefs indicate there is a double standard regarding women's intoxication and drug use relative to men's; there is more social disapproval for female intoxication as expressed by both men and women, and across all social classes. Results of this research review of women's substance abuse help to inform the on-going study of methamphetamine abuse among rural women.

Source of Funds

Hatch, State matching

Scope of Impact

Multi-state research

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 that includes disciplines such as economics and engineering in addition to poultry science, and the Institute of Food Science and Engineering that 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 that 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 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
(Attach Brief Summaries)

Fiscal Year: 2005

Select One: □ **Interim** □ **Final** (FINAL)

Institution: University of Arkansas Division of Agriculture

State: Arkansas

	Integrated Activities (Hatch)	**Multistate Extension Activities (Smith-Lever)**	**Integrated Activities (Smith-Lever)**
Established Target %	25%	2%	25%
This FY Allocation (from 1088)	$3,223,867.00	$5,254,450.00	$5,254,450.00
This FY Target Amount	$805,967	$105,089	$1,313,613
Title of Planned Program Activity			
Southern Region Extension Forester/Master Tree Farmer		$39,763.37	
Pesticide Applicator Training		$27,133.89	
Southern Region ANR Meeting		$1,475.76	
Sustainable Ag for Southern Region		$77,771.06	
Southern Region 4-H Horse Show		$2,088.87	
KOMA Beef Cattle Conference		$2,946.16	
AR-MO-OK Dairy Tour / Meeting		$828.77	
Southern Dairy Conference		$737.88	
Mid South Dairy Show		$982.05	
DHIA		$1,260.10	
National 4-H Dairy Conference		$2,483.65	
SERA-IEG For Dairy		$368.94	
Dairy Tour to California		$9,207.41	
Meat Goat Industry Tour		$3,990.59	
Four-State Heartland Community Development Conference		$184.47	
Tri-State Soybean Forum		$5,832.61	
Southern Region Plant Nutrient Management Conference		$922.35	
National 4-H Congress		$3,377.48	
National 4-H Conference		$2,735.85	
So. Reg. 4-H Volunteer Leader Forum		$2,761.69	
Mid South Fair 4-H Day		$5,214.14	
Kansas City 4-H Global Conference		$3,224.20	
4-H Volunteer Core Competencies		$19,553.78	
Southern Region Cooperative Extension Curriculum Project		$2,767.04	
National & Southern Region 4-H Program Leaders Committee		$1,291.29	
4-H Cooperative Curriculum System		$4,058.33	

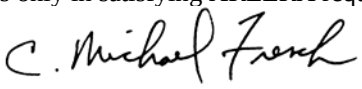
State: Arkansas

Title of Planned Program Activity	Integrated Activities (Hatch)	Multistate Extension Activities (Smith-Lever)	Integrated Activities (Smith-Lever)
4-H Technology Conference		$3,133.31	
National & Southern Region FCS Program Leaders Committee		$2,767.04	
So. Region Program Leadership Network (PLN)		$8,301.13	
So. Region Watershed Resources Mgt.		$77,031.44	
Lower Mississippi Valley Initiative		$0.00	
Southern Region Fire Ant Management		$49,271.98	
National Grassland Contest		$13,709.52	
HorseQuest.info		$1,106.82	
Delta HOPE (Healthy Options for People through Extension)		$30,050.60	
Master Farmer		$40,529.76	
Nat. Network of Forest Practitioners		$2,582.57	
Urban Forestry Council		$2,701.98	
Nature Mapping		$11,979.81	
4-H Wildlife Habitat Evaluation Program Invitational		$15,981.12	
Southern Region Program Leaders Network		$1,475.76	
Tri-State Community Development Initiative		$2,767.04	
Southern Dairy - Filth Fly IPM Program		$24,996.03	
National 4-H Forestry Council		$2,455.13	
Society of American Foresters Ouachita Chapter Exec Committee		$2,582.57	
Risk Management Training for Absentee Landowners		$553.41	
Delta Region Farm Management and Agricultural Policy Working Group		$737.88	
Agronomic Crops			$2,107,994.46
Livestock and Forages			$1,366,158.40
Poultry Production and Management			$200,775.96
Forest Management			$201,535.92
Horticulture Production & Management			$1,203,905.81
Alternative Agricultural Enterprises			$154,742.86
Agricultural Marketing			$429,637.26
Safe Food - From Farm to Table			$228,822.97
Improving Health			$2,132,716.92
Maintaining Ag Sustainability			$608,281.71
Animal Waste Management			$102,505.39
Cotton Pest Mgt./ Integrated Pest Mgt.			$1,302,983.90
Pesticide Applicator Training			$127,932.49
Imported Fire Ant Education			$40,799.64
Solid Waste Management			$34,810.11

State: Arkansas

Title of Planned Program Activity	Integrated Activities (Hatch)	Multistate Extension Activities (Smith-Lever)	Integrated Activities (Smith-Lever)
Economic and Community Development and Public Policy Information			$775,132.36
Leadership and Volunteer Development			$1,176,613.49
Strengthening Families			$536,731.48
Managing Resources			$140,665.42
Developing Youth			$3,563,829.67
Managing Resources in Limited Resource Families			$16,108.64
Plant and Animal Production	$553,888.00		
Plant and Animal Genetic Improvement	$256,993.00		
Plant Protection	$495,184.00		
Animal Health	$93,428.00		
Agricultural Economics	$263,289.00		
Product Development and Processing	$111,736.00		
Food Safety	$158,622.00		
Human Nutrition	$33,714.00		
Natural Resource Conservation	$155,012.00		
Quality of Life and Community Development	$26,903.00		
Total	$2,148,769.00	$517,676.63	$16,452,684.86
Carryover	$0.00	$0.00	$0.00

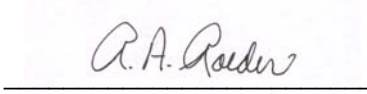
Certification: I certify to the best of my knowledge and belief that this report is correct and complete and that all outlays represented here accurately reflect allowable expenditures of Federal funds only in satisfying AREERA requirements.



_____ April 26, 2006

Director **Date**

UA Cooperative Extension Service
UA Division of Agriculture



_____ April 25, 2006

Director **Date**

UA Agricultural Experiment Station
UA Division of Agriculture

NOTE: Brief Summaries of Smith-Lever Multistate Programs provided in next section.
Hatch & Smith-Lever Integrated Activities summaries provided in program reports.